Year 7 Knowledge Book 2023-2024

Saint Benedict
A Catholic Voluntary Academy

Sticker Name

Love, Belief, Integrity, Knowledge

Saint Benedict
Catholic Voluntary Academy

OUR VALUES

BE WHO GOD MEANT YOU TO BE AND YOU WILL SET THE WORLD ON FIRE.

LOVE

As we know we are loved by God, we will learn to love ourselves and care for our own body mind and soul.

We will show love to one another by being patient and kind, not by being rude, boastful or proud.

As one body in Christ, we will ensure that no member of our community is left out or left behind

BELIEF

We will encourage one another and build each other up.

We will let our light shine, making the world a better place for all.

KNOWLEDGE

We will value knowledge: intelligent hearts acquire knowledge, the ears of the wise seek knowledge.

INTEGRITY

We will always strive to make the right choice even when this is the harder path to take.

We will live and work sustainably.

AT SAINT BENEDICT WE DEVELOP THE CHARACTER OF OUR COMMUNITY THROUGH OUR CURRICULUM AND CULTURE.

Saint Benedict

MY EQUIPMENT PLEDGE

To succeed you must be prepared. Every night before school, you need to check your school bag to ensure that you have all the correct equipment.

Here is the list of equipment you need for every lesson:

- ❑ Black or blue pens
- ❑ Red pens (one or two)
- ❑ A ruler
- ❑ A pencil
- ❑ A scientific calculator (CASIO)
- ❑ A rubber
- ❑ A protractor
- ❑ Colouring pencils
- ❑ A sharpener
- ❑ Glue stick
- ❑ Your KNOWLEDGE BOOK

I pledge that I will always bring the correct equipment to class so that I can effectively learn.

Your signature:	Parent/carer's signature:	Form tutor's signature:
.....	.....	.....

Respect

What is Respect?

Showing respect is an important part of life, and how you maintain relationships.

Three types of respect:

1. Respect Yourself
2. Respect Others
3. Respect the Planet

Why is respect important?

Receiving respect from others is important because it helps us to feel safe and to express ourselves. Respecting others helps maintain a peaceful world and encourages others to be better people. Showing respect to our planet allows us to maintain it for future generations.

Key words	Definitions
Respect	Due regard for the feelings, wishes and rights of others
Honour	The quality of knowing and doing what is morally right
Dignity	Sense of pride and self respect
Relationships	The way two or more people or groups connect and behave towards each other
Worthiness	The quality of being good enough

Rules and Sanctions

Build up a loving community

Key word	
Conduct	The way in which a person behaves.
Unacceptable	Something that is not suitable or appropriate.
Boundaries	The limits of something.
Sanction	A penalty or action taken when a rule or law has been broken.
Consistent	Acting in the same way overtime to be fair.

Behaviour

Rules and sanctions are things which guide our behaviour. We follow rules and regulations to be fair and consistent. Sanctions occur if we do not follow rules or deliberately break them.

Preparation for life

All aspects of life require us to follow rules. There are rules in school; rules in your family and home; rules to follow when crossing the road and using the bus and so on. Structure and rules allow us all to know what is acceptable and how to conduct ourselves. Rules reassure us

The law

We are all bound by the rules of the law. If we break the law, we face a raft of different sanctions. Ultimately, having rules in schools is about a lifelong understanding about what is right and what is wrong.

Kindness

Key word	
Empathy	Understand and share feelings of others
Compassion	Concern for misfortune of others
Compliment	Praise or congratulate others
Considerate	Thoughtfulness and sensitivity to others
Generous	Being liberal with things

Treat others how you would want to be treated yourself.

What is Kindness?

The quality of being friendly, generous and considerate

What does it mean to be kind?

To have empathy/sympathy, be compassionate, looking for good in people.

Why is it important to be kind?

Makes you feel happy, feel good about yourself

Builds strong relationships

Inspires others

How can we show kindness?

Smile

Hold the door open for somebody

Say something nice (compliment)

Invite somebody sat on their own to join you

Manners

Listen to somebody

Emotions

Key Words	
Feelings	An emotional state or reaction.
Relationships	The state of being connected with someone else.
Instinct	A fixed pattern of behaviour.
Intuitive	Using what you feel to be true even without conscious reasoning.
Reaction	Something done, felt or thought in response to a situation or event.
Identification	The act or process of identifying someone or something.

Work and play in harmony

What are emotions?

Emotions are biological states associated with the nervous system.

Thoughts, feelings, behavioural responses, and relationships all generate emotions.

An instinct or, intuitive reaction or feeling can create emotions

Identifying feelings

Making sense of what and how you feel is not always easy. To do this, we need to regularly check in with ourselves, making time to think about the feelings we are having and naming them. To do this, we need to think about our daily lives which may help us to see patterns of behaviour.

Not all feelings or emotions are bad or negative!

It is important to recognise when you feel happy; relaxed and good about yourself. Knowing what has led to these feelings can help us identify things we do not like which may cause us negative feelings.

Verbal Communication

Treat each other with dignity and justice

Key Words	
Clarity	Vocal clarity means you do not speak too fast or too slowly. You consider carefully the words you mean and whether your listener can understand you.
Honesty	Honesty is speaking the truth.
Respect	Respect means that you accept somebody for who they are, even when they are different from you or you do not agree with them.
Appropriate	fitting the practical or social requirements of the situation.
Tone	a quality in the voice that expresses your feelings or thou ghts, often towards the person being spoken to or the subject being spoken about
Courtesy	politeness, good manners, or consideration for other people.

What is verbal communication?
Verbal communication is the use of words to share information with other people.

What does it mean to communicate effectively?
Every time you verbally interact with someone you are aiming to develop your understanding of the world; you may be wishing to obtain information, respond to a request or offer support or guidance to another. In every one of these exchanges you are representing your tutor, your family and most importantly yourself.

Why is it important to communicate effectively?
All young people need to develop good speech, language and communication skills to reach their full potential.

Speech, language and communication underpin the basic skills of literacy and numeracy and are essential for you to understand and achieve in all subjects.

How can we communicate effectively?
Make eye contact
Speak honestly
Consider your role within the school
Consider the role of the person you are speaking to
Think carefully why you need to speak to the person you are addressing
Where necessary adapt as your conversation develops

Manners

Key Words	
Manners	A person's words or way of behaving towards others.
Respect	A regard for the feelings, wishes, or rights of others.
Listen	To take in what you hear.
Harmony	A time of behaving in one way to produce a pleasing effect.
Vocabulary	The range of words that we know and use.
Gratitude	The quality of being thankful; readiness to show appreciation for and to return kindness.

Loving...harmony...dignity

Treat your neighbour as yourself
The way in which we behave and speak towards others, reflects in their actions and words towards us.

Show the best side of yourself
When you speak to others, always show respect; be polite and thankful. Use the words 'please, thank you, sorry and pardon' when communicating with others.

Manners are for every situation
Every interaction has space for the use of manners: speech, emails, messages. Often when we get upset or angry we don't use manners.
However it does calm a situation if you do.

Change

Key Words	Definition
Change	Make or become different
Organised	Make arrangements or preparations for an event or activity
Opportunity	A time set of circumstances that make it possible to do something
Coping	To deal effectively with something difficult
Embrace	Accept (a belief, theory or change) willing and enthusiastically
Strategies	A plan of action designed to achieve a long term or overall aim

Develop potential to the full

Find the positive

Don't allow yourself to become negative about the changes in your life. Change is good, keep repeating it.

Feeling vulnerable

Facing change can be very overwhelming, leaving you feeling very emotional. Make it your mission to be proactive and respond to it positively.

Talk about it

It's good to talk about change in your life. Focus on problems, solutions and the positives that change will bring. Try to avoid focussing on the negatives and letting emotions take over.

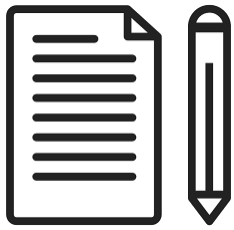
Study Skills – Ways to **learn and remember**

Self quizzing (look, cover, write)

Read through the information in the knowledge book that you want to learn

Cover the information up

Write down as much as you can remember



Use the knowledge book to;

a) Correct any mistakes
b) Add any information that you forgot

Study Skills – Ways to **learn and remember**

Spacing

Complete a self quiz of the information you want to learn

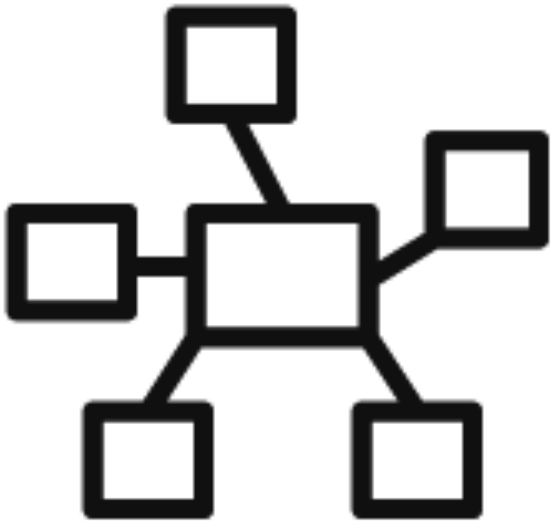
Wait for a day or 2 (depending on the deadline)

Repeat the self quiz.

The more times you can repeat this process, the more you will be able to remember without the book

Study Skills – Ways to **learn and remember**

Elaboration



Think about the topic that you are studying

Ask questions such as who, what , why , where , when how. Try to find the answers

See how these ideas connect - a mind map will be useful for this

Study Skills – Ways to **learn and remember**

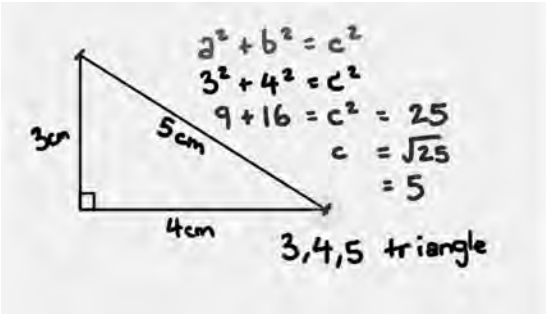
Concrete Examples

A concrete example is an clear example of an abstract idea

Pythagoras theorem example

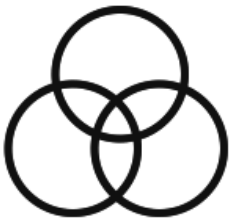
If you tried to explain Pythagoras's theorem to someone verbally, it would be quite hard to understand.

By using a concrete example that shows exactly how to use Pythagoras theorem, it is much easier to remember, understand and use



Study Skills – Ways to **learn and remember**

Interleaving



Research says we will actually learn more effectively if we mix our study skills up rather than using the same techniques all the time

1. Try to use different study skills rather than just one technique.

2. When revising for exams, prepare a revision timetable and try to revise more than one subject during a session

Study Skills – Ways to **learn and remember**

Dual Coding

As well as **writing** information down, **create an icon/ drawing** too for individual facts. This helps your brain to remember the information

INDEPENDENCE: DIAGNOSE

NAME: CLASS:

SUBJECT:

Be clear about what you know and what you don't know before you begin.

First, use a contents page or a topic list for the subject you are going to revise.

Then, fill in the following table – the topics, and how well you know them.

Next, prioritise. Which topics will you revise first? Spend time studying the topics which will make the biggest difference to your results.

Topic	Knowledge	Priority
	Know it/Sort of know it/Don't know it	
	Know it/Sort of know it/Don't know it	
	Know it/Sort of know it/Don't know it	
	Know it/Sort of know it/Don't know it	
	Know it/Sort of know it/Don't know it	
	Know it/Sort of know it/Don't know it	
	Know it/Sort of know it/Don't know it	
	Know it/Sort of know it/Don't know it	
	Know it/Sort of know it/Don't know it	
	Know it/Sort of know it/Don't know it	
	Know it/Sort of know it/Don't know it	
	Know it/Sort of know it/Don't know it	
	Know it/Sort of know it/Don't know it	

Finally, use the **diagnosis – therapy – test** worksheet to plan your independent study.

INDEPENDENCE: DIAGNOSIS – THERAPY - TEST

NAME: CLASS:

TOPIC:

DIAGNOSIS: The thing I don't understand

THERAPY: Where am I going to learn about this?

Which of the templates will I use to transform the information?

TEST: 5 questions someone can ask me about my new understanding.

You can download this template from the school website: www.saintben.sch.uk/content/independence

INDEPENDENCE: RANKING TRIANGLE

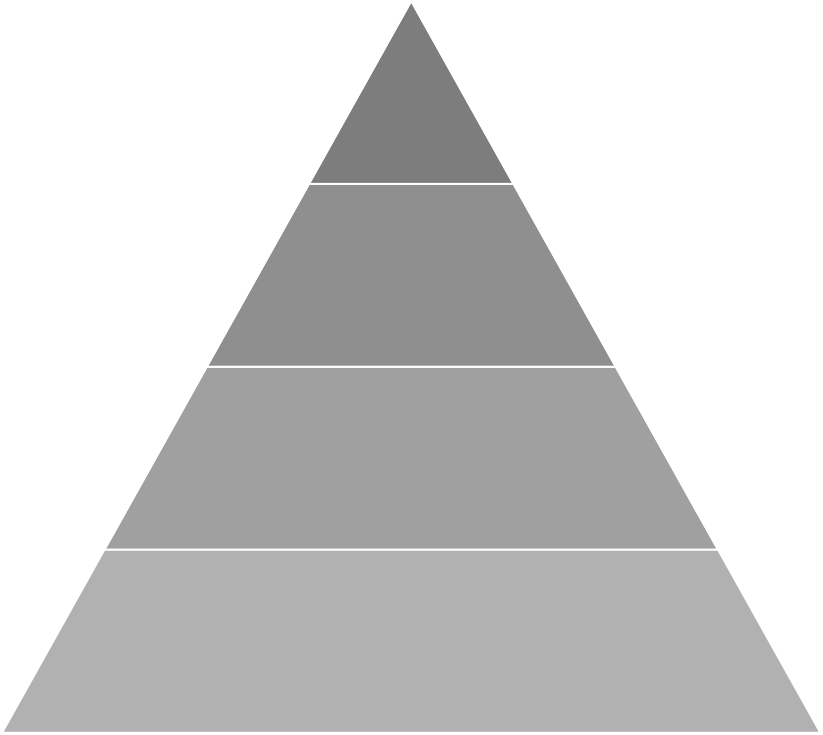
NAME: CLASS:

TOPIC:

The most important information goes at the top.

The least important information goes at the bottom.

Justify WHY. Why is it the most important? Why is it the least important?



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You can download this template from the school website: www.saintben.sch.uk/content/independence

INDEPENDENCE: PRIORITISE, REDUCE, CATEGORISE, EXTEND

NAME: CLASS:

TOPIC:

Take a section of text and do the following:

Prioritise: write out the three most important sentences. Rank 1-3 in terms of importance. Justify your decision.
Reduce: reduce the key information to 20 words.
Categorise: sort out the information into three categories. Give each category a title which sums up the information.
Extend: write down three questions you would like to ask an expert in this subject.

You can download this template from the school website: www.saintben.sch.uk/content/independence

INDEPENDENCE: BOXING UP

NAME: CLASS:

TOPIC:

Take a section of text. Read it and put your thoughts about the text into different boxes.

Needs a boost: 3 things I did not know:
Almost there: 3 things I understand better now:
I've got these: 3 things I already knew:

You can download this template from the school website: www.saintben.sch.uk/content/independence

INDEPENDENCE: QUIZZING

NAME: CLASS:

TOPIC:

Read the text and transform it into 10 questions to ask someone.

	Question	Answer
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		

Question stems:

State…	Explain…	Suggest…
Describe…	Evaluate…	Compare…

You can download this template from the school website: www.saintben.sch.uk/content/independence

INDEPENDENCE: PICTIONARY

NAME: CLASS:

TOPIC:

Transform the material into 6 pictures – one per paragraph or one per key piece of information. The pictures should represent the information so that they can act as a reminder of what the text said. Underneath each picture, explain your thinking.

1.	2.	3.

4.	5.	6.

INDEPENDENCE: OTHER IDEAS

Steps → flow chart Transform a sequence of steps into a flow chart or a diagram.

Flow chart → steps Transform a flow chart or a diagram into a sequence of steps.

Look, cover, write, check Cover a list of key words. Write them down. Check which ones you have got right. Repeat until you get them all right.

Link key words Take three words from a topic. Link them together in a sentence or a diagram. Repeat until all the key words have been linked.

You can download this template from the school website: www.saintben.sch.uk/content/independence

Year 7 Personal Development Curriculum

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Contents

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Year 7 Personal Development Curriculum

Topic - Dealing with change

Key Vocabulary	
Routine	A routine is like a habit or sequence that doesn't vary. There are daily routines things that must be done on a regular basis.
Change	To do something different from what you are used to.
Strategy	A plan of action designed to achieve a long-term or overall aim.

Key Knowledge

Change is a regular part of people's lives, moving school, moving to college or university, moving jobs.

Change should be a good experience.

Organisation is the key to dealing with such changes.

Preparation of the next step , knowing what is required and expected of you.

Strategies for dealing with change are :Talking to someone you they trust, making time for relaxing activities, Having realistic expectations, ensuring you eat and drink healthily, creating a daily routine, giving yourself time to adjust, thinking positively and self encouragement.

Never be afraid to ask for help. Everyone was new once.

Make an effort to make friends and to try things that are new.

Do your best to follow the school rules.
Enjoy every day, make the most of every moment.

Year 7 Personal Development Curriculum

Topic - The challenge of moving to Secondary School

Key Vocabulary	
Transition	The process or a period of changing from one state or condition to another.
Challenge	A call to participate in a situation
Milestone	A significant stage or event

Key Knowledge

Moving to Secondary School is a milestone in all people's lives

Moving to the next experience is a regular part of people's lives, moving school, moving to college or university, moving jobs.

Organisation is the key to dealing with such changes.

Preparation of the next step , knowing what is required and expected of you.

Check timetable, pack bag , have equipment , positive attitude.

Never be afraid to ask for help. Everyone was new once.

Make an effort to make friends and to try things that are new.

Do your best to follow the school rules.

Enjoy every day, make the most of every moment.

Year 7 Personal Development Curriculum

Topic - How to establish and manage friendships

Key Vocabulary	
Friendship	A person who you know well and who you like a lot, but who is usually not a member of your family
Peer Pressure	The influence of others to get you to behave as they do
Qualities	A distinctive attribute or characteristic possessed by someone

Key Knowledge

It takes effort to maintain a friendship.

A person can have many friends, this means that you ae not dependant on any one person should circumstances change.

Friendships have varying levels of intensity, ranging from those you meet on and off to a 'best' friend who you share more times and experiences with.

Friends reflect who you are; therefore surround yourself with good people.

Qualities of a good friend are trust, loyalty, humour, compassion, empathy, listening, supporting, honest and allowing you to be yourself.

Year 7 Personal Development Curriculum

Topic - How to improve study skills

Key Vocabulary	
Memory	The faculty by which the mind stores and remembers information.
Associative Memory	The brain's ability to link bits of information from different places together.
Skill	The ability to do something well;

Key Knowledge

The brain is a very busy organ of the body.

The memory is like a filing cabinet of all that you have done in our lifetime.

Your working memory can hold about seven times at a time.

It sifts, rejects and selects information to go into the long term memory.

Your long term memory is your storage system which holds millions of pieces of data.

The memory needs a filing system don't clutter it with useless information be selective in what your read and watch.

Feed your brain and memory , drink plenty, exercise, eat healthily, get enough sleep.

Practice, practice, practice until things become a habit and routine.

Year 7 Personal Development Curriculum

Topic - How to identify personal strengths and areas for development

Key Vocabulary	
Strength	Something that you are good at doing or that you possess.
Skill	The ability to do something well
Development	A process of growth that is characterised by improvement or change

Key Knowledge

Every human is unique and special

We all have talents, strengths and gifts

No person is good at everything – and that is normal

Weaknesses or areas for development are opportunities for us to grow

It is good to reflect on our strengths and areas for development

As we grow our strengths and areas for development will change

Year 7 Personal Development Curriculum

Topic -Personal safety and travel safety

Key Vocabulary	
Pedestrian	A person walking rather than travelling in a vehicle
Safety	The condition of being protected from or unlikely to cause danger or risk
Dangerous	Able or likely to cause harm or injury.
Traffic collision	Occurs when a vehicle collides with another vehicle, pedestrian, animal or the road
Fine	A fixed amount of money someone has to pay as a result of a penalty
Passenger	A traveller on a public or private conveyance other than the driver, pilot, or crew
Penalty	A punishment imposed for breaking a law, rule, or contract.

Key Knowledge

Road collisions remain one of the main causes of death among children and young people aged 0-15.
35% of child pedestrians are killed or seriously injured during what is typically classified as the 'school run'.
More boys are injured as a result of a road traffic collision than girls in England.
In 2014, 1,171 boys aged 0-15 were killed or seriously injured compared to 611 girls.

You must wear a seat belt if one is fitted in the seat you're using - there are only a few exceptions - You can be fined up to £500 if you don't wear a seat belt when you're supposed to.
It's illegal to hold a phone or sat nav while driving or riding a motorcycle. You must have hands-free access.
As a passenger in a vehicle, you also risk death or serious injury on the road due to the actions of other road users.
However, your own actions can also be to blame.
Drivers need to concentrate and distractions within the car can make this difficult.

Year 7 Personal Development Curriculum

Topic - How to respond in an emergency situation

Key Vocabulary	
Airway	If not clear, then open by tilting the head back, use one hand on forehead and two fingers under the chin
Emergency situation	A situation where they is an immediate problem or danger
Primary survey	What you do when you first see a casualty - but only when you are safe
Recovery position	The position you put the casualty in when you have completed the primary survey
Cardiopulmonary resuscitation (CPR)	CPR helps a casualty regain their breath. Needed only if the person is not breathing

Key Knowledge

Before attempting to help anyone you first must make sure that you are safe and not putting yourself in danger

The heart needs air (oxygen) and it's a muscle that pumps blood around the body.

There are six main stages to the primary survey

Danger – check that you are safe and the environment around you is safe

Response - Check the casualty's response. Ask questions and gently tap shoulders. Say "open your eyes!"

Shout - Anyone nearby can assist you

Airway- check If not clear, then open by tilting the head back, use one hand on forehead and two fingers under the chin

Breathing- Check for normal breathing. Do not put your face next to theirs, instead look at chest rising and falling only.

Circulation- Check the casualty for bleeding

The recovery position is used to place an unresponsive casualty who is breathing normally into a safe position that allows them to breathe easily

For all casualties, it is important to maintain an open airway throughout the procedures. This can be achieved by opening the airway of the casualty by placing a hand on their forehead, and gently tilting the head back so their mouth opens.

Year 7 Personal Development Curriculum

Topic – Introduction to careers

Key Vocabulary	
Aspiration	Striving to better ones-self eagerly.
Motives	A feeling, reason or reasons for acting or behaving in a particular way.
Values	Principles or standards of behaviour; one's judgement of what is important in life.
Conscientiousness	The quality of wishing to do one's work or duty well and thoroughly.
Self-Concept	An idea of the self constructed from the beliefs one holds about oneself and the responses of others
Assets	A useful or valuable thing or person.
Resilience	The capacity to recover quickly from difficulties; toughness.

Key Knowledge

Career

Career comes from the French *carrière*, from an older word for "street" or "road." Staying on track for a certain career is like directing a car towards a destination on a road. Maybe the expression "*career* path" is helpful in remembering that a career is something that progresses, or moves forward.

Ambition

Ambitious people have clear goals and work very hard to accomplish them. They embrace challenges and enjoy them--they know they are necessary to move forward and learn.

Ambitious people take charge of their destiny and don't expect others to bow down to their needs. They have **willpower** and **determination**. They know where they are going and what they have to do to get there. They are capable of changing and measuring up to their dreams and are always watchful for opportunities.

Ambition is a major driver for personal growth and development. Those who wish to be more, know more, do more, give more or have more, have a purpose and a powerful **internal drive** that leads them to dream bigger and go further.

Stereotyping

You have probably heard **stereotypes:** commonly held ideas or preconceptions about specific groups. You most often hear about negative stereotypes, but some are positive — the stereotype that tall people are destined for a career in basketball, for example. One of many problems with any stereotype is that even if it's true in some cases, it's certainly not true in all cases.

Year 7 Personal Development Curriculum

Topic - Effective Teamwork

Key Vocabulary	
Co-operation	When you practice cooperation you are working together on a job or project. Cooperation can sometimes be hard to come by, which is why when someone does a lot of it, it's nice to say thank you.
Collaboration	When you join a group of friends to build a huge sandcastle on the beach, your impressive structure is the result of collaboration, or working together toward a common goal.
Morale	Morale is the spirit a group has that makes them want to succeed. It's a sense of well-being that comes from confidence, usefulness, and purpose. E. g. There was good morale in the class.
Productivity	Use the noun productivity to describe how much you can get done. Your teacher at school probably keeps track of your productivity — meaning they're checking to see how much work you do and how well you do it.
Efficiency	Efficiency is avoiding a waste of time, effort, or resources. Many people have begun to use compact fluorescent light bulbs because of their greater energy efficiency.
Reflection	Taking the time to think about actions, thoughts, behaviours, plans etc, to find an improved way of doing things going forwards.

Key Knowledge

Roughly 75% of employees regard collaboration, communication and teamwork as important.
Collaboration and teamwork are in the top four important skills for employees' future success.

Systems encouraging workplace collaboration originated in the 1960s, but why are they still effective today? Many young adults choose careers that require teamwork because they enjoy working with people and want to develop, learn, and serve on a team.

Various workplace collaboration statistics 2019 revealed that many companies whose employees work together stay and grow together.

Research on teamwork shows:
70% of employees said digital technology improved their collaboration.
Online collaboration tools and digital workplaces facilitate increased productivity by up to 30%, digital collaboration statistics reveal.
Happy workers can increase their productivity by up to 20% more than unhappy workers.
Extremely connected teams demonstrate a 21% increase in profitability.
Employees whose boss acts on their feedback are 4x more likely to remain in the company.

Year 7 Personal Development Curriculum

Topic- Enterprise Skills

Key Vocabulary	
Enterprise	Enterprise describes a readiness to act boldly to get something started, like the enterprise it takes to start a charity with only a dream and a few pounds. Another meaning of enterprise is "a business venture."
Prioritization	Prioritize means to rank in order of importance.
Commercial Awareness	Commercial is an adjective describing something with money-making and marketing intentions. The adjective commercial first appeared in the 1680's, long before television commercials, which is probably what you think of when you hear the word.
Innovation	An innovation is the introduction of something new. If you run a magazine about new technology, then you're constantly looking out for the next innovation. Innovation comes from Latin innovare for renew, whose root is novus or new.
Strategy	In the game of capture-the-flag, running toward your flag screaming is not a good strategy. A strategy is any plan you make to achieve a goal.

Key Knowledge

The definition of enterprising is "having or showing initiative and resourcefulness". It's all about being able to spot opportunities and then make the most of them.

Any business is unlikely to be successful if they don't have enterprising leaders to drive them. They need employees who can spot gaps in the market and come up with new ideas to improve processes and results.

Entrepreneurship skills are associated with competence in the process of opportunity identification (and/or creation), the ability to capitalise on identified opportunities and a range of skills associated with developing and implementing business plans to enable such opportunities to be realised.

Proving yourself to be enterprising is a very valuable trait, as it tells your employee information about you as a person: for example, that you are determined to succeed, that you are creative, that you have good initiative and so on.

The available evidence suggests that there are significant numbers of small businesses in the UK with relatively underdeveloped entrepreneurship skills and that there is the potential for substantial impacts on performance.

Year 7 Personal Development Curriculum

Topic - Raising aspirations

Keyword	
Diversity	The state of being diverse with a lot of variety
Goal	The object of a person's ambition or effort; an aim or desired result.
Growth	When something grows in size or develops
Future	A period of time following the moment or a time that has yet to come or happen
Motivation	A feeling, reason or reasons for acting or behaving in a particular way.
Plan	A detailed proposal for doing or achieving something ort intention or decision about what one is going to do
Reflection	A serious thought or consideration.
Target	A goal or aim that a person has

Key Knowledge

When setting goals be realistic and specific - specify when and what you will do.

This will increase your chances of getting it done.

You need to break each goal into simple, digestible parts.

The easier you make it to complete each step of the goal, the more likely it is that you will eventually achieve it.

Each goal must have a target time frame.

Make a note of them on your daily or weekly planner and on your overall revision plan.

Write down your goals. It will keep you focused and remind you of what still has to be done.

Be realistic - Start off with a relatively small number of goals and gradually increase their number and size as you become more effective at completing them.

Year 7 Personal Development Curriculum

Topic – Stereotypes and careers

Key Vocabulary	
Stereotype	A widely held but fixed and oversimplified image or idea of a particular type of person or thing
Tradition	Customs and beliefs that have existed for a long time without changing
Career	An occupation undertaken for a significant period of a person's life and with opportunities for progress.

Key Knowledge

Everyone has the opportunity to apply for a job as long as they meet then entry criteria (qualifications, experience etc).

1975 Sex Discrimination Act it became illegal to advertise gender specific jobs

Before 1975 men and women doing the same job could be paid differently.

The right person for the job is the one who wants to do that role and is passionate about its content.

There are some jobs which are only open to specific gender owing to the nature of the role e.g. require personal and/ or intimate care.

No one has the right to stop someone wanting to take on a job or career.

Year 7 Personal Development Curriculum

Topic – Careers and values

Key Vocabulary	
Value	Something that a person, or group of people, believes is important. Values can influence our behaviour and decisions.
Motivation	The process that initiates, guides, and maintains goal-oriented behaviours
Career	An occupation undertaken for a significant period of a person's life and with opportunities for progress.

Key Knowledge

When looking for a job, people can consider whether an organisation has values that match with their own.

People might find that they feel more motivated in a career that has values that they agree with.

People might get along well with colleagues that share similar values.

They could work well as a team or make lasting friendships at work.

Personal values include, honesty, integrity, service, competition, variety.

Motivation is what gets you up each morning ready to face another day.

Year 7 Personal Development Curriculum

Topic – Career choices

Key Vocabulary	
GCSE	A qualification in a specific subject typically taken by school students aged 14–16
A Level	A qualification in a specific subject typically taken by school students aged 16–18.
Degree	A qualification gained at university after three or more years of study
Skill	The ability to do something well; expertise
Apprentice ship	A system for training a new generation of practitioners of a trade or profession with on-the-job training and some accompanying study

Key Knowledge

Qualifications open the door to all careers
GCSES taken at end of Year 11

Aged 16 you choose to go to Sixth Form , go to college, or start an apprenticeship

A Levels taken at end of year 13

A Degree is studied at university and taken at least three or more years of study (can be longer)

Personal skills are ones you possess e.g. time keeping, public speaking , decision making etc.

Employability skills are one valued by an employer e.g. teamwork, problem solving, working under pressure, communication, motivation, organisation, numeracy, literacy , ability to work under pressure, ability to adapt.

You need to be able to demonstrate you have these skills when applying for jobs so practice them now in school.

Year 7 Personal Development Curriculum

Topic -Celebrating Diversity

Key Vocabulary	
Diversity	The fact of many different types of things or people being included in something; a range of different things or people
Culture	Culture, identity, stereotype, discrimination, ethnicity
Identity	Who a person is, or the qualities of a person or group that make them different from others:
Stereotype	A set idea that people have about what someone or something is like, especially an idea that is wrong
Discrimination	Treating a person or particular group of people differentl y, especially in a worse way from the way in which you treat other people, because of their skin colour, ethnicity, gender, age etc
Ethnicity	Relating to a particular race of people. A large group of people who have the same national, racial, or cultural origins, or the state of belonging to such a group
Prejudice	An unfair and unreasonable opinion or feeling, especiall y when formed without enough thought or knowledge
Protected Characteristics	Age, Gender reassignment, Being married or in a civil partnership, Being pregnant or on maternity leave, Disability, race including colour, nationality, ethnic or national origin, religion or belief, sex, sexual orientation.

Key Knowledge

Everyone is different and our differences are what make us who we are – we are made in God's image and we are all special

We should be proud of what makes us who we are and never made to feel ashamed

Some people experience negative social interactions because of their Gender, Ethnicity, Appearance, Religion, Age, Sexuality and this is not acceptable.

If we see people being discriminated against we should challenge this. We can do this by explaining that this is wrong. We can tell a teacher at school.

If you experience diversity in your everyday life, you will have regular exposure to people, cultures, traditions, and practices that are unlike your own. This will prepare you to be a part of a global society, whether you are traveling to a new country, working with people from diverse backgrounds, or just reading about events in the news.

If people are being discriminated against because of their diversity this is bullying and we need to stop it.

We shouldn't just accept diversity we should be celebrating it!.

Year 7 Personal Development Curriculum

Topic - Prejudice and discrimination

Key Vocabulary	
Discriminate	Make an unjust or prejudicial distinction in the treatment of different categories of p eople, especially on the grounds of race, sex, age, or disability.
Characteristic	Typical of a particular person, place, or thing.
Prejudice	Preconceived opinion that is not based on reason or actual experience.
Stereotype	A set idea that people have about what someone or something is like, especially an idea that is wrong
Protected Characteristics	Age, Gender reassignment, Being married or in a civil partnership, Being pregnant or on maternity leave, Disability, race including colour, nationality, ethnic or national origin, religion or belief, sex, sexual orientation.

Key Knowledge

Prejudice comes from the words 'to judge before'. It is forming an unfavourable opinion or feeling about a person or a group of people, without a full examination of the situation. In theory, it is possible for somebody to be prejudiced without anybody else knowing about it.

Discrimination is making a distinction against a person or thing based on the group, class or category they belong to, rather than basing any action on individual merit.
A simple distinction between prejudice and discrimination is that prejudice is to do with attitude, discrimination is to do with action.

We learn our prejudices from society– no one is born with prejudiced attitudes

Many people have suffered injustices based on prejudice: Racist behaviour is one important example of this.

It is important to challenge ourselves and our attitudes – be open tot the idea that we are prejudiced and make sure that we are aware of this.

You are legally protected from discrimination by the Equality Act 2010

Year 7 Personal Development Curriculum

Topic - Bullying

Key Vocabulary	
Bullying-	Behaviour that is • repeated • intended to hurt someone either physically or emotionally • often aimed at certain groups, for example because of race, religion, gender or sexual orientation
Victim	A person harmed, injured, or killed as a result of a crime, accident, or other event or action.
STOP	Bullying can be defined using STOP Several Times On Purpose

Key Knowledge

Bullying takes many forms and can include:

Physical - such as hitting, poking, tripping or pushing

Verbal - such as name calling, insults or abuse

Social - (covert or hidden), such as lying about someone, spreading rumours, mimicking or deliberately excluding someone

Psychological - such as threatening, manipulating or stalking behaviour

Online - often referred to as cyberbullying, which means using technology to bully verbally, socially or psychologically. It can involve sharing of photos which upset or embarrass the person being bullied and taunting or malicious comments. Often people who bully online also bully in person.

Schools have policies to deal with bullying. Being bullied can affect someone's emotional state so much that they feel like they do not even want to live anymore

The survey by charity Ditch the Label spoke to 8,850 people aged 12 to 20 years old. 14% said they had bullied.
The results also suggest that people who have been bullied are almost twice as likely to become bullies.

Bullying can be harmful to your mental health, your self-esteem and your social relationships.

Year 7 Personal Development Curriculum

Topic -Cyberbullying

Key Vocabulary	
Bullying	Purposeful, repeated behaviour designed to cause physical and emotional distress.
Cyberbullying	Bullying carried out using technologies, particularly devices connected to the internet or to mobile networks. The use of technologies by an individual or by a group of people to deliberately and repeatedly upset someone else.
Homophobic Bullying	Bullying someone because of their actual or perceived sexuality.
Peer Pressure	Being encouraged to do something you might not want to do by your classmates

Key Knowledge

That cyberbullying is just as harmful as face-to-face bullying.

Because cyberbullying happens on electronic devices it can happen in places people normally feel safe (their homes) This can make the problem feel even worse as there is no escape

Whatever you say online will stay forever – there is a digital footprint. This has led to people losing jobs even years later.

You can get help by reporting the cyberbullying to your school. You can either speak to your form tutor or directly to the safeguarding team:

If you are the victim of cyberbullying
Talk to a trusted adult

Block the person or the number and report them to the service provider, eg Facebook, Instagram or Xbox Live.

Always keep the evidence by saving messages or 'screen shotting' them, so you can show it them to a trusted adult later.

You can reply asking the bully to stop, but never retaliate with mean messages as the bully only wants a reaction. If you write something nasty back, you give the bully what they want, and may make the situation worse.

Report to **True Vision** (**www.report-it.org.uk**) if you receive hateful messages and threats because of your race, religion, sexuality or disability.

Year 7 Personal Development Curriculum

Topic - Responding to bullying

Key Vocabulary	
Behaviours	Ways that people act.
Harmful	Causing damage.
Repeatedly	Over and over again.
Respond	Take action as a result of something happening.
Retaliate	'Get my own back'. 'Get our own back'.
Self-care	Looking after ourselves physically and emotionally.

Key Knowledge

A Definition

Bullying can be defined as intentional harmful behaviours carried out repeatedly over time, against an individual with less physical or psychological strength, who cannot defend themselves. There are broadly four types of bullying: physical, verbal, relational and cyber.

Ways to respond include:

Do your best to avoid those you don't get on with.

Ignore individual incidents but not the bigger problem.

Trusted adult e.g.: parent / teacher / doctor / church leader

Ask them to stop but don't retaliate.

Report to www.police.uk

Contact www.childline.org.uk 0800 1111

Self-care tips

www.Antibullyingpro.com

Search up 'every mind matters'.

Find 'your people' – spend time with those who appreciate you.

Year 7 Personal Development Curriculum

Topic - Responding to online bullying

Key Vocabulary	
Evidence	Proof that something has happened.
Screen snapshot	An image of the screen. (Press 'PrtScr' or 'Print Screen' button on a PC. Paste onto a document. Varies for phones but often power button + volume up at the same time. Save it as a photo.

Key Knowledge

Additional actions you might take for online bullying

Leave the online group.

Report to service provider.

Block people.

Keep evidence. Screen snapshots.

Report to TrueVision www.report-it.org.uk (hate crime)

Year 7 Personal Development Curriculum

Topic - Supporting others who may be experiencing bullying

Key Vocabulary	
Community	A group of similar people.
Responsibility	Having a duty to do something.
Vulnerable	Able to be harmed.
Retaliate	'Get my own back'. 'Get our own back'.

Key knowledge

General

Don't get involved directly.

Do tell a trusted adult.

Report it e.g. to service provider if online.

Friends

Encourage them to talk to a trusted adult. Offer to go with them.

Spend time with them doing normal things.

Year 7 Personal Development Curriculum

Topic - Healthy Routines

Key Vocabulary	
Routine	A sequence of actions regularly followed.
Balance	A situation in which different elements are equal or in the correct proportions.
Healthy	In a good physical or mental condition

Key Knowledge

Developing healthy routines is good for the body and mind.

Spending too much time (more than an hour a day) on devices can have a harmful affect on how you function during the day, especially if you are on your device late into the night.

Changing your habits and developing a more balanced routine can help with your intelligence and well-being.

Year 7 Personal Development Curriculum

Topic - Influences on health (sleep)

Key Vocabulary	
Routine	A sequence of actions regularly followed.
Adolescence	The period following the onset of puberty during which a young person develops from a child into an adult.
Influence	The capacity to have an effect on the character, development, or behaviour of someone

Key Knowledge

Sleep is vital for the human body.

During sleep, your body and brain repair damaged cells and gain more energy for the day ahead.

The body grows muscle tissue and makes hormones during sleep, and the brain sorts out important things from the previous day to store as memories.

The amount of sleep you need changes as you get older.

As you get into your teenage years, you need around 9 hours' sleep each night.

A lack of sleep can make your mental health can suffer and so can your concentration.

One of the great things sleep does is boost your immune system, which makes you less likely to fall ill.

People who don't get enough sleep over years are at a higher risk of serious medical problems like heart disease, diabetes and high blood pressure.

Year 7 Personal Development Curriculum

Topic - Puberty

Key Vocabulary	
Hormone	Chemical messengers which travel in the blood. Hormones are responsible for the changes caused by puberty.
Menstrual cycle	A 28-day cycle that occurs in females when they are sexually mature. It involves an egg being matured and released from the ovaries.
Oestrogen	The main female sex hormone.
Ovaries	Where eggs develop in females.
Period	Bleeding from a female's vagina, due to the breakdown of the uterus lining.
Pituitary gland	Gland located in the brain which triggers the physical and emotional changes of puberty.
Puberty	The process when the body undergoes changes to start the process of becoming an adult.
Sexual maturity	The stage where individuals have undergone puberty and are able to reproduce.
Testes	Where sperm is produced in males.
Testosterone	The main male sex hormone.

Key Knowledge

Puberty is the process when the body undergoes changes to start the process of becoming an adult.

Changes include:

Growth of underarm and pubic hair
Growth of facial hair in males
Development of sperm in testes of males
Voice gets deeper in males
Periods (the menstrual cycle) start in females
Breast development in females

Puberty begins usually between the ages of 8 and 13.
The pituitary gland located in the brain sends a signal to the brain to begin producing a hormone (oestrogen in girls, and testosterone in boys).
This sets in motion physical and emotional changes that lead to sexual maturity.
Puberty can cause emotional changes as well as physical changes, such as mood swings and changing self-confidence.

Year 7 Personal Development Curriculum

Topic - Help and support

Key Vocabulary	
Inappropriate	Not suitable or proper in the circumstances
Empathy	Understand and share feelings of others
Relationships	The state of being connected with someon e else.

Key Knowledge

A trusted adult is a person you feel comfortable to talk to and discuss your feelings.

As a young person we often feel we have to deal with any experience - this is untrue.

A trusted adult is able to offer support, guidance and advice.

This trusted adult maybe your tutor, member of school staff, parent, a relative or older friend.

We all need a shoulder to share our burdens upon.

Older people have experienced all that a young person goes through.

There are many organisations that you can talk through via text or email.

Year 7 Personal Development Curriculum

Topic – Personal hygiene during puberty

Key Vocabulary	
Puberty	The process when the body undergoes changes to start the process of becoming an adult.
Hygiene	Conditions or practices conducive to maintaining health and preventing disease, especially through cleanliness.
Sweat	Moisture exuded through the pores of the skin

Key Knowledge

Because of the hormonal changes in your body you may sweat more and your hair and skin become more greasy.

It is really important to stay clean and wash regularly.

You don't need lots of fancy things on your bathroom shelf, just soap and water.

Some people choose to use deodorant to stop their armpits getting smelly as the day goes on.

You may need to change your clothing more regularly, such as a clean shirt every day.

Puberty can cause some emotional changes for young people as well, such as an increased frequency of mood swings, experiencing changes to levels of self-esteem, needing independence, self-control, and changing self confidence.

Year 7 Personal Development Curriculum

Topic - Unwanted contact

Key Vocabulary	
Child abuse	When a child is intentionally harmed by an adult or another child.
Coercive behaviour	A purposeful pattern of incidents that occur over time in order for one individual to exert power, control or coercion over another.
Consent	Giving permission for something to happen.
Personal space	The physical space immediately surrounding someone.
Sexual assault	This law covers any kind of intentional sexual touching of somebody else without their consent. It includes touching any part of their body, clothed or unclothed, either with your body or with an object.
Unwanted contact	Any type of contact which makes someone feel uncomfortable or unsafe.

Key Knowledge

Child abuse is when a child is intentionally harmed by an adult or another child. This can be an isolated incident or can happen over a period of time.

Abuse can happen in any relationship; in heterosexual relationships the male or the female could be the perpetrator, and it can also happen in same-sex relationships.

Agreement that is brought about by wearing the other person down, intimidation, physical threats or emotional threats is not consent.

There are four main categories of child abuse:
1) Neglect: The ongoing failure to meet a child's basic needs such as food and cleanliness.
2) Physical abuse: When someone hurts or harms a young person on purpose, for example, hitting.
3) Emotional abuse: This involves the continual emotional mistreatment of a young person, for example, deliberately trying to scare, humiliate, isolate or ignore.
4) Sexual abuse: When a young person is forced or tricked into sexual activity.

Year 7 Personal Development Curriculum

Topic - Female Genital Mutilation (FGM)

Key Vocabulary	
Abuse	To treat with cruelty or violence, especially regularly or repeatedly.
Female Genital Mutilation (FGM)	The act of cutting some or all of a female's external genitals, for reasons which are not medical.
Genital	A person's external organs of reproduction.
Illegal	Means that something is against the law and people can be prosecuted and sent to jail if they engage in the activity.
Mutilation	An act or instance of destroying, removing, or severely damaging a limb or other body part of a person or animal.
Prevention	The action of stopping something from happening or arising
Tradition	Transmission of customs or beliefs from generation to generation, or the fact of being passed on in this way.
Trauma	A deeply distressing or disturbing experience.

Key Knowledge

FGM, sometimes referred to as female circumcision, is when a girl's genitals (private parts) are altered or removed. It can cause long-lasting damage as well as ongoing emotional distress.

The operation is usually done by someone who doesn't have any medical training. Girls are given no anaesthetic, no antiseptic treatment and are often forced to keep still.

FGM is a practice which takes place worldwide in at least 30 countries in Africa, Asia and the Middle East. It also takes place within parts of Western Europe and other developed countries.

Although FGM is practised by some Muslims and Christians in some parts of the world, it is not required by Islam, Christianity or Judaism and is not in the Bible or Koran.

Reasons given by people for performing FGM include tradition, becoming a woman, bringing shame on the family if they don't have it done, no one would want to marry you, preservation of virginity, family honour, sense of belonging to a community, her genitals will smell, etc.

FGM is illegal in the UK under the Female Genital Mutilation Act, 2003. Anyone who commits FGM faces up to 14 years in prison, a fine, or both.

Anyone found guilty of failing to protect a girl from risk of FGM faces up to 7 years in prison, a fine, or both.

Year 7 Personal Development Curriculum

Topic- Self-worth and self-efficacy

Key Vocabulary	
Self-worth	The internal sense of being good enough and worthy of love and belonging from others.
Self-efficacy	The belief that you are able to effectively perform the tasks needed to attain a valued goal.
Self-esteem	how we value and perceive ourselves.
Self-regulation	The complex process through which people control their thoughts, emotions, and actions.
Performance Experiences	When past successes or failures lead to changes in self-efficacy.
Vicarious Performances	When seeing other people succeed or fail leads to changes in self-efficacy.
Verbal Persuasion	When trusted people (friends, family, experts) influence your self-efficacy for better or worse by either encouraging or discouraging you about your ability to succeed.
Imaginal Performances	When imagining yourself doing well increases self-efficacy.
Affective States and Physical sensations	Associating negative moods and physical sensations with failure and positive physical sensations with success

Year 7 Personal Development Curriculum

Topic- Self-worth and self-efficacy

Five of the top factors that people use to measure and compare their own self-worth to the worth of others:

Appearance—measured by the number on the scale, the size of clothing worn, or the kind of attention received;

Net worth - income, possessions, financial assets etc;

Your social circle—some people judge their own value and the value of others by their status and what important and influential people they know;

What you do/your career—we often judge others by what they do;

What you achieve—(whether it's our own worth or someone else's), such as success in business, test scores, or placement in a marathon or other athletic challenge

Self-Efficacy

Self-efficacy beliefs are influenced in five different ways (performance experiences, vicarious performances, verbal persuasion, imaginal performances, affective states and physical sensations)

Benefits of high self-efficacy include academic achievement, healthy behaviours, athletic performance and self-regulation
People with a strong sense of self-efficacy:

Develop deeper interest in the activities in which they participate, Form a stronger sense of commitment to their interests and activities, Recover quickly from setbacks and disappointments, View challenging problems as tasks to be mastered,.

People with a weak sense of self-efficacy: Avoid challenging tasks, Believe that difficult tasks and situations are beyond their capabilities, Focus on personal failings and negative outcomes, Quickly lose confidence in personal abilities
Self-efficacy can be improved by doing the following;
Setting simple goals, Positive self-talk, trying new things and facing challenges, accepting failures and criticisms positively, approaching the goals slowly and not over-stressing about results, look back at achievements and celebrate success

Year 7 Personal Development Curriculum

Topic - Different types of relationships 1

Family – A group of one or more adults and their children brought together by these parental ties
Friendship – A group of two or more joined together by similar interests and situations
Acquaintance – A group of one or more people who area aware of each others presence but not actively close
Romantic – Two people who are drawn to an intimate knowledge of each other through loving affection.

A child is a big responsibility and takes a lot of time, effort and love.
Babies require lots of support and need adults around to help them and teach them.
It is important to feel safe, supported and stable in a relationship in case your actions result in an unexpected pregnancy.

A child "has the right to be respected as a person from the moment of their conception."

The Encyclical 'Donum Vitae'

This letter from the pope in 1987 says that;
A child deserves stability and support
If you cannot offer this, you are not ready to parent
If you are not ready to parent, you are not ready for the possible outcome of sexual activity

Year 7 Personal Development Curriculum

Topic- Different types of relationships 2

Key Words	
Nuclear family	A pair of adults and their children. Children can be adopted or biological
Reconstituted family	Following divorce, two families come together to form group of one or more parents or legal guardians and their children a new family
Single Parent family	A single adult has sole or main responsibility for parenting children
Extended family	A family unit, joined by other relatives to live together. Grandparents, aunties, cousins etc
Responsibility	Having the duty of care over someone or something
Family	A group of one or more parents or legal guardians and their children

Key Knowledge

A family is a group of at least one parent or legal guardian and their children, biological or adopted.
There are various different forms of family, all of which are equally valid and important.

What I need to know

Parents should take the lead role in a family; setting boundaries, and teaching right from wrong.
Parents are expected to provide the basic needs for their children such as food, shelter, clothing and warmth.
Parents are the first educators of their children, they are expected to provide a good role model to follow.
Parents, step parents, adopted parents, grandparents. All parents should keep the welfare and development of the child as their first intention.

God entrusted children to parents so that they might be steady, righteous examples for those children, that they might love an respect them and do everything possible so that their children can develop physically and spiritually.

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Year 7 Personal Development Curriculum

Topic- Personal values in relationships

Key Words	
Affection	A gentle feeling of fondness or liking
Friendship	Complete trust or confidence in someone or something
Honesty	To be truthful or sincere
Kindness	The quality of being generous and considerate
Love	Giving constant support to someone or something
Respect	Showing consideration for the feelings, wishes and rights of others
Value	A principle or standard of behaviour

Key Knowledge

Personal values are characteristics and behaviours that motivate us

Our actions are guided by our values

Examples of personal values include:

Love
Friendship
Respect
Honesty
Kindness

Our values shape relationships

Valuing friendship encourages connection between people

Friendship allows trust to build

Love means we show dedication and devotion

There are different types of love

Love requires sacrifice

Love means we consider the thoughts and feelings of others

Year 7 Personal Development Curriculum

Topic- Trust in relationships

Key Words	
Affection	A gentle feeling of fondness or liking
Faith	Complete trust or confidence in someone or something
Loyal	Giving constant support to someone or something
Reliability	Being trustworthy
Respect	Showing consideration for the feelings, wishes and rights of others
Trust	To believe in the reliability, truth, or ability of something or someone

Key Knowledge

What is trust?
Trust is faith in the truth or reliability someone or something
Allows you to rely on someone
Building block of all relationships

Why is trust needed?
Helps us to feel secure in relationships
Provides a foundation for a relationship and a feeling of security

How is trust built?
Having open conversations
Being true to what we have said
Being honest immediately
Admitting mistakes
Listening attentively
Showing affection
Respecting boundaries

Year 7 Personal Development Curriculum

Topic- How different behaviours influence relationships

Key Words	
Balanced relationships	An equal and healthy relationship with equal amounts of give and take
Toxic relationship	A damaging, unhealthy and unbalanced relationship

Key Knowledge

Influential behavior

Attitude and behaviour influence others positively or negatively
Leads to attitude, behaviour, action or perception changes
Happy people can positively influence others
Unhappy people can make others unhappy
Unhappiness can lead to poor mental health
Actions or words we share can influence others

Different types of relationship

Balanced relationships are ideal
Toxic relationships are negative

How you can affect others' behaviour
Keep in mind your **personal values**

Be aware your actions and behaviour will affect others

Year 7 Personal Development Curriculum

Topic - Friendships

Key Vocabulary	
Relationships	the way in which two or more people or things are connected
Respect	politeness, honour, and care shown towards someone or something that is considered important:
Positive relationships	Meaningful interactions that result in positive emotions such as happiness, enjoyment and peace and a sense of well-being. They are constructive and beneficial for all those involved.
Romantic relationships	voluntary relationships between individuals who feel very strongly attracted to the other person, both to their personality and, often, also physically
Friendship	mutual affection between people
Family relationships	Relatedness or connection by blood or marriage or adoption
Acquaintance	A person that you have met but do not know well
Professional	solely for the purpose of getting your work done. They help you advance your career and would not exist if not for your job
Relationship bank account	An account you hold with every person in which a positive deposit or a negative withdrawal can be made during every interaction you have with the person.

Key Knowledge

When we feel good about ourselves, and worthy of love we are more likely to choose friends that are good for us. There is a saying that says, “we teach people how to treat us”. In other words, how we behave toward ourselves and other people gives them clues as to how they should behave towards us. If we feel good about ourselves and respect ourselves, and treat others with respect, we are showing people how we would like to be treated.

Why is it important to have good friends? True friendship is important. Friends support one another, listen to each other and give advice. When you and your friend share personal information about yourselves, you can learn from each other and explore what you have in common and what makes you different.

Friends can introduce us to exciting things like delicious new foods and interesting customs or celebrations. You can also learn about acceptance by appreciating the different qualities that make us unique individuals. When you accept people for who they are, you are being a respectful friend.

Year 7 Personal Development Curriculum

Topic - Positive relationships

Key Vocabulary	
Relationship	The way in which two or more people or groups regard and behave towards each other. "the landlord–tenant relationship"
Emotional bank account	A system of emotional deposits and withdrawals that helps build relationships.
Deposit	To put something valuable into bank or safe
Withdrawal	The act or process of taking something away so that it is no longer available, or of someone stopping being involved i n an activity:
Positive	Full of hope and confidence

Key Knowledge

Every day we make deposits or withdrawals from our relationship accounts with each person in our lives. He recommended that to keep an overall positive balance, we need to make regular positive deposits. This will ultimately help buffer the negatives that are bound to occur in relationships. Keeping this metaphor of emotional capital in mind could be beneficial for promoting the well-being of the relationships in one's life.

Some research suggests that people, on average, have more positive than negative experiences
Bad events overpower good events in one's life, which suggests that the negative withdrawals are more salient and more impactful.

The inevitable occasional conflict is not nearly so bad for the relationship when it occurs in a partnership that is otherwise highly positive.

Year 7 Personal Development Curriculum

Topic - Unhealthy relationships

Key Vocabulary	
Imbalance of power	One person hold and asserts more power over another.
Coercion	Use of force to persuade someone to do something that they are unwilling to do
Control	Controlling something or someone, or the power to do this
Exploitation	The use of something in order to get an advantage from it
Abuse	Treat with cruelty or violence, especially regularly or repeatedly
Consent	Give permission for something to happen.
Indifference	Lack of interest in someone or something
Intimidation	The action of frightening or threatenin g someone, usually in order to persuade them to do something that you want them to do

Key Knowledge

A sign of a healthy relationship is that both individuals are able to decide for themselves what they see as acceptable, and this view is respected and valued.

It is wrong to make someone agree to do something by using intimidation or threats, physical or emotional. Pressurising or coercing someone to do something that makes them feel uncomfortable, or that they don't want to do, is never acceptable Blaming emotions, or the other person's behaviour, is not acceptable

Unhealthy behaviours that are unacceptable in relationships include behaviours that are non-consensual, intentionally hurtful, or carried out under pressure to fit in or make others happy.

Unhealthy relationship traits - Uninterested, Uncaring, Disrespectful, Suspicious, Lying, Indifference, Intimidation, Control, Anger, Unpredictable behaviour which causes distress, Frequent mood swings, Pressure

Tips for dealing with an uncomfortable situation:
Be direct - express your feelings without arguing or accusing. E.g. "I'm not okay with you sharing photos of me."
Be honest - E.g. "I feel uncomfortable when you ask for my passwords."

Year 7 Personal Development Curriculum

Topic - Stereotypes

Key Vocabulary	
Stereotype	A widely held but fixed and oversimplified image or idea of a particular type of person or thing
Media	The main means of mass communication (broadcasting, publishing, and the internet) regarded collectively.
Right	A moral or legal entitlement to have or do something.
Responsibility	To have a duty to make certain that particular things are done:

Key Knowledge

Gender stereotyping from a young age can have negative consequences and limit future decisions

We all have to challenge ideas of stereotypes

We are all individuals made in the image and likeness of God

All of us have emotions which we display as situations demand

Everyone can participate in any activity that's available - there are no boys or girls only activities

Opportunities are open to all; it is our decision to participate.

We all have a right to be ourselves

We all have a responsibility to allow others to be themselves.

Year 7 Personal Development Curriculum

Topic - Consent

Key Vocabulary	
Consent	When a person agrees by choice and has the freedom and capacity to make that choice.
Mutual	Feeling the same emotion or doing the same thing to or for each other
Boundaries	The limit of what someone considers to be acceptable behaviour
Capacity	Someone's ability to do a particular thing:

Key Knowledge

Not saying no' is not giving consent.

A key sign of consent is that the person clearly wants to engage in the activity and actively demonstrates this.

Keep checking for consent.

Responsibility for ensuring consent has been given lies with the person seeking consent, both ethically and in law.

It is not consent if the other person is not actively consenting, does not have the capacity to consent (e.g., not old enough, impaired judgement due to alcohol etc), or is being manipulated, exploited or coerced.

Year 7 Personal Development Curriculum

Topic - How to keep your money safe 1

Key Vocabulary	
Phishing	Using emails to gain your personal details which could be used to access your bank account and steal your money
Vishing	Using the telephone to gain your personal details which could be used to access your bank account and steal your money
Smishing	Using SMS text messages to gain your personal details which could be used to access your bank account and steal your money
Money muling	Being conned into letting someone use your bank to hide the proceeds of crime
Fraud	wrongful or criminal deception intended to result in financial or personal gain

Key Knowledge

Online scams
Scammers advertise goods or services that don't exist or aren't theirs to sell. They convince you to send the payment directly to their bank but the goods never arrive, or are not as advertised.

Money Mules
A "witting" mule assists the crime by providing the bank account where the proceeds of any fraud or scams can be paid to. Fraudsters and scammers can open an account themselves using fake ID, or can convince someone who already has a bank account to receive money on their behalf. By supplying the information, you also risk getting into trouble as you become complicit in the crime.

Year 7 Personal Development Curriculum

Topic - How to keep your money safe 2

Key Vocabulary	
PIN	Personal identification number.. Linked to bank cards and accounts
Identity fraud	The use of that stolen identity in criminal activity to obtain goods or services by deception.
Anti virus software	A set of programs that are designed to prevent, search for, detect, and remove software viruses, and other malicious software like worms, trojans, adware, and more.

Key Knowledge

Top tips for staying digitally safe:

Check how much personal information is public on your social media accounts. Fraudsters can use information such as your birthday, home town, pet names, holiday dates, or job title to steal your identity and apply for bank accounts or buy products in your name

Never share your PIN, bank details or passwords with anyone who approaches you or contacts you through text, email, phone or in person, and don't write them down

Phone organisations directly from the number listed on their website to verify who is contacting you

Password protect your devices using random words and include symbols, numbers and capitals and regularly change them

Limit your online activity when using open public WiFi connections, including logging on to your email, online banking and online shopping

Check the web address begins with 'https' and that there's an unbroken padlock symbol in the browser address bar, especially when online shopping. You can hover over links without clicking to see the destination

Install anti-virus software on your laptop and any other personal devices and keep it up to date

Year 7 Personal Development Curriculum

Topic - Ethical & unethical business practices and consumerism

Key Vocabulary	
Business ethics	The moral rules that govern how businesses operate, how they make decisions etc
Morals	standards of behaviour; principles of right and wrong
Stakeholders	Anyone with an interest in the business, e.g. workers, suppliers, environmental groups
employees	People who work for a business
Corporate Social Responsibility	The responsibility of a business to treat everyone/ everything in a morally correct manner – to do the right thing
Consumerism	The idea that increasing the consumption of goods and services purchased in the market is always a desirable goal and that a person's wellbeing and happiness depend fundamentally on obtaining consumer goods and material possessions.

Key Knowledge

Ethics

Ethics refers to the **moral rights and wrongs of any decision a business makes**. It is a value judgement that may differ in importance and meaning between different individuals.

Businesses may adopt ethical policies because they believe in them or they believe that by showing they are ethical, they improve their sales.

Two good examples of businesses that have strong ethical policies are The Body Shop and Co-Op.

Some examples of ethical policies are:

Reduce pollution by using non-fossil fuels.

Disposal of waste safely and in an environmentally friendly manner.

Sponsoring local charity events.

Trading fairly with developing countries

Some examples of businesses with questionable ethics are Volkswagen, Apple, but other so called top class businesses such as M&S/ Primark have been shown to demonstrate questionable practices such as employing child/ slave/ migrant labour in factories abroad

Year 7 Personal Development Curriculum

Topic - Savings

Key Vocabulary	
Saving	Income not spent; the surplus after all spending done
Saving	Reducing expenditure
Savings account	A bank account where you can store any excess money
Savings goals	What you might be aiming to achieve
Pension	A sum of money set aside to provide an income after you finish work
Interest	The reward for saving given by your bank. Usually, a small percentage per year

Key Knowledge

The easiest way to get your savings working for you is to set things up so that you automatically add a little bit each month to your savings.

That way you won't have to remember to make the payment and you won't be tempted to skip a month.

Before you know it, you'll have built up a solid chunk of savings for example, one way of saving tax efficiently is through a Cash ISA. But remember you may not have easy access to some accounts

It's a good habit to get into for the future – when you get older you may want to buy a car or a house. You will almost certainly need savings to go towards buying these items (we call this a deposit)

Your bed is great for many things – but storing your savings certainly isn't one of them.

Keeping large amounts of money in your house rather than in a bank or building society is a bad idea because:

Your savings will lose value over time – you won't earn any interest.

Theft or fire could wipe out your savings – many insurance policies won't cover money left in the house and if they do, they only tend to cover a small amount, if you have no contents insurance none of it will be covered.

Year 7 Personal Development Curriculum

Topic - Borrowing and debt

Key Vocabulary	
Borrowing	Take and use (money) from a person or bank under an agreement to pay it back later
Debt	The state of owing money, a sum of money that is owed or due
Credit	The ability of a customer to obtain goods or services before payment, based on the trust that payment will be made in the future.
Credit score	A credit score is a tool used by lenders to help determine whether you qualify for a particular credit card, loan, mortgage or service
Loan	A thing that is borrowed, especially a sum of money that is expected to be paid back with interest.
Interest	Money paid regularly at a particular rate for the use of money lent, or for delaying the repayment of a debt.
Repayment	The action of paying back a loan.

Key Knowledge

Borrowing money
Most people will need to borrow money at some stage to tide them over in an emergency, to buy larger items or to fund a special event. Before you borrow money, it's important to make sure you will be able to keep up the repayments, otherwise you could be taken to court and might even lose your home or other valuable possessions.

Types of borrowing
There are lots of different ways to borrow money. Before borrowing it's a good idea to find out about the different options available so you can make a choice about which one is best for you.
Loans (usually from a bank)
Payday loans
Credit cards (usually from a bank or finance company)
Mortgages (usually from a bank or finance company)
Other people you know (friends parents etc)
Hire purchase (usually through the retailer you buy the item from)
Loan sharks – high interest, often associated with criminal activity
Pawnbrokers (cash generators) - sell items for cash

Year 7 Personal Development Curriculum

Topic - Budgeting

Key Vocabulary	
Bank Rate	The interest rate at which the Bank of England lends money to high street banks. It influences the interest that high street banks charge, or pay, their customers
Consequence	The result of something
Debt	Money that is owed – and that is expected to be paid back – by an individual, business or country
Income	Money we earn or receive from working for a wage or salary or from investing in assets e.g. money in a bank, in stocks and shares, in property
Price	What something costs to buy; a measure of its value
Budget	An estimate of income and expenditure for a set period of time
Savings	Money left over from your income after expenses that you put away for future use

Key Knowledge

Budgeting allows for more choice in financial decisions

It is important that you balance your income against your outgoings

There are essential items(rent, mortgage, food, water, utilities) that we need to spend money on each month and there are luxuries (Netflix, cinema, eating out) where we like to have them but do not need them.

Essential items should be taken from your budget to allow you to see what is left for luxuries

You may have additional money left over which is not required within any given month, this can be saved for future use

Some people will identify saving as an essential item but may be flexible with how much they save each month

By failing to budget you can get into financial debt or difficulties which can have significant consequences on your credit score

Year 7 Personal Development Curriculum

Topic - Financial Risk

Key Vocabulary	
Analyse	Research something carefully in order to form a judgement
Bias	Showing something or someone in an unfairly positive or negative way
Critical consumer	Someone who thinks carefully about a decision to buy something
Goods	A physical product, such as food, clothes, mobile phones
Risk	A situation that could cause harm or loss
Services	A product offered in the form of a task rather than an actual thing e.g. hairdresser, financial services, waiter
Supply	The goods and services producers are willing or able to provide at a particular price

Key Knowledge

All financial decisions hold an element of risk

Risks include being caught in a scam, paying for goods or services that you didn't want or not getting what you believe you have paid for, or paying excessive amounts.

To eliminate risk we need to balance the feel good emotion with the consequences of this particular transaction

To minimise risk we can ensure we have a contract, talk about what we are about to do with our friends or peers and get their shared experience. We can stick to established big brand businesses and ensure we do some research on what other offers are being made.

Bargains that look to good to be true generally are.

Year 7 English Knowledge Organiser

Full academic year

Vocabulary

Full academic year

CONTENTS

TIER TWO VOCABULARY

William Blake

WORD	DEFINITION
Childhood	The state of being a child.
Industrial	Relating to or characterised by industry.
Inequality	A lack of equality.
Morality	Principles concerning the distinction between right and wrong or good and bad behaviour.
Poverty	The state of being extremely poor.
Revolution	A forcible overthrow of a government or social order, in favour of a new system.
Romanticism	An artistic and philosophical movement that redefined the ways people think about themselves and the world.
Vengeance	Getting revenge on someone who has wronged you.

Women's Literature

WORD	DEFINITION
Discrimination	The unjust or prejudicial treatment of different categories of people, especially on the grounds of race, age, sex, or disability.
Empowerment	The process of becoming stronger and more confident, especially in controlling one's life and claiming one's rights.
Equality	The state of being equal, especially in status, rights, or opportunities.
Feminism	The belief in women's rights on the ground of the equality of the sexes.
Misogyny	A hatred towards women.
Patriarchy	A society where men have more power than women.
Prejudice	A preconceived opinion that is not based on reason or actual experience.
Society's norms	The informal rules that govern behaviour in groups and societies.
Suffrage	The right to vote.

TIER TWO VOCABULARY

Private Peaceful

WORD	DEFINITION
Alliance	A union or association formed for mutual benefit, especially between countries.
Conflict	A serious disagreement or argument.
Cowardice	A lack of bravery.
Justice	Just, true and right behaviour.
Nationalism	A person who strongly identifies with their own nation and supports its interests to the exclusion of other nations.
Nostalgia	A sentimental longing or wistful affection for a period in the past.
Patriotism	A person who has or expresses devotion to their country.
Society	People living together in a more or less ordered community.

Shakespearian Comedy

WORD	DEFINITION
Expectation	A strong belief that something will happen or be the case.
Gender	Gender is the range of characteristics relating to, and differentiating between, femininity and masculinity.
Hierarchy	A system in which members of an organization or society are ranked according to relative status or authority.
Patriarchy	A society in which men hold more power than women.
Renaissance	The revival of European art and literature under the influence of classical models in the 14th–16th centuries.
Stereotype	A widely held but fixed and oversimplified image or idea of a particular type of person or thing.

TIER THREE VOCABULARY

WORD	DEFINITION
Adjective	A word describing or naming an attribute of a noun.
Adverb	A word that describes how a verb is being done.
Alliteration	The repetition of the same sound in a sequence of words beginning with the same letter.
Allusion	A reference to another literary text, event or person.
Foreshadowing	A warning or indication of (a future event).
First person narrative	When a narrator recounts events from their own point of view using the first person such as "I", "us", "our" and "ourselves".
Genre	A style or category of art, music, or literature.
Metaphor	A figure of speech that describes something by saying it is something else.

WORD	DEFINITION
Noun	A word used to identify a person, place or thing.
Pathetic fallacy	The use of weather to reflect a character's feelings or the narrative atmosphere.
Personification	The attribution of human feelings and responses to inanimate things or animals.
Simile	A figure of speech involving the comparison of one thing with another thing of a different kind using 'like' or 'as'
Symbolism	The use of symbols to represent ideas or qualities.
Third person narrative	When the writer writes about a character who isn't the speaker.
Verb	A word describing an action or how something is done.

TIER THREE VOCABULARY

WORD	DEFINITION
Ellipsis	Intentionally leaving out a word, sentence, or whole section from a text for effect.
Emotive language	Words which provoke a powerful emotional response.
Exaggeration	Representing something as being larger, better, or worse than it really is.
Direct address	Referring to the reader directly using the pronouns 'we' or 'you'.
Facts	Something which can be proven to be true.
Knowledge	Knowing the topic/subject you are writing or speaking about.

WORD	DEFINITION
Onomatopoeia	The process of creating a word that phonetically imitates, resembles, or suggests the sound that it describes.
Opinion	A belief which cannot be proven to be true.
Oxymoron	A figure of speech in which apparently contradictory terms appear next to each other.
Pun	A joke using the different possible meanings of a word or the fact that there are words which sound alike but have different meanings.
Repetition	When a word or phrase is used more than once across a text for effect.

Grammar

Full academic year

CONTENTS

TERM 1

A simple sentence is a complete piece of information. It contains a subject, a verb and sometimes an object.

The pen fell on the floor.

A compound sentence contains two main clauses (like two simple sentences). These are joined with a conjunction: *and, but, so, because*.

Miss Kelly was tired, so she bought a large coffee.

A complex sentence contains a main clause and a subordinate clause.

Whilst it was raining, Mr Thornhill enjoyed a cup of tea in his office.

TERM 2

A comma indicates a pause between parts of a sentence or separates items in a list.

I went to Morrisons and bought linguine, king prawns, garlic and chilli flakes.

A semi-colon can be used between two closely related independent clauses, provided they are not already joined by a coordinating conjunction.

Miss Kureczko was busy; she wouldn't even answer the phone.

A colon is used to precede a list of items, a quotation, or an expansion or explanation.

Monday: the worst day of the week.

TERM 3

ISPACE indicates the various ways you can start a sentence. It stands for –ING verbs, Simile, Preposition, Adverb, Connective, -ED verbs.

–ING verb	-ING verb example: Flying proudly in the wind, the flag reigned over the castle
Simile	Simile example: Like a predator, the child caught the escaping balloon.
Preposition	Preposition example: Turning to my right, I saw the corridor I was meant to walk down.
Adverb	Adverb example: Nervously, the cat padded its way across the room.
Connective	Connective example: Finally, she arrived at her front door.
-ED verb	-ED verb example: Withered, the trees stood like ancient guards.

An apostrophe is used to indicate either possession or the omission of letters.

Apostrophes for possession	Using an apostrophe + s ('s) shows that one person/thing owns or is a member of something.	Reece's ballet class Iqra's bike Jake's pen Jess' room
Apostrophes for contractions	When you combine two words to make a contraction, you will always take out some letters. In their place, use an apostrophe.	they + have = they've are + not = aren't they + will = they'll

A paragraph is a distinct section of a piece of writing, usually dealing with a single theme and indicated by a new line.

New paragraphs should start with a topic sentence, and information within the paragraph should stay focused on that topic.

A helpful way to remember when to start a new paragraph is to learn TiPToP.

Ti - stands for **Time**, so start a new paragraph for a different time period.

P - stands for **Place**, so start a new paragraph for each new place.

To - stands for **Topic**, so start a new paragraph for each new topic, idea or subject.

P - stands for **Person**, so start a new paragraph for each new person or change of speaker in a dialogue.

Reading Skills

CONTENTS

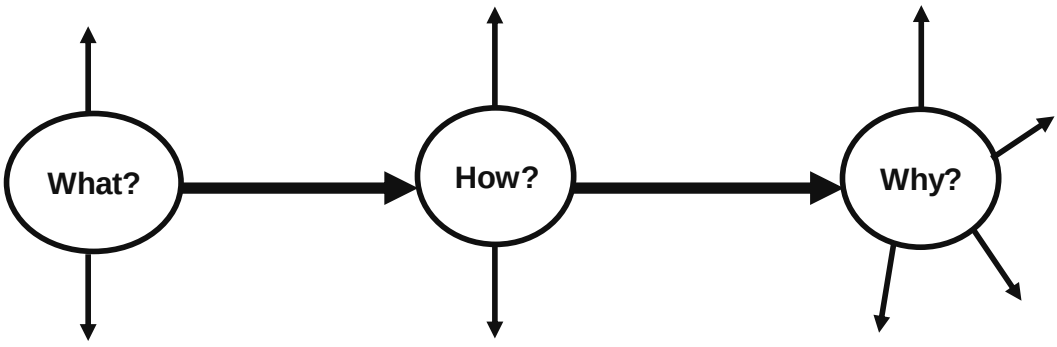
Full academic year

RESPONDING TO A TEXT

Ask yourself:
Do you agree or disagree with the statement? Does the text support or go against the question?

Ask yourself:
How did you reach that decision? Which words or phrases from the text made you agree or disagree with the question? Find a quote to support your argument.

Ask yourself:
Zoom into one word. What are the connotations of a word? What other words or ideas do they make you think of?



Ask yourself:
How do the writer's choice of words make the reader feel? Why has the writer used that particular word?

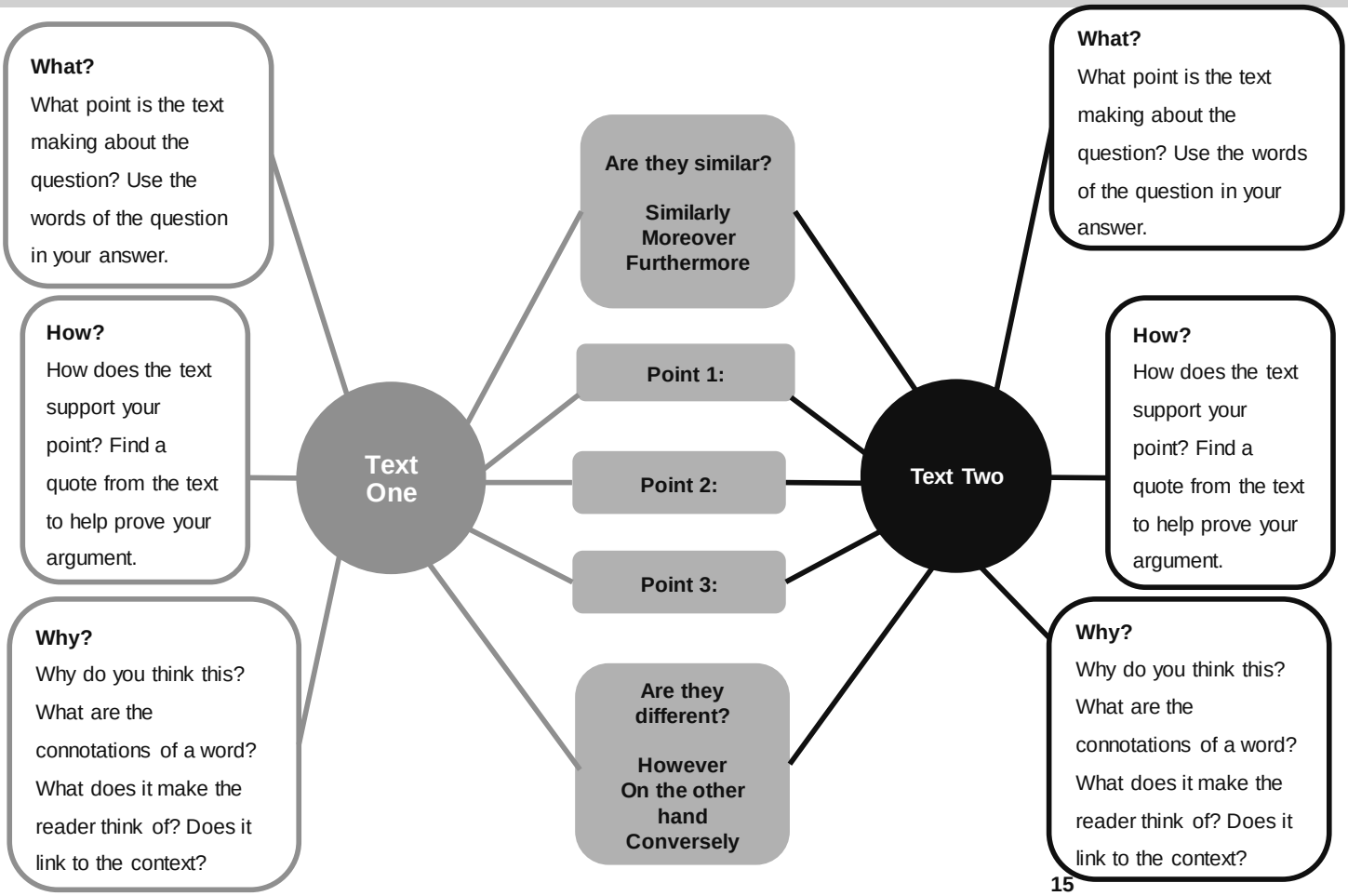
Ask yourself:
How does the text link to the question? Use the keys words from the question in the answer.

Ask yourself:
Which techniques can you see in your quote? Which word is most important? How does this quote link to your original point?

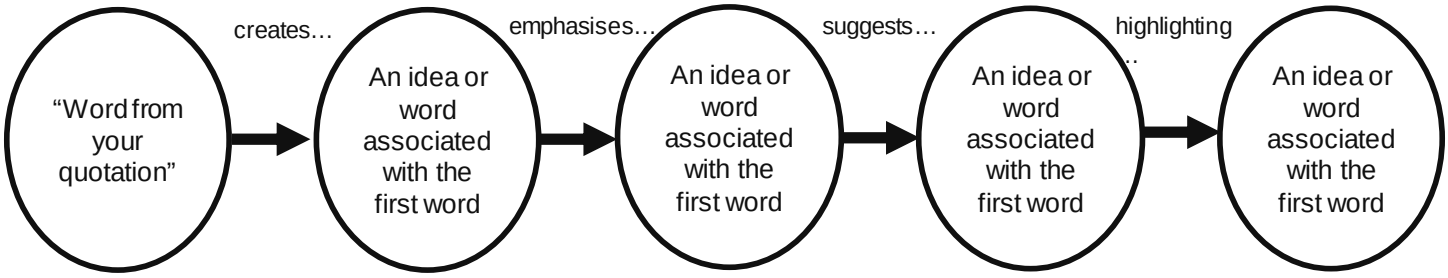
Ask yourself:
How does your analysis link back to the original question?

Ask yourself:
What themes or contextual ideas do the words link to?

COMPARING TWO TEXTS



FINDING CONNOTATIONS



The word "_____" creates an image of _____.

It emphasises _____ because it suggests_____.

This highlights_____ and therefore makes the reader feel _____ about _____.

Year 7 Texts

Full academic year

William Blake Poetry

Autumn Term 1

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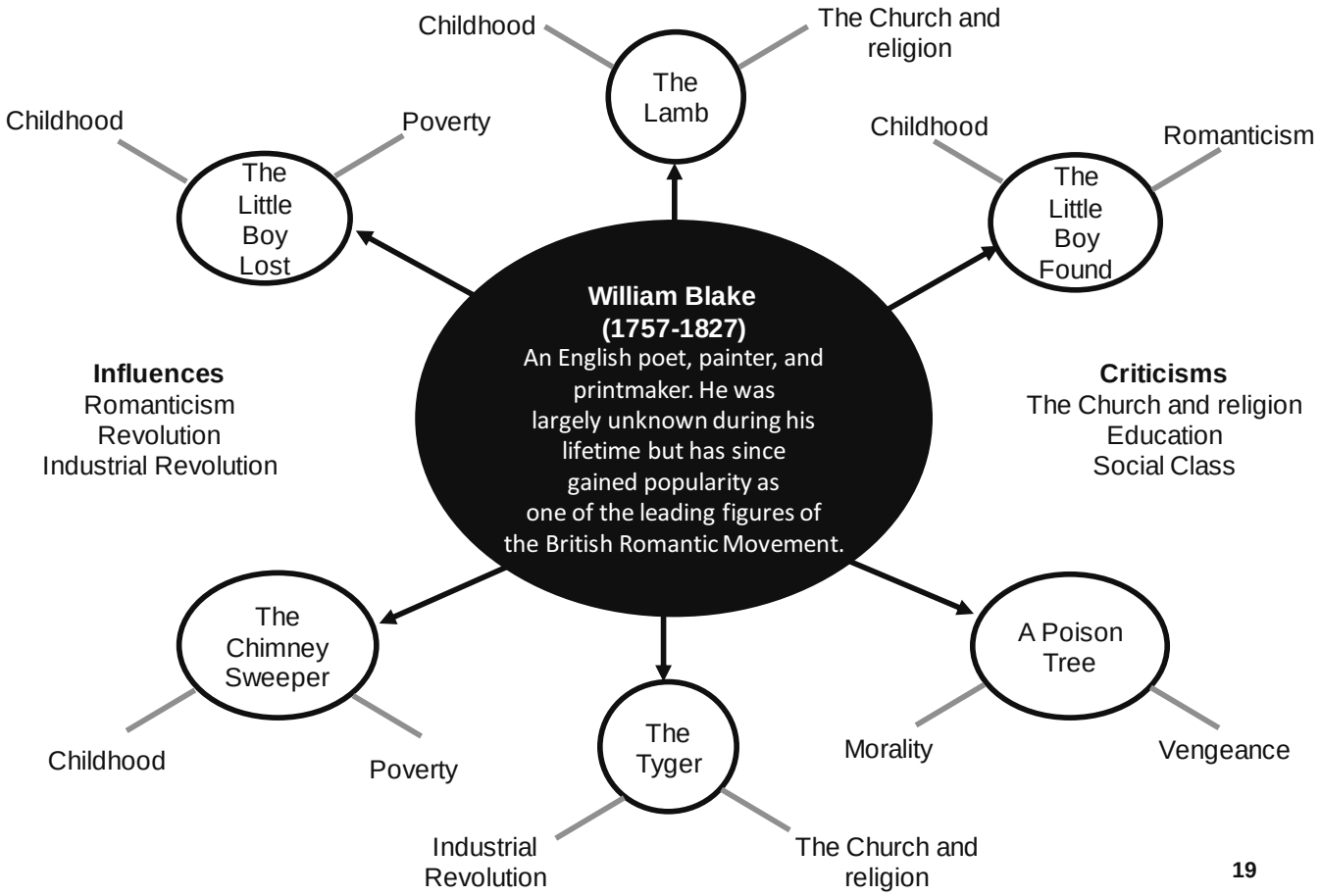
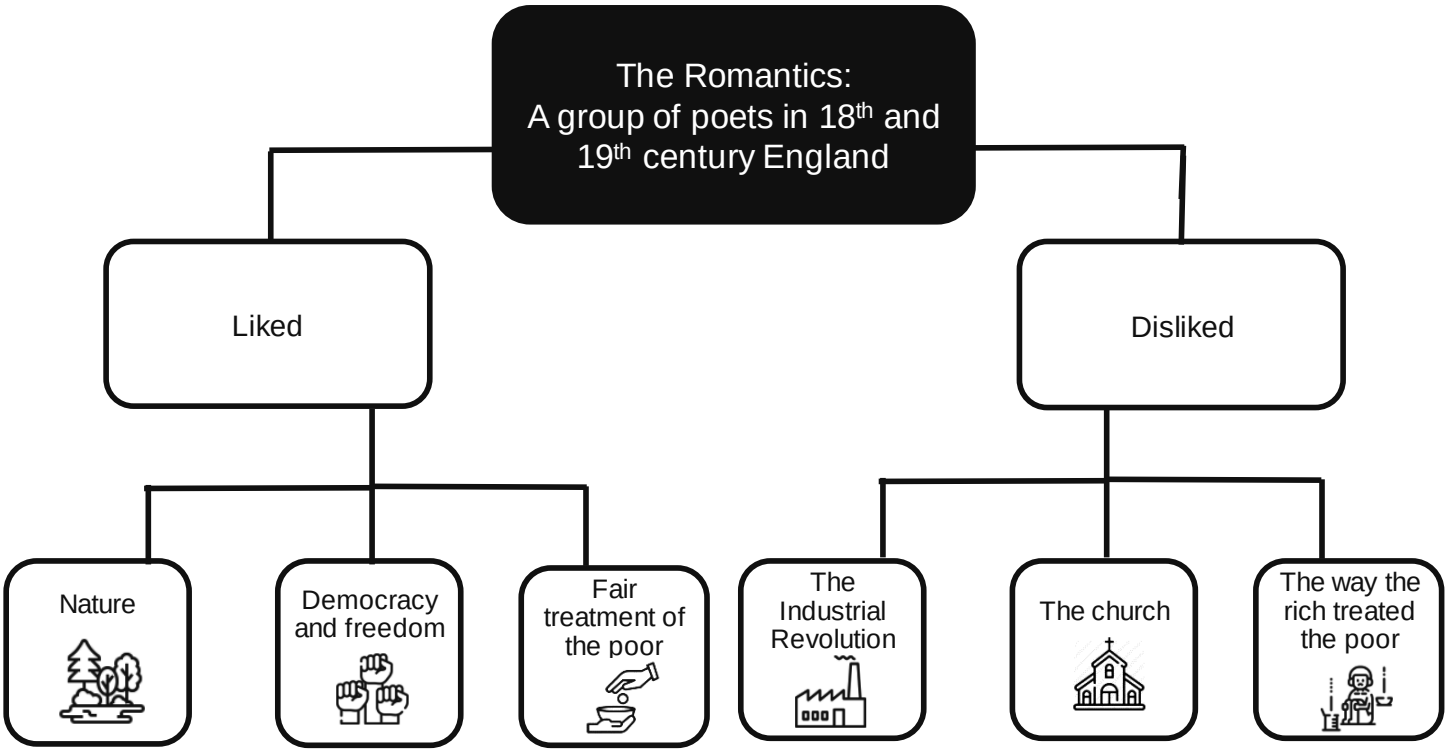
WILLIAM BLAKE THEMES AND INFLUENCES



THE ROMANTICS



Women's Literature



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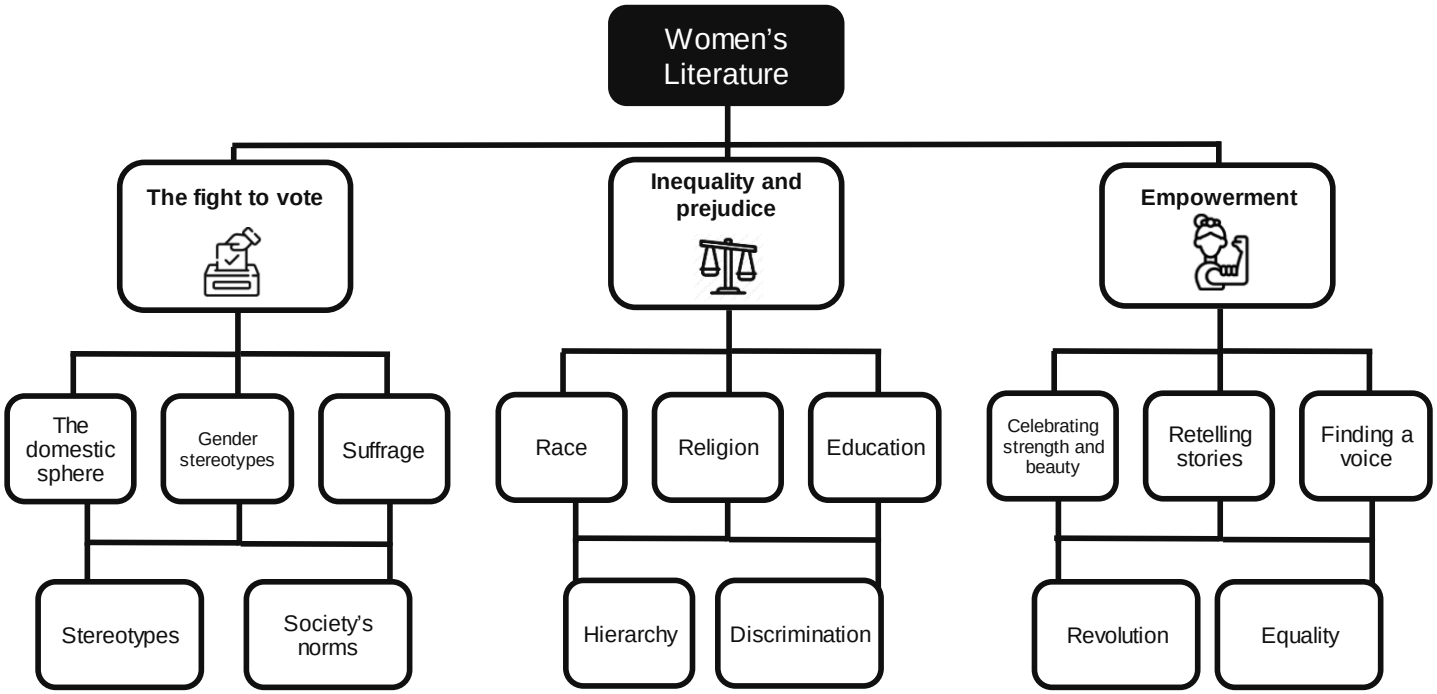
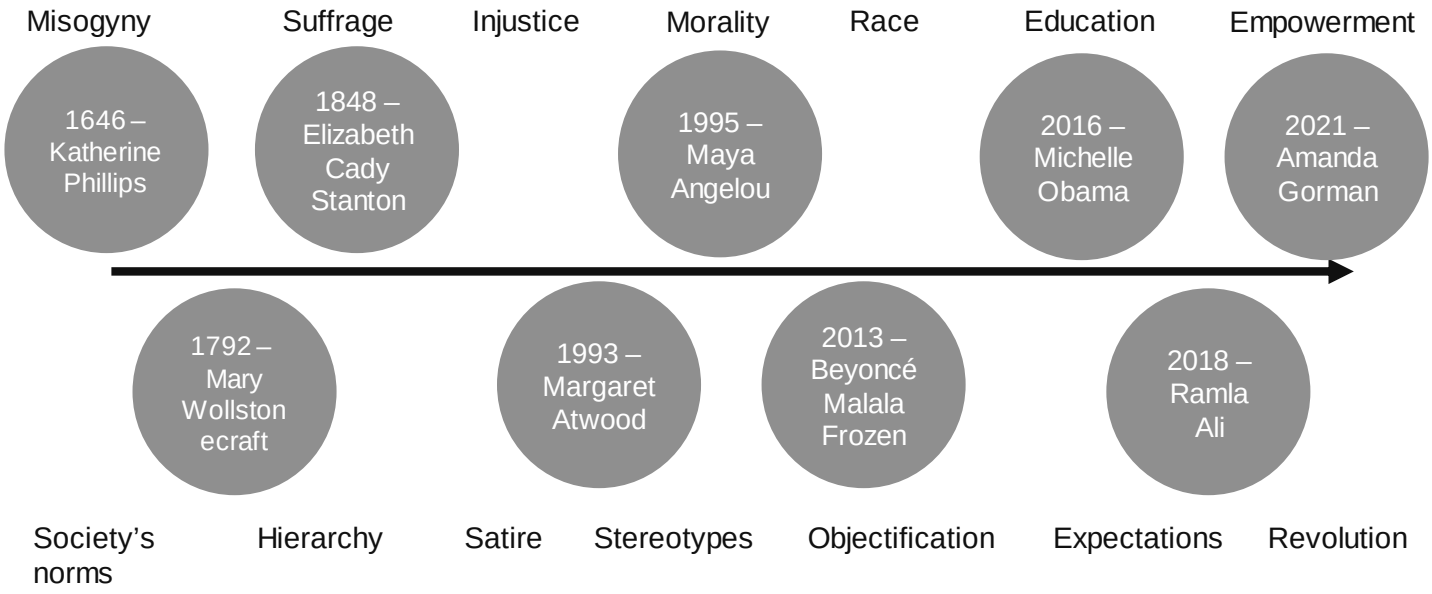
Autumn Term 2

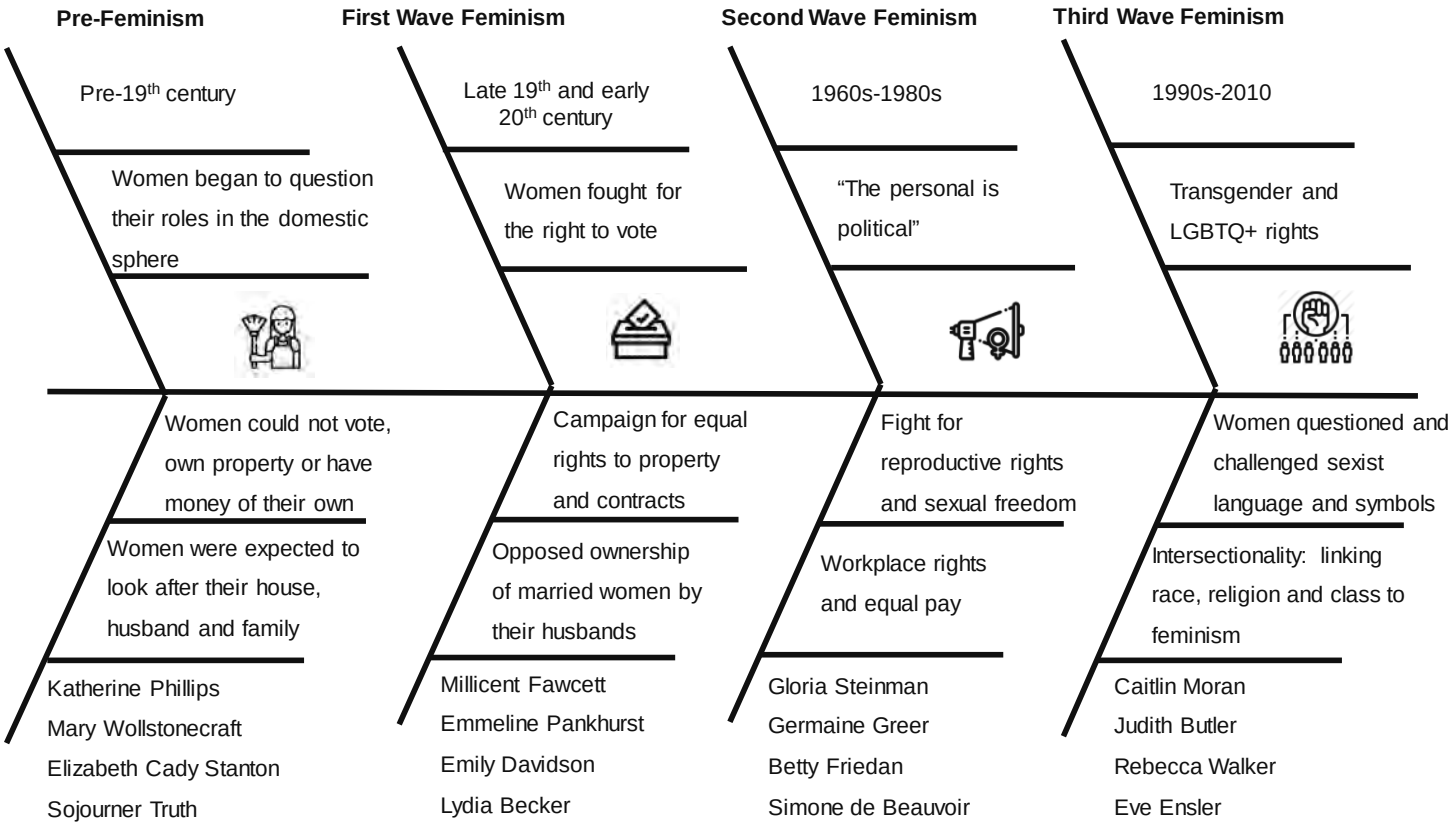
Women's Literature Themes and Influences



Women's Literature Authors and Ideas



FEMINISM TIMELINE



Private Peaceful and World War One Context



Spring Term

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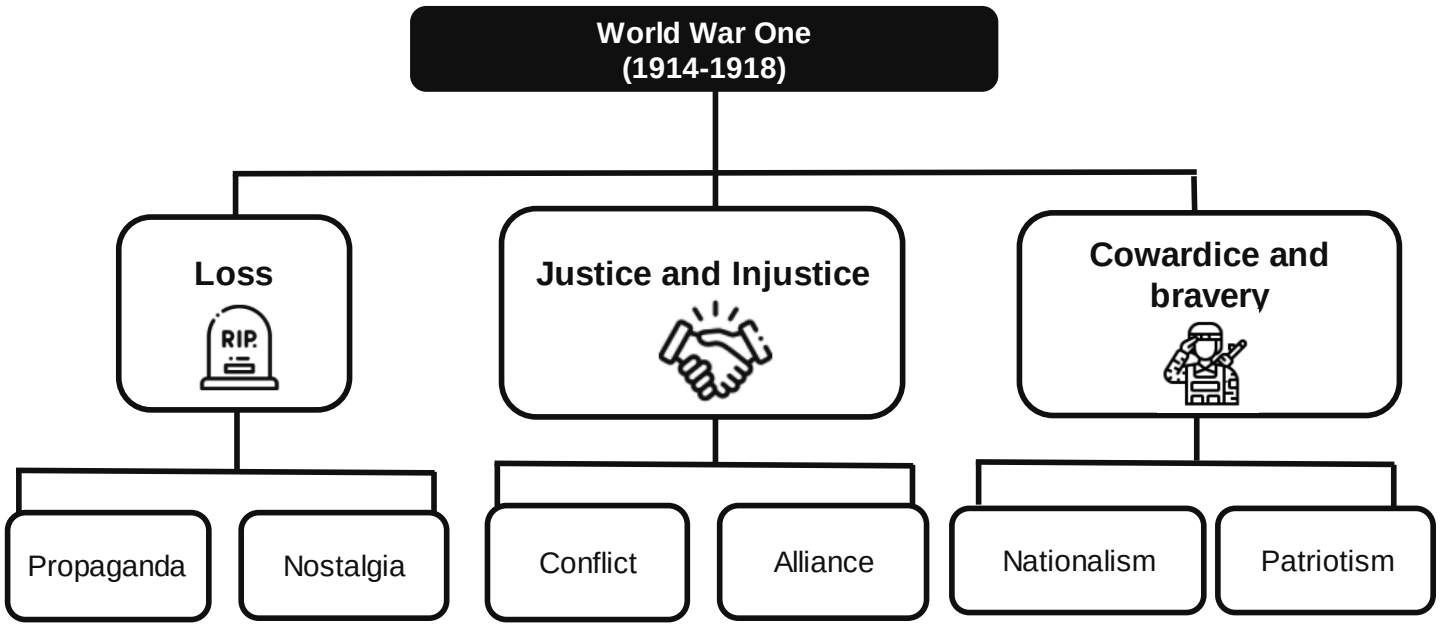
Private Peaceful Themes and Influences



PRIVATE PEACEFUL CHARACTERS

Tommo

The narrator of the story and youngest member of the Peaceful household

Watches his father die but later volunteers to go to war to help his brother

Loyal
Guilt-ridden
Brave

Protective
Courageous
Stubborn

Constantly protects Tommo from danger. He falls in love with Molly before he goes to war.

Charlie

Tommo's protective and loyal older brother

Big Joe

Tommo and Charlie's older brother who has meningitis as a child

Loves to sing 'Oranges and Lemons' and goes missing after Bertha is killed

Kind
Generous
Caring

Gentle
Loving
Sweet

A childhood friend of the Peaceful family who falls in love with Charlie.

Molly

A friend of Charlie and Tommo

Grandma Wolf

Tommo's evil grandmother who is hated by the Peaceful family

Comes to live with the Peaceful family whilst Mother works for the Colonel

Strict
Cruel
Miserable

Spiteful
Mean
Powerful

Owns the grand estate and the Peaceful house and treats the family cruelly after Tommo's father dies

Colonel

A mean-spirited man who is hated by the Peaceful family

Mr. Munnings

Tommo's first teacher who is strict and scary

Gives Charlie the cane for protecting Tommo in a fight in the playground

Intimidating
Sarcastic
Arrogant

Patriarchal
Vicious
Malicious

Takes an instant dislike to Charlie and gives suicidal orders on the battlefield

Sergeant Hanley

A cruel, petty man leads Charlie and Tommo in the war

PRIVATE PEACEFUL THEMES

Family and Loyalty

Charlie
Molly
Tommo

Key Words
Love
Alliance
Brotherhood

CH2: Molly becomes best friends with Charlie and Tommo and is instantly one of the family

CH5: Charlie and Molly start dating and Tommo feels jealous as he loves Molly too

CH12: Charlie refuses to follow orders and abandon Tommo despite terrible consequences

Bravery and Courage

Mother
Charlie
Tommo

Key Words
Defiance
Strength
Conflict

CH2: Charlie stands up for Tommo during a fight in the playground and is punished by Mr Munnings for it

CH5: Mother stands up to the Colonel when he tries to take Bertha away from the family

CH8: Charlie's insubordination enrages Sergeant Hanley and he is punished severely

Loss

Mr Peaceful
Big Joe
Tommo

Key Words
Shame
Exploitation
Cruelty

CH1: Tommo watches his father die when he is crushed by a tree in an accident

CH2: The Colonel tries to evict the Peaceful family after their father dies

CH6: Big Joe goes missing after Bertha is shot dead and the whole village have to find him

Justice and Injustice

Grandma Wolf
Sergeant Hanley
The Colonel

Key Words
Morality
Patriarchy
Hierarchy

CH3: Grandma Wolf is horribly strict with the boys and kills Big Joe's pet mouse

CH7: The Colonel forces Charlie to enlist in the war so Tommo decides to go too

CH8: Charlie is arrested and punished for protecting Tommo against Sergeant Hanley

Shakespearean Genres: Comedy



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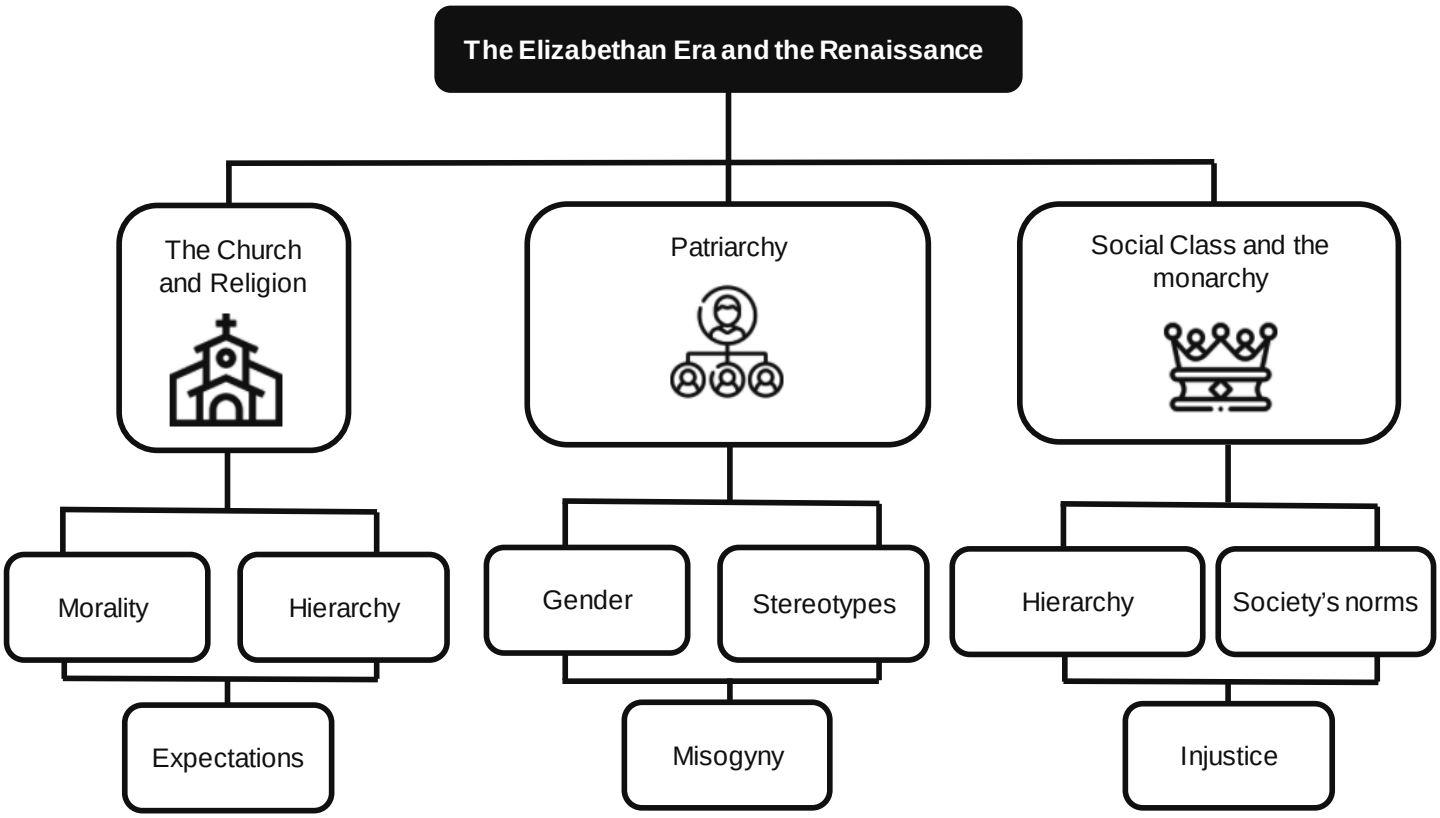
Summer Term 1

Shakespearean Themes and Influences



SHAKESPEAREAN COMEDY CHARACTERS

Much Ado About Nothing

Beatrice

The funny and feisty niece of a wealthy governor

Beatrice defies patriarchal expectations as she does not just want to be a quiet and submissive wife

Witty
Feisty
Independent

Funny
Intelligent
Dramatic

He engages with Beatrice in a competition to outwit, outsmart, and out-insult the other, possibly to mask his true love for her

A lord who has recently returned from fighting in a war and vows he will never marry

Benedick

A Comedy of Errors

Adriana

The wife of Antipholus of Ephesus

Adriana mistakes the wrong twin brother as her husband and thinks he is acting like a stranger

Fierce
Jealous
Angry

Identical
Separated
Reunited

The twins were separated in a shipwreck until they are reunited in Syracuse 25 years later

Twin brothers who are the cause of much confusion in the play

Antipholus of Syracuse and Antipholus of Ephesus

The Twelfth Night

Viola (Cesario)

A shipwreck causes Viola to be swept into Illyria where she disguises herself as a man called Cesario

Viola finds herself falling in love with her boss Orsino, but he believes her to be a man

Disguised
Concealed
Brave

Kind
Trustworthy
Noble

At the start of the play Orsino is in love with Olivia but he grows increasingly interested in Cesario

Viola's employer who believes she is a man

Orsino

A MIDSUMMER NIGHT'S DREAM CHARACTERS

Egeus

Egeus is an important man in Athens, and Hermia's father. He wishes his daughter to marry Demetrius.

He would rather have his own daughter put to death than allow her to marry the man she loves.

Patriarchal
Cruel
Selfish

Mischievous
Magical
Humorous

Puck puts love potion in Lysander's eyes rather than Demetrius, causing Lysander to fall in love with Helena instead of Hermia.

A mischievous fairy whose spells and charms significantly impact the events of the play

Puck

Hermia

Hermia rejects patriarchal expectations that her father should decide her husband

Hermia is in love with Lysander and plans to run away with him after her father forbids their marriage.

Defiant
Passionate
Short

Obsessed
Lovesick
Insecure

After being charmed by Puck, both Demetrius and Lysander fall in love with her, but she believes they are mocking her

A young woman who is desperately in love with Demetrius

Helena

Lysander

A handsome young man from Athens who is in love with Hermia at the start of the play

After Puck's spell, Lysander falls in love with Helena, despite his true feelings for Hermia

Romantic
Persuasive
Dismissive

Arrogant
Stubborn
Unpredictable

Demetrius was once engaged to Helena but leaves her after he meets Hermia.

Demetrius falls in love with Helena after Puck's spell

Demetrius

Imaginative Writing



CONTENTS

Summer Term 2

COMMON GENRES

 **Overcoming the Monster** The protagonist sets out to defeat an antagonistic force (often evil) which threatens the protagonist and/or protagonist's homeland.	 **Rebirth** An event that forces the main character to change their ways and often become a better individual.	 **Quest** The protagonist and companions set out to acquire an important object or to get to a location. They face temptations and other obstacles along the way.
 **Rags to Riches** The poor protagonist acquires power, wealth, and/or a mate, loses it all and gains it back, growing as a person as a result.	 **Tragedy** The protagonist is a hero with a major character flaw or great mistake which is ultimately their undoing. Their unfortunate end evokes pity at their folly and the fall of a fundamentally good character.	 **Comedy** Light and humorous play with a happy or cheerful ending; a dramatic work in which the central motif is the triumph over adverse circumstance, resulting in a successful or happy conclusion.

STRUCTURE GRAPHS

Freytag's Pyramid

Freytag's Pyramid is a paradigm of dramatic structure outlining the seven key steps in successful storytelling: exposition, inciting incident, rising action, climax, falling action, resolution, and denouement.

Cyclical Narrative

A circular plot is a non-linear plot that progresses more or less chronologically and ends with its protagonist returning to a situation similar to the one at the beginning of the story.

In Medias Res

In Medias Res is a Latin term meaning "into the middle of things". Simply put, it's a plot structure that begins in the middle of the story. In Medias Res is best reserved for action-heavy novels like thrillers, mysteries, and horror.

The Hero's Journey

The Hero's Journey operates as a cyclical story structure, meaning that the hero's physical journey will end where it began, though their internal journey as a character will leave them forever changed.

NARRATIVE STRUCTURE

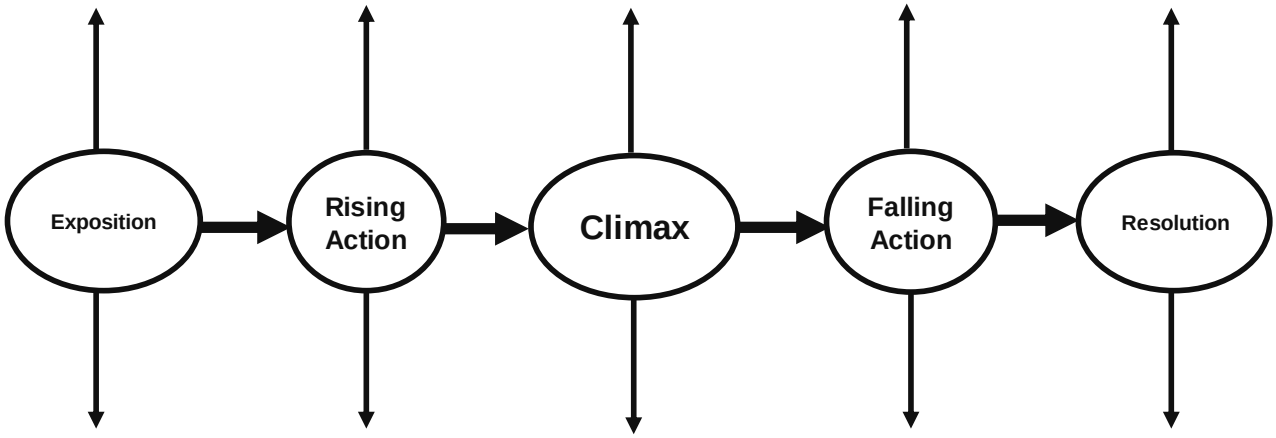
You could use: Pathetic fallacy to build the atmosphere and foreshadow events.

You could use: Reflections here which could be revisited later in the story.

You could use: Short, simple sentences to add to the suspense.

You could use: Flashbacks or flash forwards to show the possible outcomes of the story.

You could use: Repetition from the beginning of the story to show change.



Set the scene, introduce characters and the plot.

Introduce a conflict, a new character, or a dilemma to move the story forward.

The peak of interest in the story, when the tension is at its greatest and the action takes place.

The aftermath of the action; what will happen as a result of the events in the climax of the story.

The final outcome of the story, ether all problems have been solved, or the story ends on a cliff-hanger.

STRUCTURAL DEVICES

Foreshadowing	A warning or indication of a future event.
Repetition	The action of repeating something that has already been said or written.
Perspectives	A particular attitude towards or way of regarding something; a point of view.
Chronological	Following the order in which they occurred.
Flashback	A scene in a film, novel, etc. set in a time earlier than the main story.
Echo	A close parallel to an idea, feeling or image.
Location	The place or type of surroundings where something is positioned or where an event takes place.
Climax	The most intense, exciting, or important point of something; the culmination.
Conclusion	The end or finish of an event, process, or text.
Links	A relationship between two things or situations, especially where one affects the other.
Focus	The centre of interest or activity.
Anaphora	The repetition of a word or phrase at the beginning of successive clauses.
Changes	An act or process through which something becomes different.
Introduction	The action of introducing something.

CHARACTER TYPES

Protagonist (the main character)

Every story has this type of character and evolves around it. It appears in the story from the start to end. It is the one who fights with the situations and antagonist characters and takes the story to the happy (or unhappy) ending.

Static or flat character

Flat characters don't have strong characteristics or reveal much about the self, but play an important role in helping the main character in his or her intention. They do not change throughout the story and they fill the gaps. Such characters often have a very short role to play.

Changing or dynamic character

The dynamic character plays a role that develops and changes during the events in the story. This character may change positively or negatively depending on the need of the story. This type of character often rises from a normal non-important person to an important one and makes a significant effect on the story.

Antagonist (opposing the main character)

The antagonist plays against this heroic character and tries to stop him by posing threats to his and others' lives. An antagonist is usually a negative influence within a story, but doesn't always need to be a person. It can also be a difficult situation or accidental event that works against the protagonist.

Stock character

Unlike other characters, the characters of this type are of not much value in a story. They are usually stereotypical and don't have any impact on the plot. They are generally not recognised by the readers.

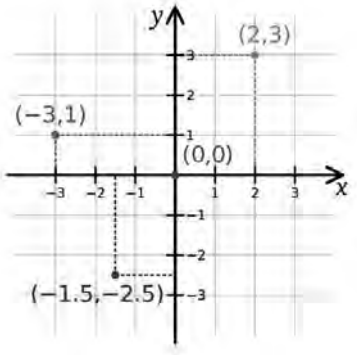
Round character

This is the character which contributes the most in making the story interesting and keeps the reader confused about the person's actual nature. This type of character acts subtly and makes it difficult for the readers to fully understand and identify how the person will act in the story until the end of the story.

GCSE Mathematics Knowledge Organiser

A1: Algebra Notation

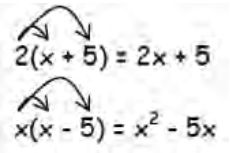
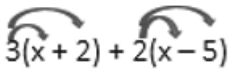
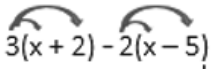
Plot Coordinates
Collect Like terms
Simplify Expressions

A1.1 Plot coordinates in four quadrants e.g. Plot the origin (0,0) Plot the point (2,3) Plot the point (-3,1) Plot the point (-1.5, -2.5)	(x coordinate, y coordinate) For x, move right for positive values and left for negative. For y, move up for positive values and down for negative. e.g. 

A1.2 Collect like terms by adding and subtracting e.g. a + 2a a + 2b $5a^2 – 2a^2$ $a^2 – 2a$	Only like terms can be added or subtracted. e.g. a + 2a = 3a a + 2b cannot be added $5a^2 – 2a^2 = 3a^2$ $a^2 – 2a$ cannot be subtracted
A1.3 Simplify simple expressions by multiplying e.g. a x b 2a x 3a	Terms can be simplified when multiplying. Multiply any numbers first, then write the letters including any powers that result. e.g. a x b = ab 2a x 3a = $6a^2$

A1: Algebra Notation

Expand a single bracket
Factorise into a single bracket
Substitute into an expression

A1.4 Expand a single bracket e.g. Expand 2(x + 5) Expand x(x - 5) Expand and simplify expressions with more than one bracket e.g. Expand 3(x + 2) + 2(x – 5) 3(x + 2) – 2(x – 5)	Multiply everything in the bracket by what is outside.  Expand each bracket and then simplify the expression. Take care with negative numbers.  = 3x + 6 + 2x – 10 = 5x - 4  = 3x + 6 -2x + 10 = x + 16

A1.5 Factorise into a single bracket. e.g. 4y - 12 $y^2 + 7y$	Divide by the highest common factor of each part of each term. e.g. 4 is the HCF of 4 and 12. y is not common to both terms. 4y – 12 = 4(y – 3) Y is common to both terns. $y^2 + 7y = y(y + 7)$
A1.6 Substitute into an expression. e.g. Find the value of 3a - b when a = 6 and b = -2.	Replace the letters with the given numbers, then carry out the calculation. Remember BIDMAS and the rules for negative numbers. e.g. 3a – b = 3 x 6 –(-2) = 18 + 2 = 20

A1: Algebra Notation

Use a formula by substituting numbers

Expand two brackets

A1.7 Use a formula by substituting numbers	Replace the letters with the given numbers, then carry out the calculation. Remember BIDMAS and the rules for negative numbers.
e.g. Use the formula v = u + at to work out v when u = 5, a = 10, t = 6.	e.g. v = u + at v = 5 + 10 x 6 v = 5 + 60 v = 65
Use the formula v = u + at to work out a when v = 32, u = 7, t = 5.	v = u + at 32 = 7 + 5a 25 = 5a a = 5
Use the formula v = u + at to work out t when v = 5, u = 17, a = -4.	v = u + at 5 = 17 – 4t -12 = -4t t = 3

A1.8 Expand two brackets.	Use a grid to expand two brackets. Take care with negative numbers. Add together the four terms in the grid. Simplify the two x terms.
e.g. (x + 3)(x – 2)	e.g. <table><tr><td></td><td>x</td><td>+3</td></tr><tr><td>x</td><td>x^2</td><td>+3x</td></tr><tr><td>-2</td><td>-2x</td><td>-6</td></tr></table> x^2 + 3x -2x -6 = x^2 + x -6
(2x – 1)(x + 4)	<table><tr><td></td><td>2x</td><td>-3</td></tr><tr><td>x</td><td>$2x^2$</td><td>-3x</td></tr><tr><td>+4</td><td>+8x</td><td>-12</td></tr></table> $2x^2$ - 3x +8x -12 = $2x^2$ +5x -12

A1: Algebra Notation

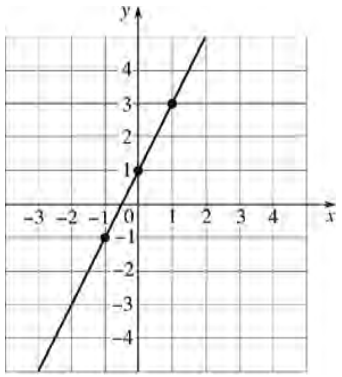
Plot a linear graph from a sequence or formula

Use the index rules for multiplication and division

Use the index laws for raising to a power

A1.9 Plot a linear graph from a sequence or formula e.g. Plot the graph of $y = 2x + 1$	Draw a table of values by substituting values of x into the formula. Plot the points in pencil. Join the points with a ruler and pencil. They should be in a straight line. e.g.

x	-1	0	1
y	-1	1	3



A1.10 Use the index rules for multiplication and division e.g. $3a^2 \times 2a^3$ $10a^6 \div 5a^2$	Deal with the numbers first. When multiplying add the indices. When dividing subtract the indices. e.g. $3 \times 2 = 6$ $a^2 \times a^3 = a^{2+3} = a^5$ $3a^2 \times 2a^3 = 6a^5$ $10 \div 5 = 2$ $a^6 \div a^2 = a^{6-2} = a^4$ $10a^6 \div 5a^2 = 2a^4$
A1.11 Use the index rules for raising to a power e.g. $(a^2)^4$ $(2a^6)^3$	Raise any numbers to the power outside the brackets first. Multiply the indices when raising a power to a power. e.g. $(a^2)^4 = a^{2\times4} = a^8$ $2^3 = 8$ $(a^6)^3 = a^{6\times3} = a^{18}$ $(2a^6)^3 = 8a^{18}$

A2: Formulae, Functions and Expressions

Use a formula by substituting numbers

Change the subject of a simple formula

Expand two brackets

A2.1 Use a formula by substituting numbers e.g. Use the formula v = u + at to work out v when u = 5, a = 10, t = 6. Use the formula v = u + at to work out a when v = 32, u = 7, t = 5. Use the formula v = u + at to work out t when v = 5, u = 17, a = -4.	Replace the letters with the given numbers, then carry out the calculation. Remember BIDMAS and the rules for negative numbers. e.g. v = u + at v = 5 + 10 x 6 v = 5 + 60 v = 65 v = u + at 32 = 7 + 5a 25 = 5a a = 5 v = u + at 5 = 17 – 4t -12 = -4t t = 3

A2.2 Change the subject of a simple formula e.g. Make t the subject of the formula $v = u + at$	Use the same balancing steps as when you solve equations to change the subject of the formula. e.g $v = u + at$ (Minus u from both sides of the equation) $v - u = at$ (divide both sides of the equation by a) $\frac{v-u}{a} = t$
A2.3 Expand two brackets. e.g. (x + 3)(x – 2)	Use a grid to expand two brackets. Take care with negative numbers. Add together the four terms in the grid. Simp e.g

	x	+3
x	x^2	+3x
-2	-2x	-6

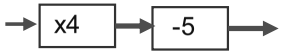
$x^2 + 3x - 2x - 6$
$= x^2 + x - 6$

A2: Formulae, Functions and Expressions

Substitute into an expression

Use a function machine to find input and output

A2.4 Substitute into an expression. e.g. Find the value of 3a - b when a = 6 and b = -2. e.g Find the value of abc+ 3b when a= 5, b=3 and c=7	Replace the letters with the given numbers, then carry out the calculation. Remember BIDMAS and the rules for negative numbers. e.g. 3a – b = 3 x 6 –(-2) = 18 + 2 = 20 e.g abc+ 3b = 5x3x7-3x3 = 105-9 =96

A2.5 Use a function machine to find input or output e.g find the output for the function machine below when the input is 4  e.g find the input for the function machine below when the output is 7  	To find the output follow the instructions from left to right. To find the input, reverse the function machine by using inverse functions and follow it from right to left e.g Input is 4 = 4x4-5 Output =11 e.g Reverse function machine is  Output is 7 =7-5x3 Input is 6

A2: Formulae, Functions and Expressions

Evaluate formulae in a calculator including fractions and negative numbers

Rearrange formulae with fractions

Expand and simplify an expression involving brackets

A2.6 Evaluate formulae in a calculator including fractions and negative numbers e.g. Find the value of 5a-3b when a = $\frac{2}{3}$ and b = -2.	Rewrite the formula, replacing the letters with numbers. When putting into a calculator remember to use the fraction key and put any negative numbers into brackets e.g Rewrite the formula to be $5 \times \frac{2}{3} - 3 \times (-2)$ Type into calculator so it looks exactly like this $=\frac{28}{3}$ or $9.\dot{3}$
A2.7 Rearrange formulae with fractions e.g Make x the subject of the formula $y = \frac{x}{5} + k$	Multiply each term by the denominator then use the same balancing method as when solving equations e.g $y = \frac{x}{5} + k$ (Multiply every term by 5) $5y = x + 5k$ (Subtract 5k from both sides) $5y - 5k = x$

A2.8 Expand and simplify an expression involving brackets e.g Expand and simplify $3(x + 2) + 2(x - 5)$ e.g Expand and simplify $3(x + 2) - 2(x - 5)$	To expand brackets multiply each term in the bracket by the term outside the bracket. Collect like terms together. Take care with negative signs. e.g $3(x+2)+2(x-5)$ $=3x+6+2x-10$ $=5x-4$ e.g $3(x+2)-2(x-5)$ $=3x+6-2x+10$ $=x+16$

A2: Formulae, Functions and Expressions

Factorise a quadratic expression where a=1

Use index rules for multiplying and Dividing

Use index rules for raising to a power

A2.9 Factorise a quadratic expression where a=1 e.g factorise $x^2 + 5x + 4$ e.g Factorise $x^2 - 3x - 4$	Work out two numbers that: Add to make the number in front of x; Multiply to make the number on its own. Write each bracket with an x and one of the numbers. Take care with negative numbers. e.g $x^2 + 5x + 4$ Add to make 5 Multiply to make 4 (x + 4)(x + 1) e.g $x^2 - 3x - 4$ Add to make -3 Multiply to make -4 (x - 4)(x + 1)

A2.10 Use Index rules for multiplying and dividing e.g Simplify $3a^2 \times 5a^7$ e.g Simplify $20c^8 \div 4c^3$	When multiplying the same base number with different indices, ADD the indices When dividing the same base number with different indices subtract the indices e.g Multiply the coefficients together and add the powers $=15a^9$ e.g Divide the coefficients and subtract the powers $=5c^5$
A2.11 Use index rules for raising to a power e.g simplify $(3y^2)^4$	Rewrite the calculation using the usual rules of indices then use the rules of multiplication to simplify e.g Rewrite as $3y^2 \times 3y^2 \times 3y^2 \times 3y^2$ Multiply the coefficients together and add the powers $=81y^8$

A2: Formulae, Functions and Expressions

Rearrange formulae with factorisation

Simplify algebraic fractions by factorisation

A2.12 Rearrange formulae with factorisation e.g. Make x the subject of the formula $ax = by + cx$	If there is more than one of the variable you're making the subject you will need to factorise. Move all of that variable to one side of the equation then factorise it out to leave you with only one of that variable e.g Move all the terms with x in them onto the same side $ax - cx = by$ Factorise out the x variable $x(a - c) = by$ Divide both sides by the created brackets $x = \frac{by}{a - c}$
A2.13 Simplify algebraic fractions by factorisation e.g Simplify $\frac{6x - 15}{9}$ e.g Simplify $\frac{x^2 + 7x + 12}{x^2 - 2x - 15}$	Start by factorising the numerator and denominator of the fraction. Then look for common factors that can be cancelled, these may be brackets or coefficients of brackets e.g Factorise the numerator $\frac{3(2x - 5)}{6}$ Cancel the common factor of 3 from the denominator and the multiplier of the brackets on the numerator $\frac{2x - 5}{2}$ e.g Factorise the numerator and denominator $\frac{(x + 3)(x + 4)}{(x + 3)(x - 5)}$ Cancel the matching brackets $\frac{(x + 4)}{(x - 5)}$

A2: Formulae, Functions and Expressions

Adding/Subtracting Algebraic fractions

Multiplying/Dividing algebraic fractions

Expand Triple Brackets

Substitute into a function using function notation

A2.14 Adding/Subtracting Algebraic Fractions e.g simplify $\frac{2x-4}{3}+\frac{3x+4}{5}$	Form a common denominator by using cross multiplication. Then add/subtract the numerator using the rules of algebra e.g Form a common denominator in the usual way $\frac{10x-20}{15}+\frac{9x+12}{15}$ Add the numerators together $\frac{19x-8}{15}$
A2.15 Multiplying/Dividing algebraic fractions e.g Simplify $\frac{x^2+2x-3}{x^2+4x+4}\div\frac{x^2+5x+6}{x^2-6x-16}$	Factorise the numerator/denominator of all fractions then follow the usual rules for multiplying/dividing, remembering to cross cancel e.g Factorise numerator and denominator and keep change flip $\frac{(x+3)(x-1)}{(x+2)(x+2)}\times\frac{(x+2)(x-8)}{(x+2)(x+3)}$ Cross cancel matching brackets $\frac{(x-1)(x-8)}{(x+2)(x+2)}$

A2.16 Expand triple brackets e.g Expand and simplify $(x+3)(x+4)(x-2)$	Expand two of the brackets using a grid then multiply the answer by the third bracket in another grid e.g Expand the first two brackets using a grid 	x	x	$+3$
---	---	---
x	x^2	$+3x$
$+4$	$+4x$	$+12$ | $=x^2+7x+12$ Then put this answer into another grid and expand with the third | x	x	$+7x$	$+12$
---	---	---	---
x	x^3	$+7x^2$	$+12x$
-2	$-2x^2$	$-14x$	-24	 $=x^3+5x^2-2x-24$
A2.17 Substitute into a function using function notation e.g If $f(x)=x^2-5$ evaluate $f(4)$	Replace the letter in the bracket with the number in the bracket and calculate using BIDMAS e.g Replace the x (‘s)in the formula with 4 and calculate $=4^2-5$ $=11$

A2: Formulae, Functions and Expressions

Find the Inverse of a function

Find a compound function

A2.18 Find the inverse of a function e.g Find $f^{-1}(x)$ where $f(x) = 3x + 5$ e.g Find $f^{-1}(x)$where $f(x) = x^2 - 6$	Replace the $f(x)$ notation with a y then rearrange the formula to make x the subject of the formula. Finally replace all y's in the formula with x's e.g Replace f(x) with y $y = 3x + 5$ Rearrange the formula to make x the subject $x = \frac{y-5}{3}$ Replace all y's with x's $f^{-1}(x) = \frac{x-5}{3}$ e.g Replace f(x) with y $y = x^2 - 6$ Rearrange the formula to make x the subject $x = \sqrt{y+6}$ Replace all y's with x's $f^{-1}(x) = \sqrt{x+6}$

A2.19 Find a compound function e.g Find $fg(x)$ where $f(x) = 3x + 5$ and $g(x) = x^2 - 6$ e.g Find $\mathrm{gf}(x)$ where $f(x) = 3x + 5$ and $g(x) = x^2 - 6$	Work from right to left replacing the x's with the stated function. e.g Working from right to left $g(x)$ needs to be substituted into $f(x)$ $fg(x) = 3(x^2 - 6) + 5$ Expand the brackets and simplify $fg(x) = 3x^2 - 13$ e.g Working from right to left $f(x)$needs to be substituted into $g(x)$ $gf(x) = (3x + 5)^2 - 6$ Expand the brackets and simplify $gf(x) = 9x^2 + 30x + 19$

A3: Solving Equations and Inequalities

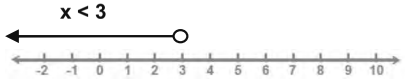
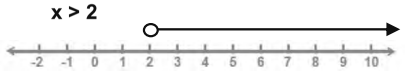
Solve Simple and two step linear equations

Solve Linear equations with brackets

Solve Linear equations with unknowns on both sides

Solve a linear inequality

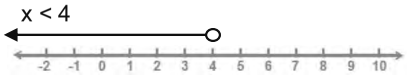
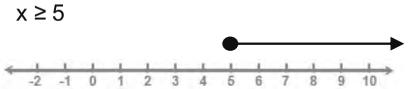
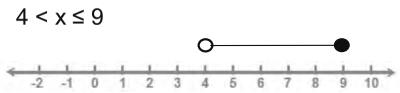
A3.1 Solve simple and two step linear equations e.g. 2x – 3 = 7 $\frac{x}{2} + 1 = 5$	e.g. 2x – 3 = 7 (add 3 to each side) 2x = 10 (divide both sides by 2) x = 5 e.g. $\frac{x}{2} + 1 = 5$ (subtract 1 from each side) $\frac{x}{2} = 4$ (multiply both sides by 2) x = 8
A3.2 Solve linear equations with brackets e.g. 3(4x + 1) = 15 2(5x - 4) = 12	e.g. 3(4x + 1) = 15 (expand the bracket) 12x + 3 = 15 (subtract 3 from both sides) 12x = 12 (divide both sides by 12) **x = 1** e.g. 2(5x - 4) = 12 (expand the bracket) 10x - 8 = 12 (add 8 to each side) 10x = 20 (divide both sides by 10) **x = 2**

A3.3 Solve linear equations with unknowns on both sides e.g. 2a + 5 = a + 8 4a - 3 = 2a + 11	e.g. 2a + 5 = a + 8 (subtract a from both sides) a + 5 = 8 (subtract 5 from both sides) **a = 3** e.g. 4a - 3 = 2a + 11 (subtract 2a from both sides) 2a - 3 = 11 (add 3 to both sides) **a = 7**
A3.4 Solve a linear inequality e.g. 2x – 4 < 2 3x + 5 > 11	e.g. 2x – 4 < 2 (add 4 to both sides) 2x < 6 (divide both sides by 2) **x < 3**  e.g. 3x + 5 > 11 (add 4 to both sides) 3x > 6 (divide both sides by 2) **x > 2** 

A3: Solving Equations and Inequalities

Display an inequality on a number line

Solve Linear Simultaneous Equations

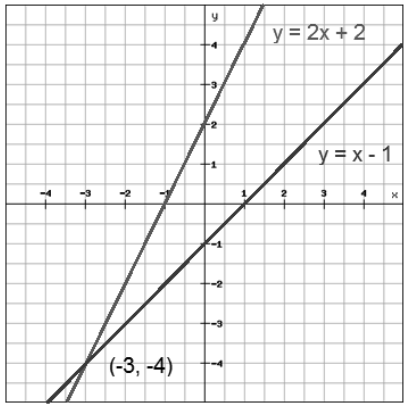
A3.5 Display an inequality on a number line e.g. x > -1 x < 4 x ≤ 7 x ≥ 5 4 < x ≤ 9	A circle represents the number in the inequality. If the sign is > or < then the circle is not coloured in. If the sign is ≥ or ≤ then the circle is coloured in. x > -1 (x is greater than -1) x < 4 (x is less than 4) x ≤ 7 (x is less than or equal to 7) x ≥ 5 (x is greater than or equal to 5) 4 < x ≤ 9 (x is greater than 4 and less than or equal to 9) e.g. x > -1  x < 4  x ≤ 7  x ≥ 5  4 < x ≤ 9 

A3.6 Solve linear simultaneous equations e.g. Solve 2x – 3y = 11 5x + 2y = 18	**Make the number in front of the y the same by multiplying the whole linear equation.** 2x – 3y = 11 (x2) 5x + 2y = 18 (x3) **Add or subtract to eliminate y.** **Same signs subtract.** **Different signs add.** 4x – 6y = 22 15x + 6y = 54 **Solve the equation to find the value of x.** 19x = 76 x = 4 **Substitute the value of x into one of the equations to find the value of y.** 5(4) + 2y = 18 20 + 2y = 18 2y = -2 y = -1

A3: Solving Equations and Inequalities

Solving simultaneous equations graphically

Solve a quadratic equation by factorising when a=1

A3.7 Solving simultaneous equations graphically e.g. Solve $y = 2x + 2$ $y = x - 1$	Draw the graphs of the equations. Find out where they cross. The solution is the coordinates of the intersection point.  **x = -3** **y = -4**

A3.8 Solve a quadratic equation by factorising when a = 1 e.g. Solve $x^2 + 7x + 12$	**Write the equation in the form $ax^2 + bx + c = 0$.** $x^2 + 7x + 12 = 0$ **Factorise the left-hand side. Find two values that add to make b and multiply to make c.** Add to make 7 Multiply to make 12. Factors of 12 (12&1, 6&2, 3&4) $(x + 3)(x + 4) = 0$ **Equate each factor to 0 and solve for the values of x.** $x + 3 = 0$ (subtract 3 from both sides) $X = -3$ $x + 4 = 0$ (subtract 4 from both sides) $X = -4$ **x = -3** **or** **x = -4**

A3: Solving Equations and Inequalities

Solve a quadratic equation by factorising when a does not equal 1

Solve a quadratic equation using the quadratic formula

A3.9 Solve a quadratic equation by factorising when a does not equal 1 e.g. Solve $2x^2 + 7x + 3 = 0$	**Write the equation in the form $ax^2 + bx + c = 0$.** $2x^2 + 7x + 3 = 0$ **Factorise the left-hand side. Find two values that add to make b and multiply to make (c x a).** Add to make 7 *Multiply to make 3 x 2* Multiply to make 6 Factors of 6 (6&1, 3&2) 6 + 1 = 7 As a = 2, we must divide 6 by 2 to get 3. (2x + 1)(x + 3) = 0 **Equate each factor to 0 and solve for the values of x.** 2x + 1 = 0 (subtract 1 from both sides) 2x = -1 (divide both sides by 2) x = - ½ x + 3 = 0 (subtract 3 from both sides) X = -3 **x = - ½ or x = -3**

A3.10 Solve a quadratic equation using the quadratic formula $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$ e.g. Solve $x^2 + 4x - 2$	**Write the equation in the form $ax^2 + bx + c = 0$.** $x^2 + 4x - 2 = 0$ **Write the values for a, b and c (including the sign)** a = 1, b = 4, c = -2 **Substitute the values for a, b and c into the formula** $x = \frac{-4 \pm \sqrt{(4^2 - 4 \times 1 \times -2)}}{2 \times 1}$ **Simplify to get the two values of x** $x = \frac{-4 \pm \sqrt{24}}{2}$ **$x = \frac{-4 + \sqrt{24}}{2} = 0.45$ (2dp)** **or** **$x = \frac{-4 - \sqrt{24}}{2} = -4.45$ (2dp)**

A3: Solving Equations and Inequalities

Solve a quadratic equation by completing the square

Solve linear /quadratic simultaneous equations using substitution

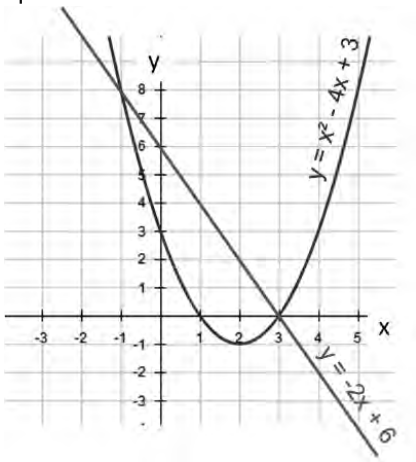
A3.11 Solve a quadratic equation by completing the square e.g. Solve $x^2 + 8x - 40$	**Write the equation in the form $ax^2 + bx + c = 0$.** $x^2 + 8x - 40 = 0$ **Write x + half the coefficient of x in brackets then square** $(x + 4)^2 - 40 = 0$ **Square and subtract the coefficient of x** $4^2 = 16$ $(x + 4)^2 - 16 - 40 = 0$ $(x + 4)^2 - 56 = 0$ **Now solve by adding the constant to both sides** $(x + 4)^2 - 56 = 0$ $(x + 4)^2 = 56$ **Square root both sides** $(x + 4)^2 = 56$ $x + 4 = \pm \sqrt{56}$ **Solve to find the two values of x** **$x = -4 - \sqrt{56} = -11.48$ (2dp)** **or** **$x = -4 + \sqrt{56} = 3.48$ (2dp)**

A3.12 Solve linear/quadratic simultaneous equations using substitution e.g. Solve Solve $x + y = 4$ and $x^2 + y^2 = 40$.	**Rearrange the linear equation** $x + y = 4$ $y = 4 - x$ **Substitute the linear equation into the quadratic.** $x^2 + (4 - x)^2 = 40$. **Expand and simplify.** $(4 - x)^2 = x^2 - 8x + 16$ $x^2 + x^2 - 8x + 16 = 40$. $2x^2 - 8x + 16 = 40$ **Solve the quadratic by an appropriate method.** $2x^2 - 8x + 16 = 40$ $2x^2 - 8x - 24 = 0$ $(2x - 12)(x + 2) = 0$ $2x = 12$ **$x = 6$** **or** **$x = -2$** **Substitute the values found into the linear equation.** **When $x = 6$, $y = 4 - 6 = -2$** **When $x = -2$, $y = 4 - -2 = 6$**

A3: Solving Equations and Inequalities

Solve linear/quadratic simultaneous equations graphically

Use iteration to solve an equation

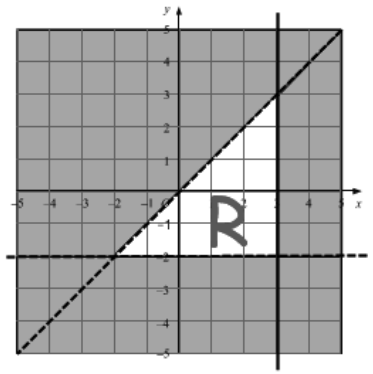
A3.13 Solve linear/quadratic simultaneous equations graphically e.g. Solve $y = x^2 - 4x + 3$ $y = -2x + 6$	Draw the graphs of the equations. Find out where they cross. The solutions are the coordinates of the intersection points.  **When x = -1 y = 8** **or** **When x = 3 y = 0**

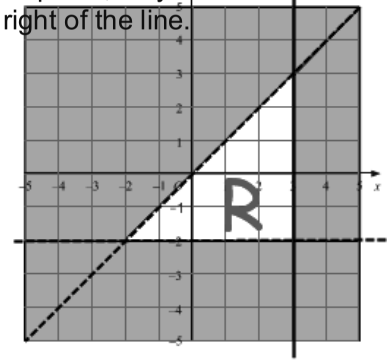
A3.14 Use iteration to solve an equation e.g. Using $x_{n+1} = 8 - \frac{5}{x_n^2}$ With $x_0 = 1$ Find the values of: x_1, x_2 , x_3 and x_4	**Input the value for x_0 into the formula to find the value for x_1.** 8 - $\frac{5}{1^2}$ = 3 x_1 = 3 **Input the value for x_1 into the formula to find the value for x_2.** 8 - $\frac{5}{3^2} = \frac{67}{9}$ $x_2 = \frac{67}{9}$ **Input the value for x_2 into the formula to find the value for x_3.** 8 - $\frac{5}{(\frac{67}{9})^2}$ = 7.909779461 x_3 = 7.909779461 **Input the value for x_3 into the formula to find the value for x_4.** 8 - $\frac{5}{(7.909779461)^2}$ = 7.920082617 x_4 = 7.920082617 **x_1 = 3** **$x_2 = \frac{67}{9}$** **x_3 = 7.909779461** **x_4 = 7.920082617**

A3: Solving Equations and Inequalities

Represent an inequality graphically

Find a region on a graph defined by more than one inequality

A3.15 Represent an inequality graphically e.g. Represent the following inequalities graphically: $x < y$ $y > -2$ $x \leq 3$	Plot each straight line. Use a broken line for < or >. Use a solid line for ≤ or ≥. Decide which side of the line to shade. Leave the required region unshaded. 

A3.16 Find a region on a graph defined by more than one inequality e.g. Find the region defined by the following inequalities: $x < y$ $y > -2$ $x \leq 3$	**Decide which side of the line to shade – shade the section you do not want and leave the required region unshaded.** $x < y$ (x is less than y) Area below the line is required, so you shade above the line. $y > -2$ (y is greater than -2) Area above the line is required, so you shade below the line. $x \leq 3$ (x is less than or equal to 3) Area to the left of the line is required, so you shade to the right of the line. 

A3: Solving Equations and Inequalities

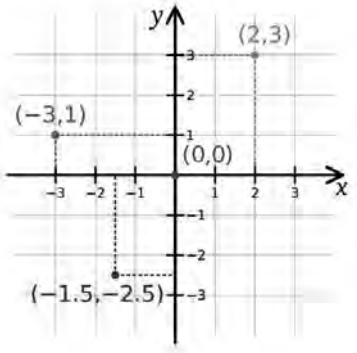
Use trial and improvement to solve an equation

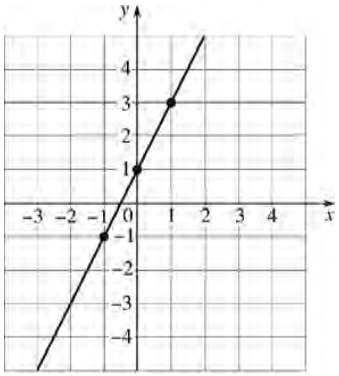
A3.17 Use trial and improvement to solve an equation e.g. Use trial and improvement to solve the following equation to 1dp. $x^2 + 3x + 2 = 86$ has a solution between 7 and 8.	**Substitute different values for x into the equation until a value closest to the solution is found to the required degree of accuracy.** Solution between 7 and 8. Start with the midpoint of 7.5. $(7.5)^2 + 3(7.5) + 2 = 80.25$ *too small* $(7.6)^2 + 3(7.6) + 2 = 82.56$ *too small* $(7.7)^2 + 3(7.7) + 2 = 84.39$ *too small* $(7.8)^2 + 3(7.8) + 2 = 86.24$ *too big* *Solution is between 7.7 and 7.8* $(7.75)^2 + 3(7.75) + 2 = 85.3125$ *too small* The solution is between 7.75 and 7.8. Therefore to 1dp the solution is 7.8. **x = 7.8 to 1dp**

A4: Graphs 1

Plot coordinates in four quadrants

Plot a linear graph from a sequence or formula

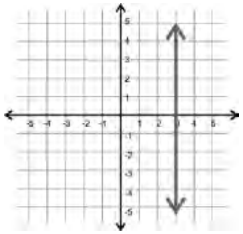
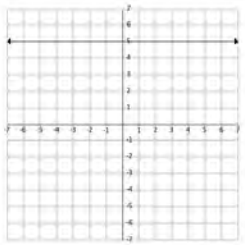
A4.1 Plot coordinates in four quadrants e.g. Plot the origin (0,0) Plot the point (2,3) Plot the point (-3,1) Plot the point (-1.5, -2.5)	(x coordinate, y coordinate) For x, move right for positive values and left for negative. For y, move up for positive values and down for negative. e.g. 

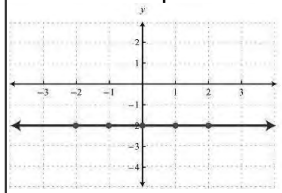
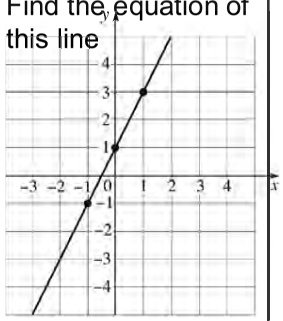
A4.2 Plot a linear graph from a sequence or formula e.g. Plot the graph of y = 2x + 1	Draw a table of values by substituting values of x into the formula. Plot the points in pencil. Join the points with a ruler and pencil. They should be in a straight line. e.g. y = 2x + 1 x | -1 | 0 | 1 y | -1 | 1 | 3 

A4: Graphs 1

Find the equation of vertical and horizontal lines

Find the equation of a line by considering the coordinates

A4.3 Find the equation of vertical and horizontal lines e.g. Write the equation of this line  Write the equation of this line 	Vertical lines have the form 'x = n' where n is the value where the line crosses the x axis. e.g. this line is x = 3. Horizontal lines have the form 'y = n' where n is the value where the line crosses the y axis. e.g. this line is y = 5.

A4.4 Find the equation of a line by considering the coordinates e.g. Find the equation of  Find the equation of this line 	Select a set of coordinates from the line and compare the x and y values. Use these to determine the equation of the line. e.g. from this line you can get the coordinates (-2,-2), (-1, -2), (0, -2), (1,-2), (2,-2) In all of these the y coordinate is -2 so the equation of the line is y = -2. From this line you can get the coordinates (-2,-3), (-1, -1), (0,1), (1,3) In all of these the y coordinate is found by multiplying the x coordinate by 2 and adding 1. So the equation of the line is y = 2x + 1.

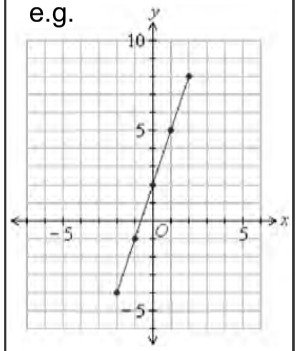
A4: Graphs 1

Identify the intercept of a graph

Calculate the gradient of a linear graph

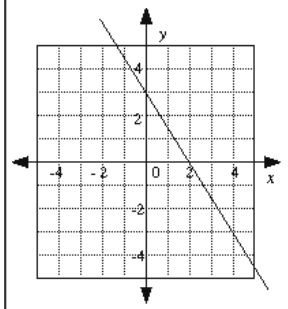
A4.5
Identify the intercept of a graph

e.g.



The intercept of a graph is the value where the line crosses the y axis

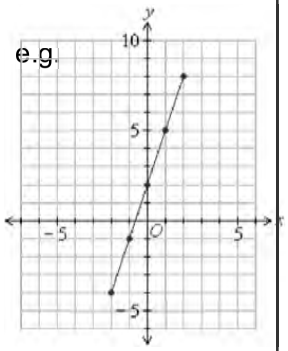
e.g.
this line crosses the y axis at 2, so the intercept of the graph is 2.



This line crosses the y axis at 3, so the intercept of the graph is 3.

A4.6
Calculate the gradient of a linear graph

e.g.

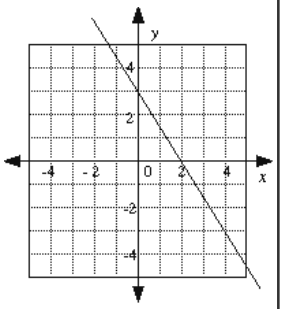


Identify the coordinates of two points on the graph. The gradient is calculated using the formula

Gradient = $\frac{Change\ in\ y\ coordinates}{Change\ in\ x\ coordinates}$

e.g. from this line you can get the coordinates (2,7) and (1,5).

Gradient = $\frac{7-5}{2-1} = \frac{2}{1} = 2$.



From this line you can get the coordinates (0,3) and (2,0).

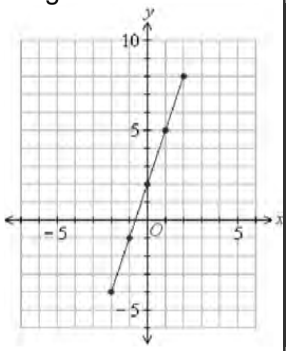
Gradient = $\frac{3-0}{0-2} = \frac{3}{-2}$ = -1.5.

A4: Graphs 1

Calculate the gradient of a line segment between two points

Construct the equation of a line

A4.7 Calculate the gradient of a line segment between two points e.g. Find the gradient of the line segment between the points (0,3) and (2,9) Find the gradient of the line segment between the points (2,7) and (5,1)	The gradient is calculated using the formula Gradient = $\frac{Change\ in\ y\ coordinates}{Change\ in\ x\ coordinates}$ e.g. Gradient = $\frac{9-3}{2-0} = \frac{6}{2} = 3.$ Gradient = $\frac{7-1}{2-5} = \frac{6}{-3} = -2.$

A4.8 Construct the equation of a line e.g.  	The equation of a straight line is given by y = mx + c. m is the gradient. c is the intercept. e.g. Gradient = $\frac{5-2}{1-0} = \frac{3}{1} = 3.$ Intercept = 2. y = mx + c. y = 3x + 2.
A4.9 Find the gradient of a line parallel to a given line e.g. Find a line parallel to y = 3x - 1	Parallel lines have the same gradient. Give the equation of a line with same gradient. The intercept can be any value. e.g. Any line with a gradient of 3 y = 3x y = 3x +6

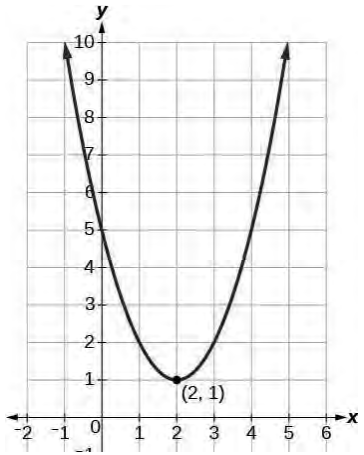
A4: Graphs 1

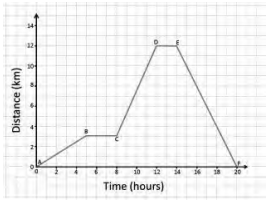
Plot a quadratic Graph

Plot and Use Distance Time Graphs

A4.11 Plot a quadratic graph e.g. Plot the graph of $y = x^2 - 4x + 5$	Draw a table of values by substituting values of x into the formula. Plot the points in pencil. Join the points with a ruler and pencil. They should be in a smooth curve e.g. $y = x^2 - 4x + 5$

x	-1	0	1	2	3	4	5
y	10	5	2	1	2	5	10

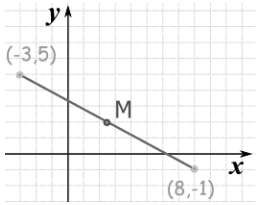


A4.12 Plot and use distance time graphs  From the graph explain what happens between: A and B; B and C; E and F. Where is the speed the greatest?	Plot distance on the vertical axis. Plot time on the horizontal axis. Speed is calculated using Speed = $\frac{Distance\ Travelled}{Time\ taken}$. e.g. Between A and B, 3 km are travelled in 5 hours. Between B and C, no distance is travelled during the 3 hour period. Between E and F, 12 km are travelled in 6 hours. The greatest speed occurs where the line is the steepest. This between C and D. You can also calculate speed: A to B 3 ÷ 5 = 0.6 km per hour; C to D 9 ÷ 4 = 2.25 km per hour; E to F 12 ÷ 6 = 2 km per hour;

A4: Graphs 1

Find the coordinates of the midpoint of a line segment

Find the equation of a line passing through a given point, parallel to a given line

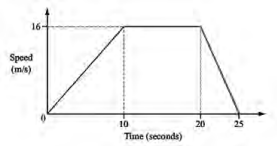
A4.13 Find the coordinates of the midpoint of a line segment e.g. Find the midpoint of this line segment  	Draw the line segment and identify the coordinates of the point at the halfway position. Alternatively, use the coordinates of the ends of the line segment. x coordinate of the midpoint is the mean average of the x coordinates of the end points, i.e. (-3 + 8) ÷ 2 = 2.5. y coordinate of the midpoint is the mean average of the y coordinates of the end points, i.e. (5 + -1) ÷ 2 = 2.

A4.14 Find the equation of a line passing through a given point, parallel to a given line e.g. Find the equation of the line parallel to $y = 3x - 1$ that passes through the point (2, 7)	If the lines are parallel, the gradient is the same for both. Use $y = mx + c$. e.g. Gradient = 3. When x = 2, y = 7. $y = mx + c$. $7 = 3 \times 2 + c$ $c = 1$ $y = 3x + 1$.

A4: Graphs 1

Plot and use speed time graphs

Find the gradient of a line perpendicular to another line

A4.15 Plot and use speed time graphs e.g.  From the graph explain what happens between: 0 and 10 seconds; 10 and 20 seconds; 20 and 25 seconds.	Plot speed on the vertical axis. Plot time on the horizontal axis. Acceleration is calculated using Acceleration = $\frac{Change\ in\ speed}{Time}$. e.g. Between 0 and 10 seconds, speed increased from 0 to 16 m/s in 10 seconds. Acceleration = 16 ÷ 10 = 1.6 m/s^2. Between 10 and 20 seconds, speed remains constant. Acceleration = 0 m/s^2. Between 20 and 25 seconds, speed decreased from 16 to 0 m/s in 10 seconds. Acceleration = -16 ÷ 5 = -3.2 m/s^2.

A4.16 Find the gradient of a line perpendicular to another line e.g. Find the gradient of a line perpendicular to the line y = 5x + 4 Find the gradient of a line perpendicular to the line y = -2x + 4	When two lines are perpendicular, the product of their gradients is -1. Find the gradient of the given line. Find the reciprocal and change the sign. This is the gradient of the perpendicular line. e.g. Gradient of y = 5x + 4 is 5. Negative reciprocal is -1/5 or -0.2. Gradient of perpendicular is -0.2. Gradient of y = -2x + 4 is -2. Negative reciprocal is ½ or 0.5. Gradient of perpendicular is ½.

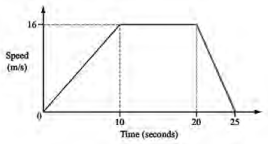
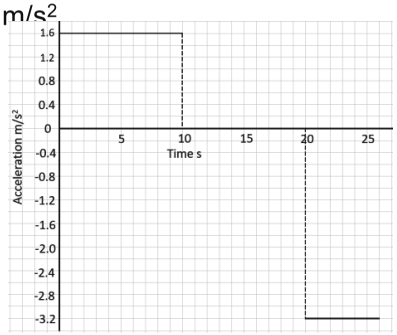
A4: Graphs 1

Find the equation of a line passing through a given point, perpendicular to a given line

Find the equation of a perpendicular bisector to a line segment

Plot and use acceleration time graphs

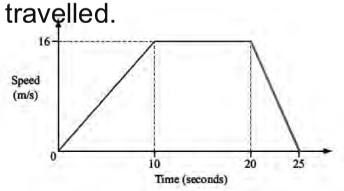
A4,17 Find the equation of a line passing through a given point, perpendicular to a given line e.g. Find the equation of the line perpendicular to y = ½ x + 3 that passes through the point (2, 7)	If the lines are perpendicular, the product of their gradients is -1. Use y = mx + c. e.g. Gradient of given line = ½ . Gradient of perpendicular = -2. When x = 2, y = 7. y = mx + c. 7 = -2 x 2 + c c = 11 y = -2x + 11.
A4.18 Find the equation of a perpendicular bisector to a line segment e.g. Find the equation of the perpendicular bisector of the line segment joining the points (0, 7) and (4,5).	Find the gradient and midpoint of the line segment. Find the gradient of a line perpendicular to the line segment. Use y = mx + c. e.g. Gradient of line = $\frac{7-5}{0-4}$ = -½ . Gradient of perpendicular = 2. Midpoint of given line is (2, 6). y = mx + c. 6 = 2 x 2 + c c = 2 y = 2x + 2.

A4.19 Plot and use acceleration time graphs e.g. Plot an acceleration time graph for this speed time graph  	Plot acceleration on the vertical axis. Plot time on the horizontal axis. e.g. Between 0 and 10 seconds, acceleration = 16 ÷ 10 = 1.6 m/s^2. Between 10 and 20 seconds, acceleration = 0 m/s^2. Between 20 and 25 seconds, acceleration = -16 ÷ 5 = -3.2 m/s^2 

A4: Graphs 1

Relate gradient of a line or curve to rate of change

Relate the area under a speed time graph to distance

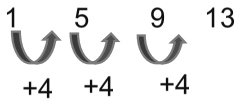
A4.20 Relate gradient of a line or curve to rate of change.	The gradient of a line gives the rate of change of the variables. On a distance time graph, it shows the rate of change of distance with respect to time, i.e. speed. On a speed time graph, it shows the rate of change of speed with respect to time, i.e. acceleration.
A4.21 Relate the area under a speed time graph to distance.	The area under a speed time graph gives the distance travelled.  In the example, the distance travelled in the first 10 seconds is the area of the triangle. Distance travelled = (16 x 10) ÷ 2 = 80m.

A5: Sequences

Continue a sequence using a term to term rule
Generate a linear sequence using a term to term rule
Generate e linear sequence using nth term
Find the nth term of a linear sequence

A5.1
Continue a sequence using a term to term rule

1 5 9 13
This is the start of a sequence.
Each individual digit is called a term.
Using a term to term rule carry on the sequence.
What are the next two numbers of this sequence?

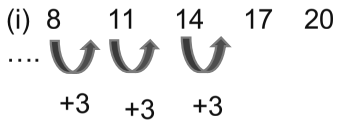


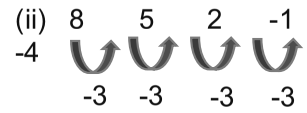
Term to term rule = +4
The sequence can be carried On by adding 4.
The next two numbers are 17 and 21

A5.2
Generate a linear sequence using term to term rule

(i) A sequence has a starting term of 8 and a term to term rule of +3. Generate the sequence

(ii) A sequence has a starting term of 8 and a term to term rule of -3. Generate the sequence





A5.3
Generate a linear sequence using nth term

If the nth term of a sequence is **5n+1** what are the 1st, 2nd and 3rd terms of the sequence?

Replace n by each of the numbers 1, 2 and 3 in turn.

If the nth term is **5n+1**
1st term (n=1) = 5 x **1** + 1 = 6
2nd term (n=2) = 5 x **2** + 1 = 11
3rd term (n=3) = 5 x **3** + 1 = 16
The sequence begins 6, 11, 16
The terms have a difference of 5 which matches the 5n in the formula.

A5.4
Find the nth term of a linear sequence

The position to term rule allows us to write a rule for any term in the sequence from its position.

Find the nth term for the sequence 4, 10, 16, 22

Position	1	2	3	4
Term	4	10	16	22

+6

+6 means that the rule for this sequence contains 6n.
1 x 6 – 2 =4
2 x 6 – 2 = 10
3 x 6 – 2 = 16
Term = position x 6 – 2
Term = n x 6 – 2
nth term = 6n - 2

A5: Sequences

Continue sequence of square numbers
Continue sequence of cube numbers
Relate sequences to patterns
Plot a linear graph from a sequence or formula

A5.5
Continue sequence of square numbers

A square number is obtained by multiplying a number by itself e.g. 1 x 1 = 1
2 x 2 = 4

1, 4, 9, 16, 25
is the start of a sequence of square numbers.
How can this sequence be continued?

1 4 9 16 25

+3 +5 +7 +9

+2 +2 +2

The first line of differences is the set of odd numbers beginning with 3.
The second line of differences is a constant 2.
Each term is the square of its term number.

A5.6
Continue sequence of cube numbers

A cube number is obtained by multiplying a number by itself three times e.g. 1 x 1 x 1 = 1
2 x 2 x 2 = 8

1, 8, 27, 64, 125
is the start of a sequence of cube numbers.
How can this sequence be continued?

1 8 27 64 125

+7 +19 +37 +61

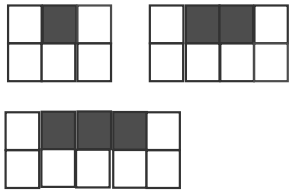
+12 +18 +24

+6 +6

If we calculate the first line of differences and continue with the second we find that the third line of differences is a constant 6.
Each term is the cube of its term number.

A5.7
Relate sequences to patterns

This is a sequence of diagrams showing black tiles *b* and white tiles *w.*
How many white tiles are there when there are 8 black tiles?



Find a formula for w in terms of b

b	1	2	3
W	5	6	7

Using the rule for sequences w = b + 4

Therefore when b = 8
w = 8 + 4
w = 12

A5.8
Plot a linear graph from a sequence or formula

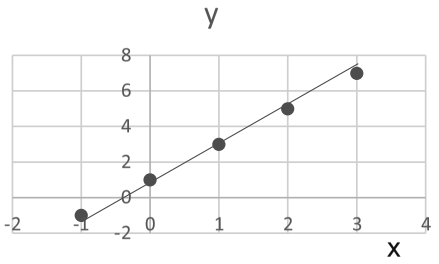
Plot the graph of the formula
y = 2x + 1

First make a table of values +
y = 2 x -1 + 1 = -1
y = 2 x 0 + 1 = 1 etc

Y = 2x + 1

x	-1	0	1	2	3
y	-1	1	3	5	7

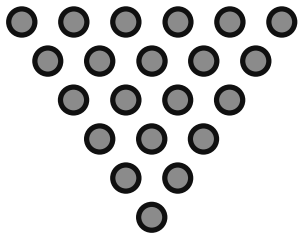
Now plot x and y values as co-ordinate points and join with a straight line.



A5: Sequences

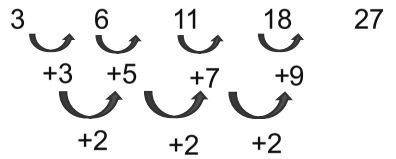
Recognise and continue sequence of triangular numbers

Recognise and continue Fibonacci type sequences

A5.9 Recognise and continue sequence of triangular numbers 	1, 3, 6, 10, 15, …. is the start of the sequence of triangular numbers. The difference between the terms is +2, +3, +4, +5 and this can be used to continue the sequence. The 1st row of the triangle is 1, the 1st triangle number. Adding the 1st + 2nd rows of the triangle gives 1 + 2= 3 which is the 2nd triangle number Adding the 1st+2nd+3rd rows gives 1 + 2 + 3 = 6 which is the 3rd triangle number and so on.
A5.10 Recognise and continue Fibonacci type sequences 0, 1, 1, 2, 3, 5, 8, 13, … This is the Fibonacci sequence. How can this sequence be continued?	To continue the Fibonacci sequence add each term to the previous term to generate the next one e.g. 0 + 1 = 1 1 + 1 = 2 1 + 2 = 3 2 + 3 = 5 3 + 5 = 8 5 + 8 = 13 8 + 13 = 21 which is the next term in the sequence.

Identify arithmetic and geometric type sequences

Identify a quadratic sequence

A5.11 Identify arithmetic and geometric type sequences In an **Arithmetic sequence** the same amount (common difference) is added on to each term to continue the sequence. In a **Geometric sequence** every term is multiplied by the same amount (common ratio) to continue the sequence.	Are the following arithmetic or geometric sequences? (i) 2, 6, 18, 54, …. (ii) 5, 8, 11, 14, 17 ….. (iii) 256, 128, 64, 32, …… (iv) 42, 38, 34, 30, 26, ….. (i) Geometric: common ratio x3 (ii) Arithmetic: common difference +3 (iii) Geometric: common ratio x 0.5 (iv) Arithmetic: common difference (v) -4
A5.12 Identify a quadratic sequence 3 6 11 18 27 This sequence does not have a common difference on the first line of Differences so we continue to the second row of differences.	 The 1st row of differences has a common difference of 2 so this is a quadratic sequence.

A5: Sequences

Use the nth term to write a quadratic sequence

A5.13 Use the nth term to write a quadratic sequence A **quadratic** sequence always contains a squared term. The nth term of a quadratic sequence is $2n^2 + n + 1$. Write down the first 5 terms of this sequence.	$2n^2 + n + 1.$ $2 \times 1^2 + 1 + 1 = 4$ $2 \times 2^2 + 2 + 1 = 11$ $2 \times 3^2 + 3 + 1 = 22$ $2 \times 4^2 + 4 + 1 = 37$ $2 \times 5^2 + 5 + 1 = 56$ So the sequence is 4, 11, 22, 37, 56 ....
A5.14 Find the nth term of a quadratic sequence Find the nth term of the sequence 4, 13, 26, 43, 64 If the 2nd line of differences is 2 rule is n^2 is 4 rule is $2n^2$ is 6 rule is $3n^2$ is 8 rule is $4n^2$	4 13 26 43 64 +9 +13 +17 +21 +4 +4 +4 The 2nd line of differences is 4 so the rule contains $2n^2$ Term no: 1 2 3 4 Term: 4 13 26 43 $2n^2$: 2 8 18 32 Subtract: 2 5 8 11 This sequence has a rule 3n-1 so the whole rule is $2n^2 + 3n - 1$

A6: Graphs 2

Plot a graph of a cubic function

Identify and plot a reciprocal graph

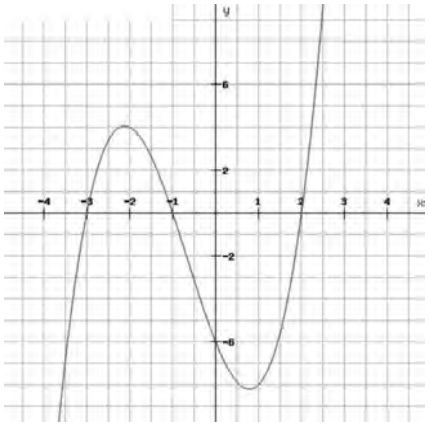
A6.1
Plot a graph of a cubic function

e.g.
Plot the graph of
$y = x^3 + 2x^2 - 5x - 6$.

Draw a table of values by substituting values of x into the formula.
Plot the points in pencil.
Join the points with a ruler and pencil.
They should be in a smooth curve

e.g. $y = x^3 + 2x^2 - 5x - 6$.

x	-3	-2	-1	0	1	2
y	0	4	0	-6	-8	0



A6.2

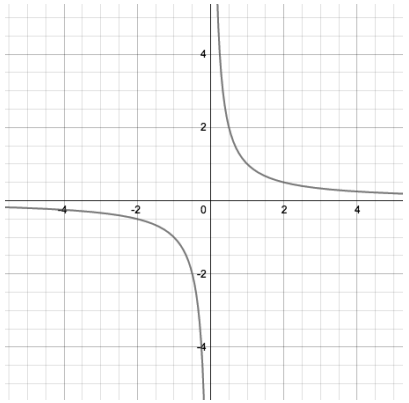
Identify and plot a reciprocal graph

e.g.
Plot the graph of
$y = \frac{1}{x}$.

Draw a table of values by substituting values of x into the formula.
Plot the points in pencil.
Join the points with a ruler and pencil.
They should be in smooth curves as in the example, $y = \frac{1}{x}$.

The axes are asymptotes.

x	-4	-2	-1	-0.5	0.5	1	2	4
y	-0.25	-0.5	-1	-2	2	1	0.5	0.25



A6: Graphs 2

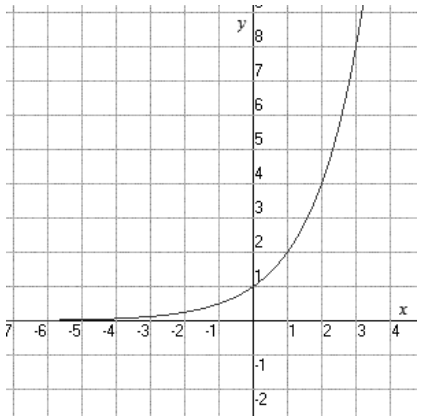
Identify and plot a exponential graph

Know the graph of sine

Know the graph of cosine

A6.3 Identify and plot an exponential graph e.g. Plot the graph of $y = 2^x$.	Draw a table of values by substituting values of x into the formula. Plot the points in pencil. Join the points with a ruler and pencil. They should be in a smooth curve e.g. $y = 2^x$.

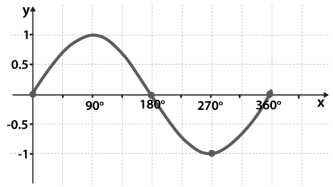
x	-3	-2	-1	0	1	2	3
y	1/8	¼	½	1	2	4	8



A6.4 Know the graph of sine	For the Sine function between 0 and 360°, the main values are

x	0	90	180	270	360
y	0	1	0	-1	0

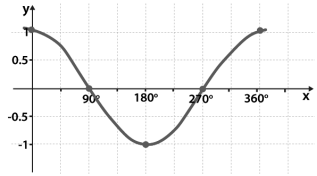
giving this curve



Know the graph of cosine	For the Cosine function between 0 and 360°, the main values are

x	0	90	180	270	360
y	1	0	-1	0	1

giving this curve



A6: Graphs 2

Know the graph of tangent

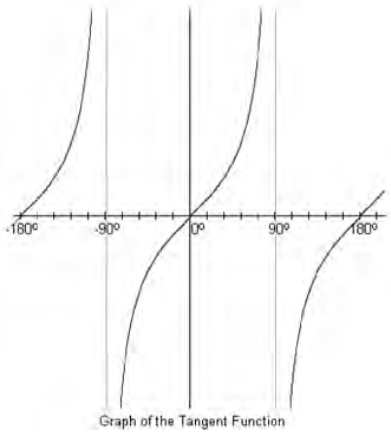
Translate a graph f(x+a) and f(x) +a

A6.5
Know the graph of tangent

For the Tangent function between -180° and 180°, the main values are

x	-180	-135	-45	0	45	135	180
y	0	1	-1	0	1	-1	0

There are asymptotes at -90° and 90°.
The graph of tangent is

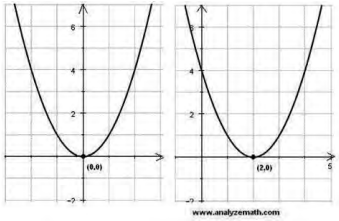


Graph of the Tangent Function

A6.6
Translate a graph f(x + a) and f(x) + a

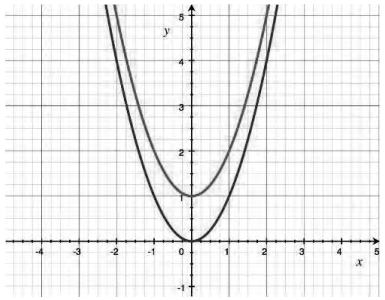
e.g. y = f(x – 2)

y = f(x + a).
Translates the graph (-a) steps along the x-axis.
e.g. y = f(x – 2) translates y = f(x)
2 units along the x axis, to the left.



y = f(x) + 1

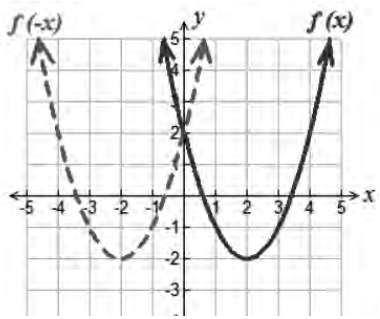
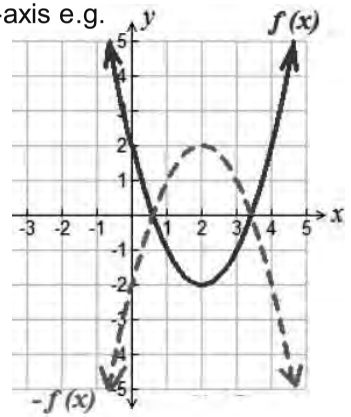
y = f(x) + a.
Translate the graph a steps along the y-axis.
e.g. y = f(x) + 1 translates y = f(x)
1 unit up along the y=axis.

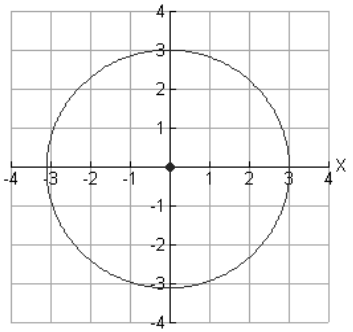


A6: Graphs 2

Reflect a graph f(-x) and –f(x)

Know and plot the graph of a circle

A6.7 Reflect a graph f(-x) and -f(x) e.g. y = f(-x) y = -f(x)	**y = f(-x).** Reflects the graph of f(x) in the y-axis e.g.  **y = -f(x).** Reflects the graph of f(x) in the x-axis e.g. 

A6.8 Know and plot the graph of a circle e.g. plot the graph of the circle $x^2 + y^2 = 9$.	The graph of a circle is of the form: $x^2 + y^2 = r^2$ where r is the radius and the centre is (0,0). e.g. $x^2 + y^2 = 9$ $x^2 + y^2 = 3^2$ This a circle of radius 3 and centre (0,0). 

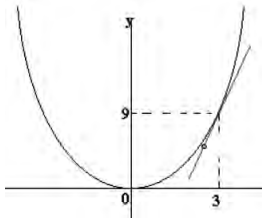
A6: Graphs 2

Estimate the gradient of a curve using a tangent

Estimate the area under a curve using trapezia

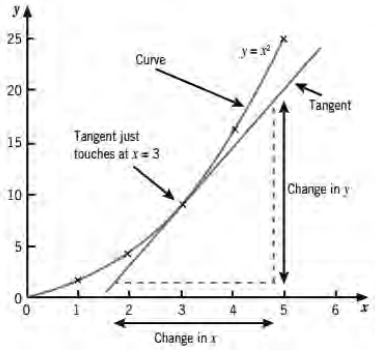
A6.9
Estimate the gradient of a curve using a tangent

Find the gradient of the curve $y = x^2$ at the point (3, 9).



To estimate the gradient of a curve at a given point, draw a tangent to the curve at that point.
Find the gradient of the tangent.

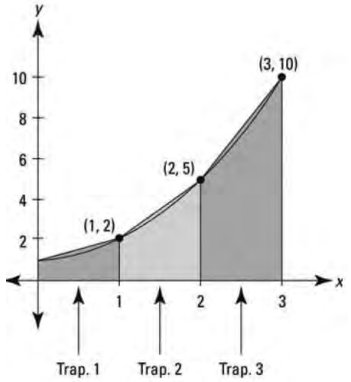
e.g. estimate the gradient of the curve $y = x^2$ at the point (3,9).



A6.10
Estimate the area under a curve using trapezia

e.g.
estimate the are under the curve
$y = x^2 + 1$ between
$x = 0$ and $x = 3$.

Divide the area under the curve into trapezia of equal width.
More accuracy is gained by using more trapezia.

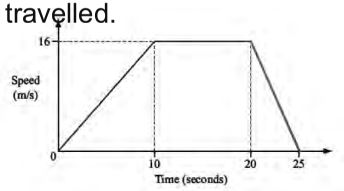


Calculate the area of each trapezium and add them for the area under the curve.
Trap 1: ½ (1 + 2)1 = 1.5 square unit.
Trap 2: ½ (2 + 5)1 = 3.5 square units.
Trap 3: ½ (5 + 10)1 = 7.5 square units.
Area
= 1.5 + 3.5 + 7.5
= 12.5 square units.

A6: Graphs 2

Relate gradient of a line or curve to rate of change

Relate the area under a speed time graph to distance

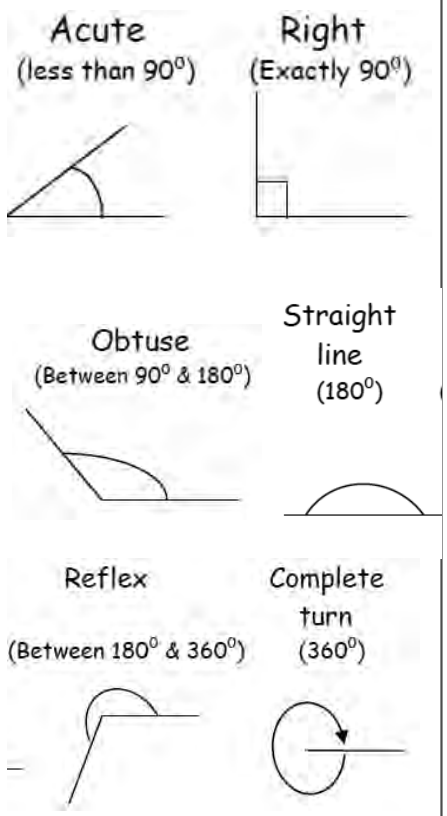
A6.11 Relate gradient of a line or curve to rate of change.	The gradient of a line gives the rate of change of the variables. On a distance time graph, it shows the rate of change of distance with respect to time, i.e. speed. On a speed time graph, it shows the rate of change of speed with respect to time, i.e. acceleration.
A6.12 Relate the area under a speed time graph to distance.	The area under a speed time graph gives the distance travelled.  In the example, the distance travelled in the first 10 seconds is the area of the triangle. Distance travelled = (16 x 10) ÷ 2 = 80m.

G1: Angles, Similarity and Congruency

Identifying types of angle

Drawing an angle

G1.1
Identifying types of angle



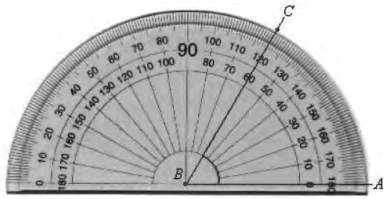
G1.2

Drawing an angle

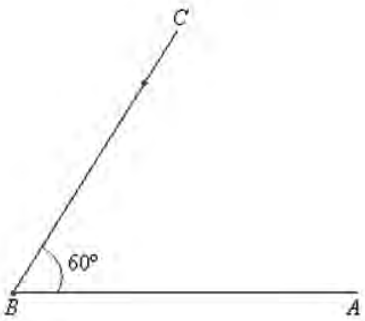
e.g. Draw an angle of 60°

Draw a straight line

Place your protractor on either end of the line and using the appropriate scale find 60 degrees and put a



Join the end of the line you measured from and the dot you drew.



A6: Graphs 2

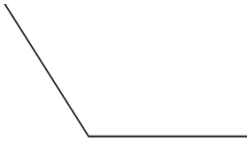
Measuring angles

Know and use angles on a straight line

G1.2

Measuring angles

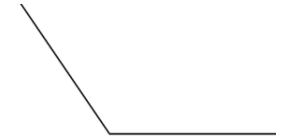
e.g. measure the following angle.

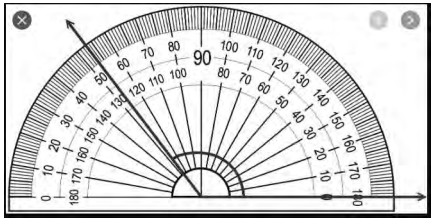


Place the midpoint of the protractor on the VERTEX of the **angle**.

Line up one side of the **angle** with the zero line of the protractor (where you see the number 0).

Read the degrees where the other side crosses the number scale.





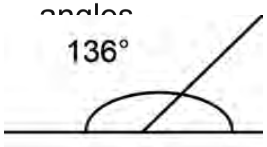
= 126°

G1.3

Know and use angles on a straight line.

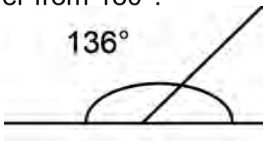
e.g.

Find the missing angles



Angles on a straight line add up to 180°

Find the total of the given angles and subtract your answer from 180°.



180 - 136 = 44°

124 + 42 = 166

180 – 166 = 14°

A6: Graphs 2

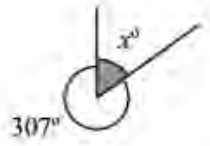
Know and use angle sums of a point

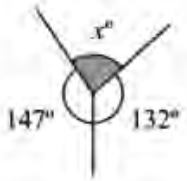
Know and use the corresponding angle rule

G1.4

Know and use angle sums at a point

e.g. Find the missing angles

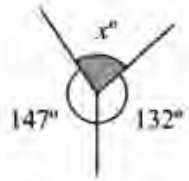




Angles at a point add up to 360°

Find the total of the given angles and subtract your answ

360 – 307 = 53°

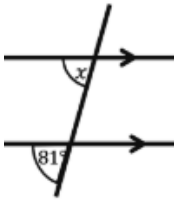


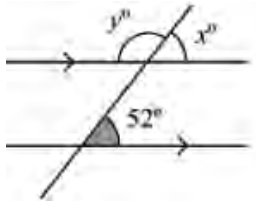
147 + 132 = 279
360 – 279 = 81°

G1.5

Know and use the correspondin g angle rule

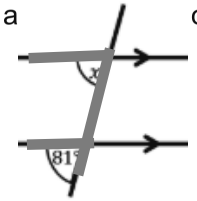
e.g. find the x in each of the following questions



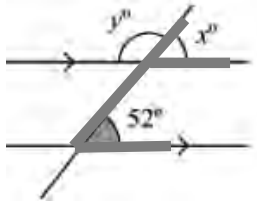


Corresponding angles are equal.

You need to be able to join the angles with an **F** shape. It can be a of an **F**.



X = 81°



X = 52°

A6: Graphs 2

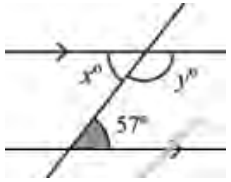
Know and use the alternate angle rule

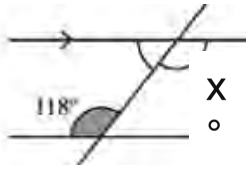
Know and use the vertically opposite angle rule

G1.6

Know and use the alternate angle rule

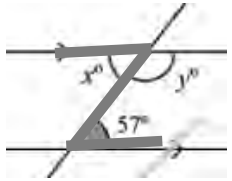
e.g. Find the x in the following questions



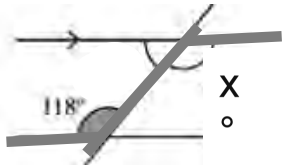


Alternate angles are equal.

You need to be able to join the angles with an **Z** shape. It can be any orientation of an **Z.**



X = 57°

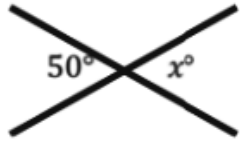


X = 118°

G1.7

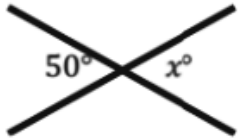
Know and use the vertically opposite angle rule

e.g. Find the missing angle in each of these

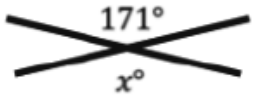


Vertically opposite angles are equal.

The **angles opposite** each other when two lines cross. They are always equal.



X = 50°



X = 171°

A6: Graphs 2

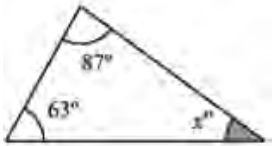
Know and use the interior angles in a triangle

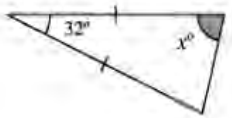
Know and use the sum of interior angles in a quadrilateral

G1.8

Know and use the sum of interior angles in a triangle

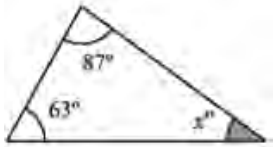
e.g. Calculate the missing angle in each of the folllowing questions.



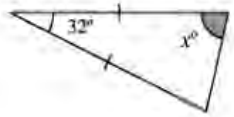


Angles in a triangle add up to 180°

Find the total of the given angles and subtract your answer from 180°.



63 + 87 = 150
180 – 150 = 30°

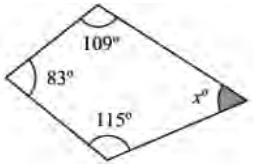


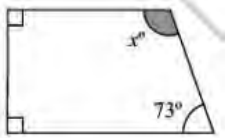
This is a special triangle called an Isosceles triangle. In an Isosceles triangle the base angles are equal. We still take the given angles away from 180, but we halve the answer afterward.
180 – 32 = 148
148 ÷ 2 = 74°

G1.9

Know and use the sum of interior angles in a quadrilateral

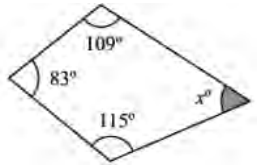
e.g. Calculate the missing angle in each of the folllowing questions.



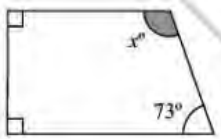


Angles in a quadrilateral add up to 360°

Find the total of the given angles and subtract your answer from 360°.



109 + 83 + 115 = 307
360 – 307 = 53°



73 + 90 + 90 = 253
360 – 253 = 107°

A6: Graphs 2

Know and use the sum of internal angles of a polygon

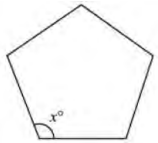
Identify congruent shape using the simple definition of congruency

G1. 10

Know and use the sum of internal angles of a polygon

e.g.

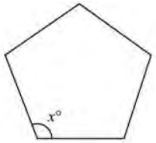
Calculate the sum of internal angles of the following shape.



Calculate the sum of interior angles in a Hexagon

A **polygon** is a 2d shape formed by straight lines. The formula for finding the sum of the **measure** of the **interior angles** is (n - 2) x 180.

n represents the number of sides the shape has.



(5 – 2) x 180 = 540°

Calculate the sum of interior angles in a Hexagon

A hexagon has 6 sides.

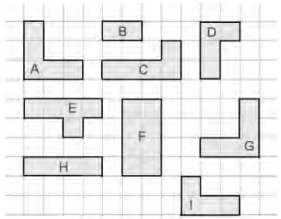
(6 – 2) x 180 = 720°

G1. 11

Identify congruent shapes using the simple definition of congruency.

e.g.

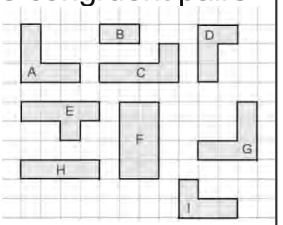
List all the congruent pairs of shapes.



Congruent shapes have the same size and **shape**. This means that the sides and segments of two **shapes** have the same length. And, the angles possess the same measurements

If one shape can be made from another using Rotations, Reflections, or Translations then the shapes are Congruent.

e.g. List the congruent pairs of shapes.



A and G
D and I

A6: Graphs 2

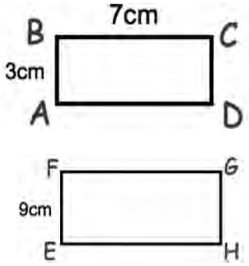
Use similarity to find missing lengths

Know and use the sum of external angles of a regular polygon

G1. 12

Use similarity to find missing lengths.

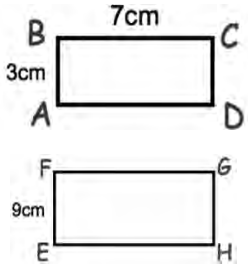
e.g. Rectangle ABCD and EFGH are mathematically similar.



Calculate the length of FG

When two shapes are **similar**, the ratios of the lengths of their corresponding sides are equal. Similar shapes are enlargements of each other.

e.g.



Rectangle ABCD and EFGH are mathematically simil ar. Calculate the length of FG.

The scale factor to get from 3cm to 9cm is 3. Which means you must multiply the other sides by 3 also.

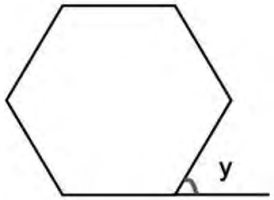
Therefore 7 x 3 = 21cm

FG=21cm

G1. 13

Know and use the sum of external angles of a regular polygon

e.g.

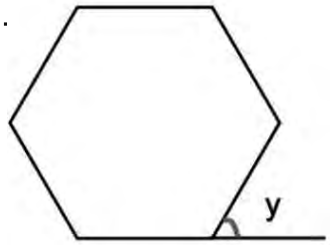


Calculate the size of angle y

The sum of **exterior angles of any polygon** is 360°. The formula for calculating the size of an **exterior angle of a regular polygon** is:

exterior angle of a regular polygon = 360 ÷ number of sides.

e.



y= 360 ÷ 6 = 60°

A6: Graphs 2

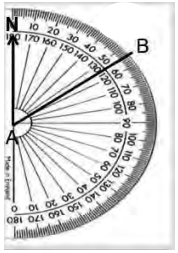
Read a bearing

Draw a bearing

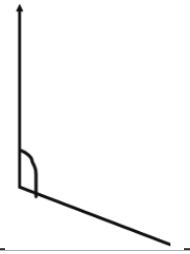
G1. 14

Read a bearing

e.g. Measure the bearing from A to B



Measure the following bearing



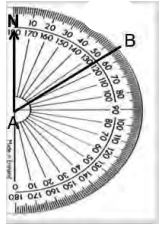
A **bearing** is used to represent the direction of one point relative to another point

There are 3 rules to follow when measuring a bearing:

- Measure from north
- Measure clockwise
- Writing using 3 digits

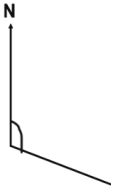
e.g. Measure the bearing from A to B.

= 054°



Measure the following bearing

= 110°



G1. 15

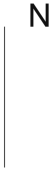
Draw a bearing

e.g. Draw a bearing of 130°

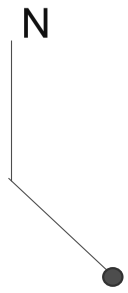
A **bearing** is used to represent the direction of one point relative to another point.

To draw a bearing of 130° you need to;

- Draw a North line



- Measure 130° from the north line and join.

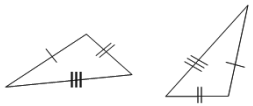


A6: Graphs 2

Prove Congruency using ASA SAS SSS and RHS

Use similarity to find missing areas

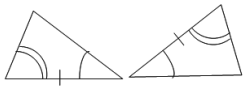
G1. 16
Prove congruency using ASA,SAS,SSS and RHS



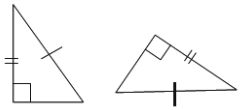
Congruent shapes have the same size and shape.
One will fit exactly over the other.
2 triangles are congruent if any of these 4 conditions are satisfied on each triangle.

The corresponding sides are equal, SSS

2 sides and the included angle are equal, SAS



2 angles and the included side are equal, ASA

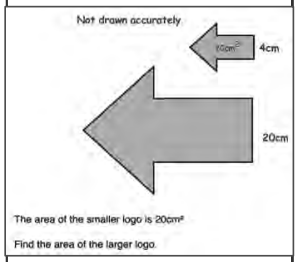


Both triangles are right angled, the hypotenuses are the same length and another pair of sides are equal, RHS.

G1. 17

Use similarity to find missing areas

e.g. find the missing area



Similar figures are identical in shape, but not necessarily in size. A missing length, area or volume on a reduction/enlargement figure can be calculated by first finding the scale factor.

We already know that if two shapes are similar their corresponding sides are in the same ratio and their corresponding angles are equal.
When calculating a missing area, we need to calculate the Area Scale Factor.

Area Scale Factor (ASF) = (Linear Scale Factor)^2

Area Scale Factor (ASF) = 5^2

Area scale factor = 25

So the area of the new shape is;

area of old shape x area scale factor

= 20 x 25
= 500cm^2

A6: Graphs 2

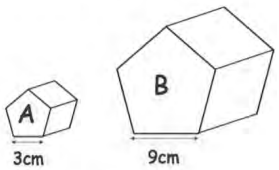
Use similarity to find missing volumes

G1. 19

Use similarity to find missing volumes

e.g. Calculate the missing volume

Below are two similar pentagonal prisms.



The volume of prism A is 15cm³
Work out the volume of prism B.

Similar figures are identical in shape, but not necessarily in size. A missing length, area or volume on a reduction/enlargement figure can be calculated by first finding the scale factor.

We already know that if two shapes are similar their corresponding sides are in the same ratio and their corresponding angles are equal.

When calculating a missing volume, we need to calculate the Volume Scale Factor.
Volume Scale Factor (VSF) = (Linear Scale Factor)^3

Volume Scale Factor (VSF) = 3^3

VSF = 27

So the volume of the new shape is;

Volume of old shape
x
Volume scale factor

15 x 27 = 405cm^3

G2: 2D Shapes

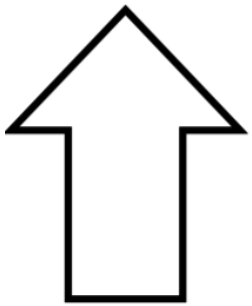
Identify Line Symmetry

Identify Rotational Symmetry

G2.1

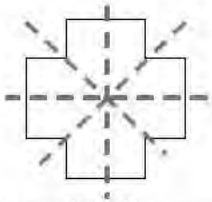
Identify line symmetry

e.g.
Draw the lines of symmetry on the following shape.



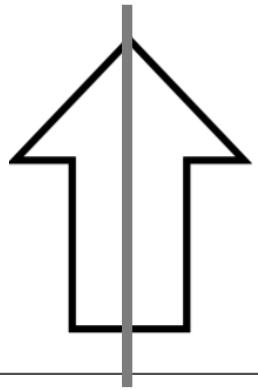
- Order of Line Symmetry

this is the number of times a shape can be folded so that one side falls exactly onto the other side



This shape has line symmetry ORDER 4

e.g. Draw the lines of symmetry on the following shape

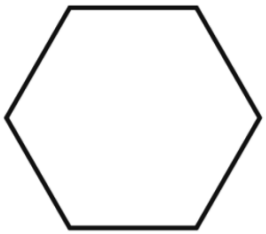


G2.2

Identify rotational symmetry

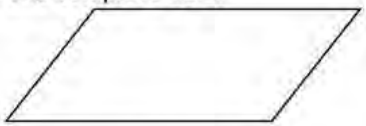
e.g.

State the order of rotational symmetry of the following shape (regular hexagon)



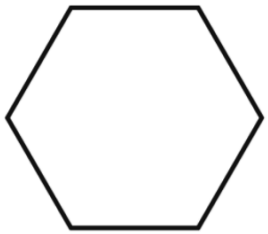
- Order of Rotational Symmetry

this is the number of times a shape falls into its outline in one complete turn



A parallelogram has rotational symmetry order 2

e.g. State the order of rotational symmetry of the following shape (regular hexagon)



Rotational symmetry order 6

G2: 2D Shapes

Reflect a Shape

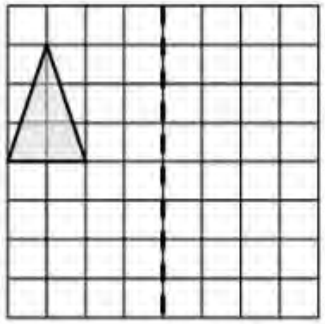
Describe a reflection

G2.3

Reflect a shape

e.g.

Reflect the shape in the given mirror line



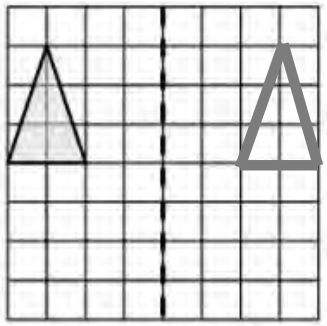
A shape can be **reflected** across a line of reflection to create an image.

The line of reflection is also called the mirror line.

Reflection is an example of a **transformation**. A transformation is a way of changing the size or position of a shape.

Every point in the image is the same distance from the mirror line as the original shape.

e. g. Reflect the shape in the given mirror line

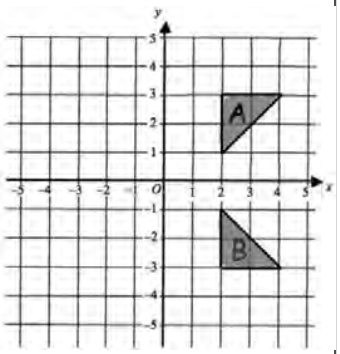


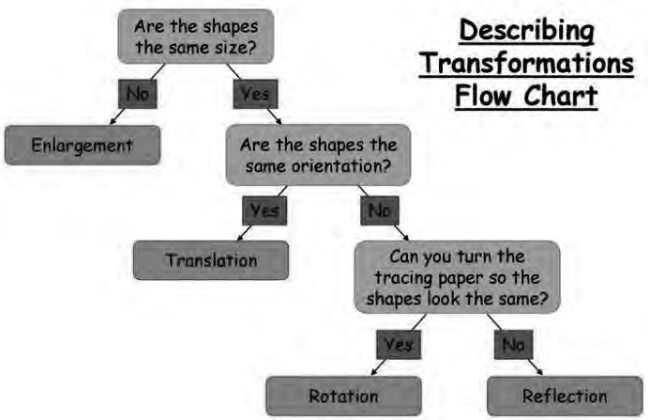
G2.4

Describe a reflection

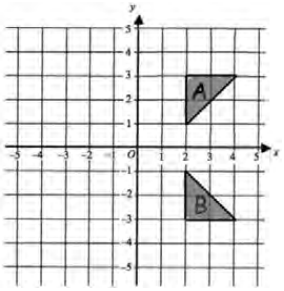
e.g.

Describe fully the single transformation that maps A onto B.





e.g. Describe fully the single transformation that maps A onto B.



Using the flow chart you can work out that it is a **reflection**, you then need to calculate where the mirror line is. To do this you need to find the line that is equidistant from each shape. In this case the mirror line is the **x-axis. So it is a reflection in the x-axis.**

G2: 2D Shapes

Rotate a shape

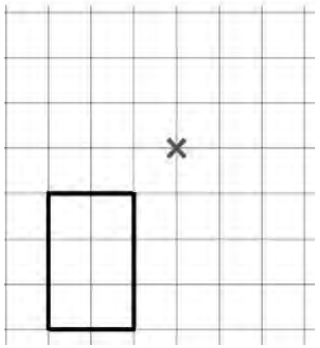
Describe a rotation

G2.5

Rotate a shape

e.g.

Rotate the following shape 90° clockwise

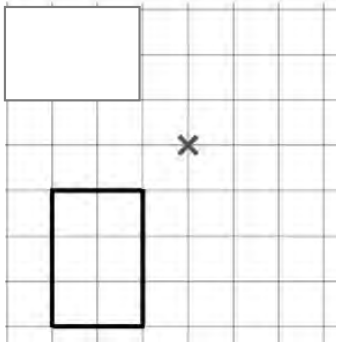


A **rotation** is a turn of a shape.

A rotation is described as the angle of **rotation**, and the direction of the turn.

- 90° is a quarter turn
- 180° is a half turn
- Clockwise is the same direction a clock turns
- The opposite to clockwise

e.g. Rotate the following shape 90° clockwise

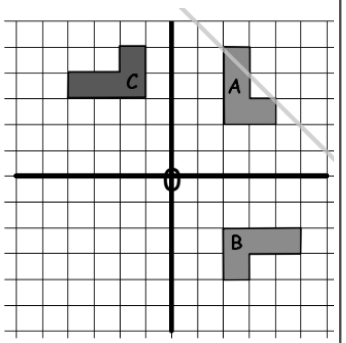


G2.6

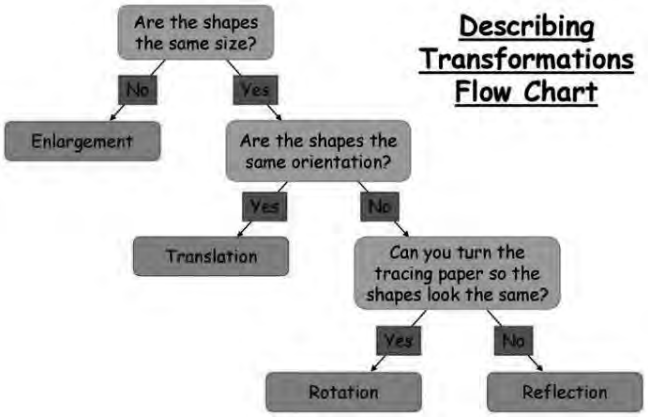
Describe a Rotation

e.g.

Describe the following transformation



A to B:
A to C:



Follow the flow diagram to see which of the transformations it is: Rotation

Calculate the angle and direction of rotation:

A to B: Rotation, 90° clockwise

A to C: Rotation 90° anti clockwise

G2: 2D Shapes

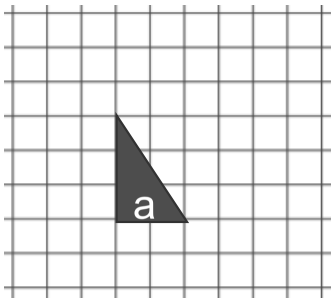
Translate a shape

Describe a translation

G2.7

Translate a shape

e.g. Translate the following shape 2 left and 1 up



A **translation** moves a shape up, down or from side to side but it does not change its appearance in any other way.

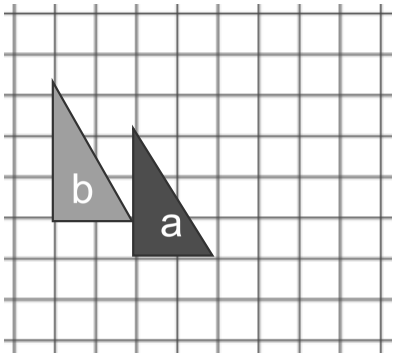
Translation is an example of a **transformation**. A transformation is a way of changing the size or position of a shape.

Every point in the shape is translated the same distance in the same direction.

You are given to instructions to move the shape;

- Left or right
- Up or down

Translate the following shape 2 left and 1 up

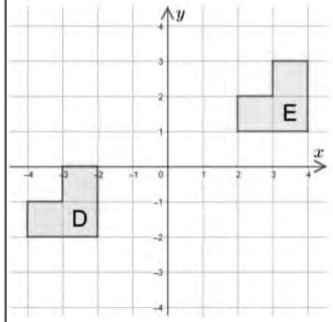


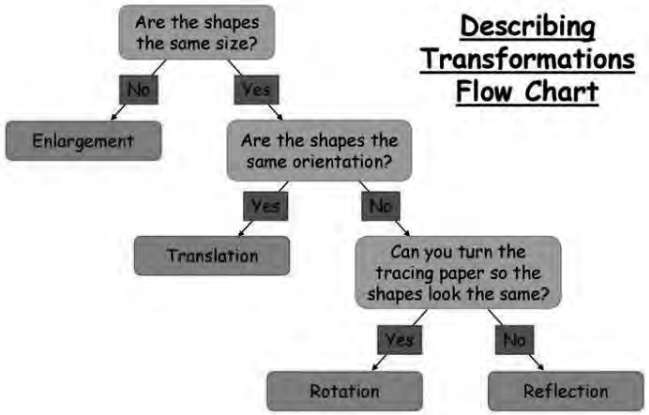
G2.8

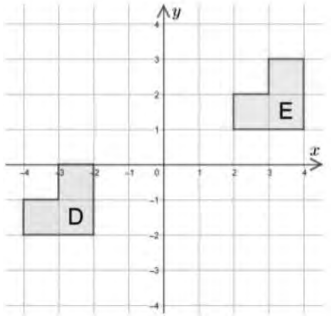
Describe a Translation

e.g.

Describe the following translation to map shape d to shape e.







e.g. describe the following translation to map shape d to shape e.

6 right and 3 up

G2: 2D Shapes

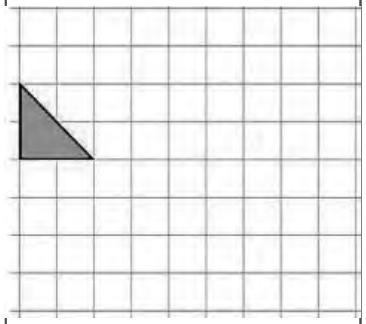
Enlarge a shape by an integer scale factor

Describe an enlargement by an integer scale factor

G2.9

Enlarge a shape by an integer scale factor

e.g. Enlarge the following shape by a scale factor of 2

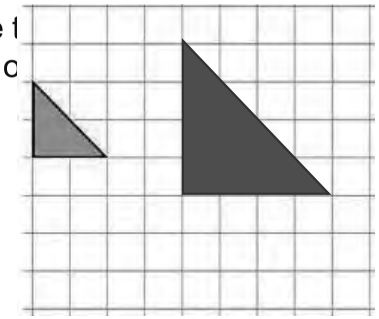


Enlarging a shape changes its size.

When enlarging a shape you need to know by how much. This is called the **scale factor**. For example, a **scale factor** of 2 means that you multiply each side of the shape by 2.

An enlargement with positive scale factor greater than 1 increases the size of the enlarged shape.

e.g. Enlarge t
scale factor o

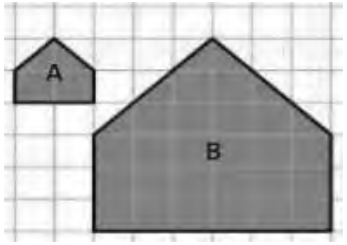


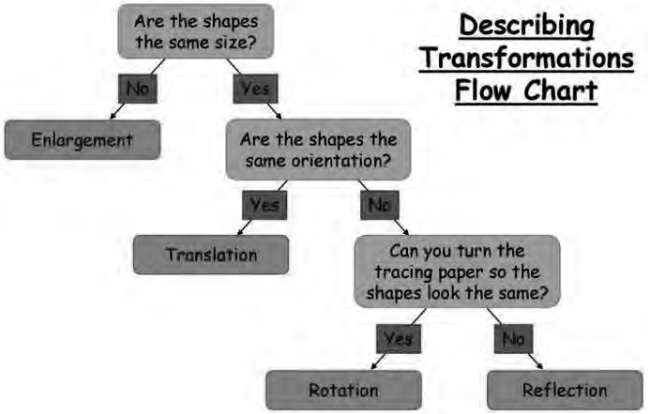
Multiply each of the sides of the shape by 2 and re-draw.

G2.10

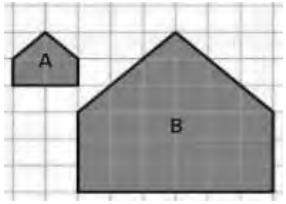
Describe an enlargement by an integer scale factor

e.g. Describe the following transformation that maps shape A to B.





e.g. Describe the following transformation that maps A to B



Follow the flow diagram to see which of the transformations it is. **Enlargement.**

To find the Scale Factor you see what each side has been multiplied by. In this case it's **3.**

The transformation is **Enlargement SF. 3.**

G2: 2D Shapes

Calculate the perimeter of a rectangle

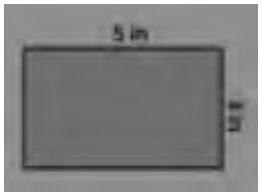
Calculate the area of a rectangle

G2.11

Calculate the perimeter of a rectangle

e.g.

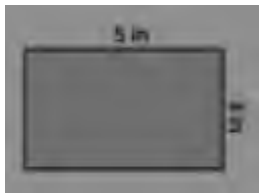
Calculate the perimeter of the following rectangle



The **perimeter** is the length of the outline of a shape. To find the **perimeter** of a rectangle or square you have to add the lengths of all the four sides

e.g.

Calculate the perimeter of the following rectangle

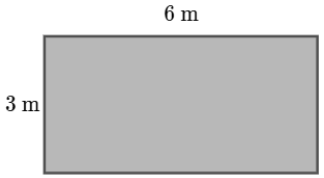


Perimeter = 5+5+3+3= 16in

G2.12

Calculate the area of a rectangle

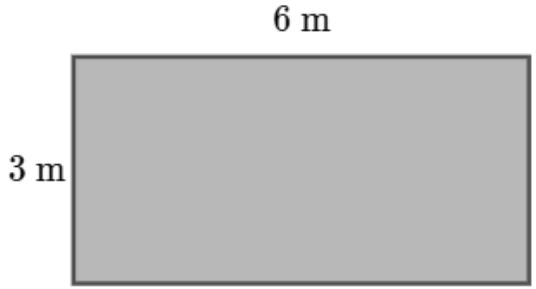
e.g. Calculate the area of the following rectangle



A shape's **area** is the number of square units it takes to completely fill it. In a rectangle you find it by multiplying the width by the height.

Formula: Width × Height

e.g. Calculate the area of the following rectangle



Area = width x height

Area = 6 x 3

Area = 18m²

G2: 2D Shapes

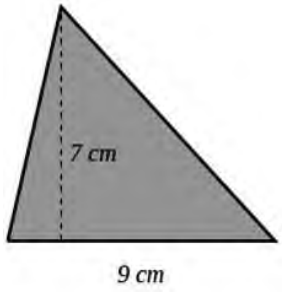
Calculate the area of a triangle Calculate the area of a parallelogram

G2.13

Calculate the area of a triangle

e.g.

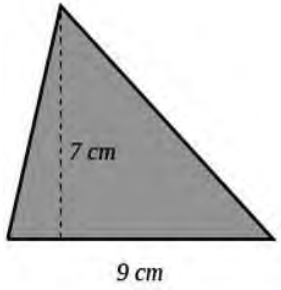
Calculate the area of the following triangle



A shapes **area** is the number of square units it takes to completely fill it. In a triangle you find it by multiplying the base by the height (perpendicular), then dividing your answer by 2.

Area of a triangle = $\frac{base\ X\ height}{2}$

e.g. Calculate the area of the following triangle



Area of triangle = $\frac{9\ X\ 7}{2}$

Area of triangle = $\frac{63}{2}$

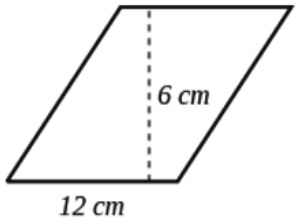
= 31.5cm²

G2.14

Calculate the area of a parallelogram

e.g.

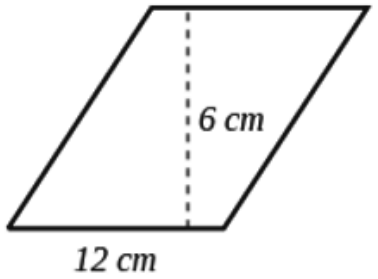
Calculate the area of the following parallelogram



A shapes **area** is the number of square units it takes to completely fill it. In a parallelogram you find it by multiplying the width by the height.

Area of a parallelogram = width x height

e.g. Calculate the area of the following parallelogram



Area of parallelogram = 12 x 6

Are of parallelogram = 72cm²

G2: 2D Shapes

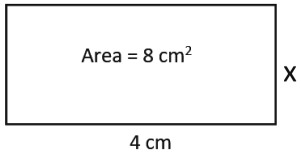
Calculate missing sides from areas
Read a timetable

G2.15

Calculate missing sides from areas

e.g.

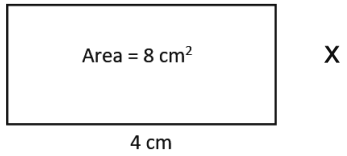
Calculate the missing side of the following shape.



To find missing lengths of rectangles you first need to remember the formula to find the area which is:

Area = width x length

What you need to do is rearrange the formula, so what you are looking for is the subject.



In this case you are looking for the length so you rearrange the formula to make it the subject.

Length = area ÷ width
Length = 8 ÷ 4
= 2cm

Shortcut:
With a rectangle or square you just divide the area by the side that you are given.

G2.16

Read a timetable

e.g. **Read & interpret timetables**

Station	Time of leaving
Peterborough	08 44
Huntingdon	09 01
St Neots	09 08
Sandy	09 15
Biggleswade	09 19
Arlesey	09 24

e.g. Time taken to travel from Peterbrough to Sandy

0844 0900 0915

16min + 15min = 31min

To read a timetable such as the one in the example, you look at the “time of leaving” column. This states the time that the particular mode of transport leaves that particular place.

G2: 2D Shapes

Use Metric measures of length

Convert metric units of length

G2.17

Use metric measures of length

We can measure how long things are, or how tall, or how far apart they are. Those are all examples of length measurements.

Small units of length are called **millimetres**.
A **millimetre** is about the thickness of a plastic id card (or credit card).

When we have 10 millimetres, it can be called a **centimetre**.
1 centimetre = 10 millimetres
A fingernail is about **one centimetre wide**.

We can use millimetres or centimetres to measure how tall we are, or how wide a table is, but to measure the length of a football pitch it is better to use **metres**.

A **metre** is equal to 100 centimetres.
1 metre = 100 centimetres

The length of a guitar is about 1 **metre**
Metres can be used to measure the length of a house, or the size of a playground.

A **kilometre** is equal to 1000 metres.
The distance from one city to another or how far a plane travels can be measured using **kilometre**s.

G2.18

Convert metric units of length

e.g.

Convert:

100mm to cm
170cm to m
6700m to km

10mm	**1cm**
100cm	1m
1000	1km

e.g. convert:

100mm to cm
Divide by 10 =10cm

170cm to m
Divide by 100 =1.7m

6700m to km
Divide by 1000 =6.7km

To work the other way i.e. cm to mm you do the inverse i.e. multiply by 10.

G2: 2D Shapes

Use Metric measures of mass

Convert metric units of mass

G2.19

Using metric units for mass

Mass: how much matter is in an object.
We measure mass by weighing, but weight and mass are not really the same thing.

These are the most common measurements:

- Grams
- Kilograms
- Tonnes

Grams are the smallest, Tonnes are the biggest.

Grams are often written as g (for short), so "300 g" means "300 grams".
A loaf of bread weighs about 700 g

When we have 1000g, we have 1kilogram, written short as 1kg.
Scales measure our mass using kilograms. An adults mass can be about 70 kg.

But when it comes to things that are very heavy, we need to use the tonne.
Once we have 1,000 kilograms, we will have 1 tonne.
Some cars can have a mass of around 2 tonnes

G2.20

Convert metric units of mass

e.g.

Convert:

5500g into kg

9870kg into tonnes

1000g	**1kg**
1000kg	1 tonne

e.g. convert:

5500g to kg
Divide by 1000 = 5.5kg

9870kg to tonnes
Divide by 1000 =9.87 tonnes

To work the other way i.e. kg to g you do the inverse i.e. multiply by 1000.

G2: 2D Shapes

Use Metric measures of volume or capacity

Convert metric units of volume or capacity (litres only)

G2.21 Use metric units of volume or capacity	Volume is the amount of 3-dimensional space something takes up. The two most common measurements of volume are: • Millilitres • Litres A **millilitre** is a very small amount of liquid, 5 ml can be held within a teaspoon. A **litre** is just a bunch of millilitres put all together. In fact, 1000 millilitres makes up 1 litre: 1 litre = 1,000 millilitres

G2.22 Convert metric units of volume or capacity (litres only) Convert: 5000ml to L 7L to ml 700ml to L	**1000ml** = **1L** e.g. convert: 5000ml to L Divide by 1000 =5L 7L to ml Multiply by 1000 = 7000ml 700ml to L Divide by 1000 =0.7L To work the other way i.e. L to ml you do the inverse i.e. multiply by 1000

G2: 2D Shapes

Use simple conversions of imperial to metric

Enlarge a shape by an integer factor with a centre of enlargement

G2.23

Use simple conversions of imperial to metric

- Imperial units

Length	Weight	Capacity
1 inch=2.5cm	2.2 pounds≈1kg	1gallon≈4.5litres
1 foot=30cm		
1 mile≈1.6km		

Convert:

3 inches to cm
Multiply by 2.5 =7.5cm

5 feet to cm
Multiply by 30 = 150cm

4 miles to km
Multiply by 1.6 ≈ 6.4km

180 pounds to kg
Divide by 2.2 ≈ 82kg

7 gallons to litres
Multiply by 4.5 ≈31.5L

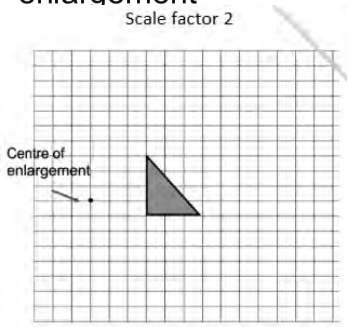
To work the other way i.e. cm to feet you do the inverse i.e. divide by 30

G2.24

Enlarge a shape by an integer scale factor with a centre of enlargement

e.g.

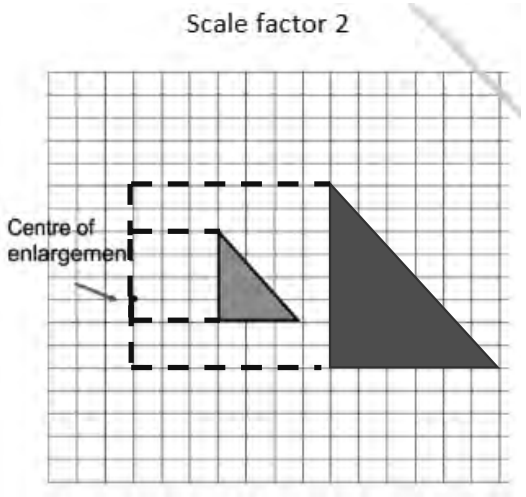
Enlarge the following shape by the given scale factor and from the given centre of enlargement



You sometimes can be asked to enlarge from a specific **centre of enlargement.** When a shape is **enlarged** from a **centre of enlargement**, the distances from the **centre** to each point are multiplied by the scale factor.

e.g. Enlarge the following shape by the given scale factor and from the given centre of enlargement

To enlarge using a centre of enlargement, you count the distance from of each point from the centre of enlargement, then multiply that distance by the scale factor.



G2: 2D Shapes

Describe an enlargement by an integer scale factor and a centre of enlargement

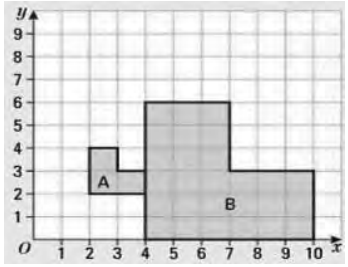
Enlarge a shape using a fractional scale factor

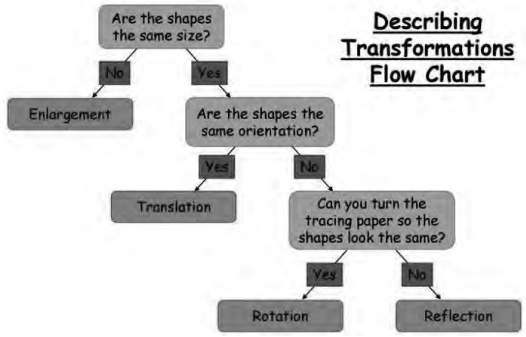
G2.25

Describe an enlargement by an integer scale factor and a centre of enlargement

e.g.

Describe fully the single transformation that maps A onto B

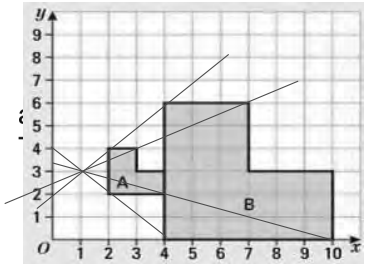




First of all use the flow chart to decide which of the transformations it is.

When you have found that it is an enlargement, you need to find the scale factor. To do this you must count the length of the sides and see what you multiply by to get from A to B.

To work out the centre of enlargement you join the vertices of both shapes and see where the lines intersect, this is the centre of enlargement.



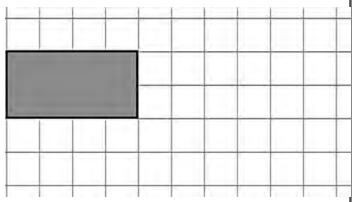
This is an enlargement, with scale factor of 3. centre of enlargement is (1,3)

G2.26

Enlarge a shape using a fractional scale factor

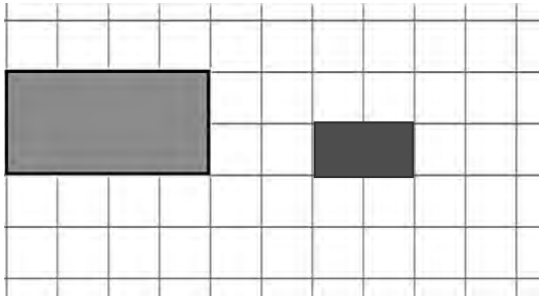
e.g.

Enlarge the following shape with a scale factor of a $\frac{1}{2}$



To enlarge a shape with a fractional scale factor, you follow the same steps as when you enlarge with an integer.

e.g. enlarge the following shape with a scale factor of a $\frac{1}{2}$.



G2: 2D Shapes

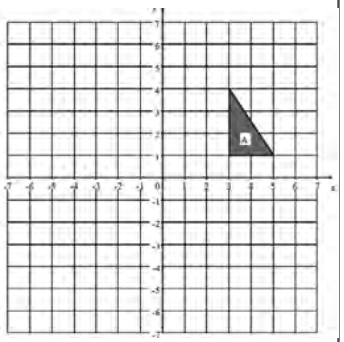
Translate a shape

Describe a translation

G2.27

Translate a shape

e.g. Translate the following shape in the vector $\begin{bmatrix}2\\1\end{bmatrix}$



A **translation** moves a shape up, down or from side to side but it does not change its appearance in any other way.

Translation is an example of a **transformation**. A transformation is a way of changing the size or position of a shape.

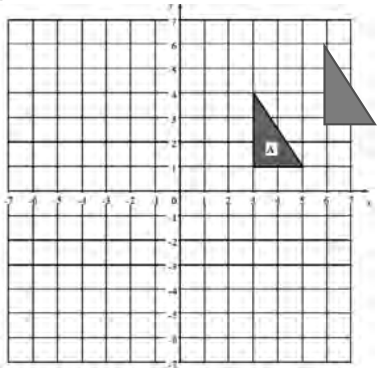
Every point in the shape is translated the same distance in the same direction.

Column **vectors** are used to describe translations.

$\begin{bmatrix}4\\-2\end{bmatrix}$ Means that you move the shape 4 to the right and 2 down

$\begin{bmatrix}-2\\5\end{bmatrix}$ Means that you move the shape 2 to the left and 5 up

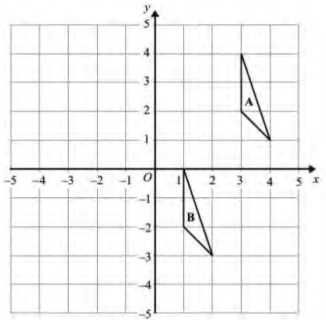
e.g. Translate the following shape in the vector $\begin{bmatrix}2\\1\end{bmatrix}$

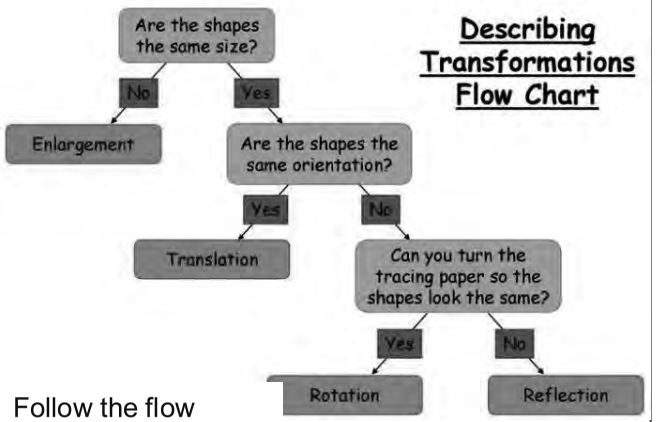


G2.28

Describe a Translation

Describe the transformation that fully maps A onto B



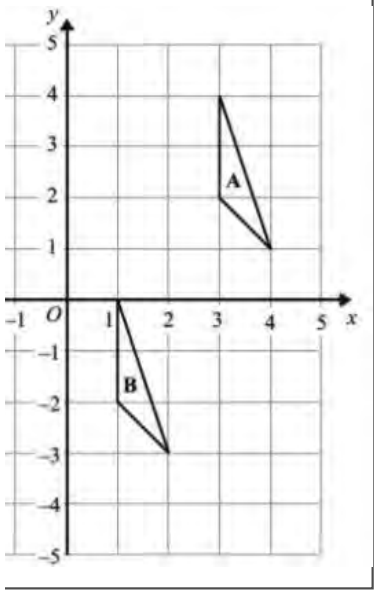


Follow the flow diagram to see which of the transformations it is.

Translation

Find the vector by counting the squares. This shape has moved 2 left and 4 down. So the vector is $\begin{bmatrix}-2\\-4\end{bmatrix}$

So the single transformation is **a translation in the vector** $\begin{bmatrix}-2\\-4\end{bmatrix}$



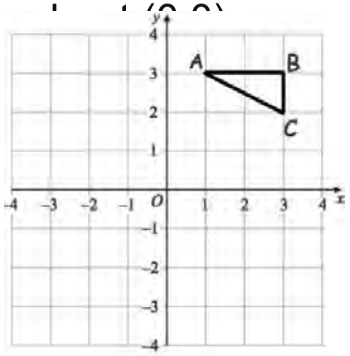
G2: 2D Shapes

Rotate a shape with a given centre of rotation

Describe a rotation through a centre of rotation

G2.29

Rotate a shape with a given centre of rotation
e.g.
Rotate the following shape 90° clockwise



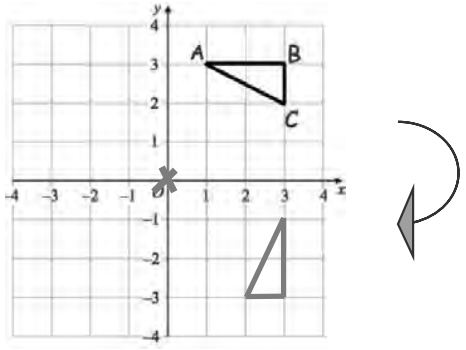
Rotation turns a shape around a fixed point called the **centre of rotation**.

Rotation is an example of a **transformation**. A transformation is a way of changing the size or position of a shape.

Three pieces of information are needed to rotate a shape:

- the centre of rotation
- the angle of rotation
- the direction of rotation

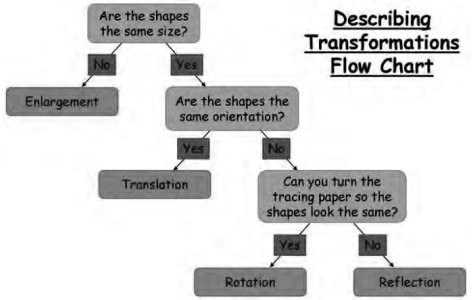
e.g. Rotate the following shape 90° clockwise about (0,0)



In this particular question you rotate the shape a quarter turn clockwise (using tracing paper) with your pencil on the given coordinate.

G2.30

Describe a rotation through a centre of rotation



First of all decide which of the transformations it is by using the flow chart.

Find two corresponding points on the original shape and the shape that's been rotated — typically, the pointy end of the triangle, or a convenient right angle. Draw a line between them.
At each of the points, draw a line at 45º towards where you thing the centre of rotation ought to be.
Where these lines cross is the centre of rotation.
Check you've gone the right way: measure the distance from your centre to two other corresponding points and check they're the same.
Otherwise, you need to draw your 45º lines on the other side of your line
Continued on the next page.

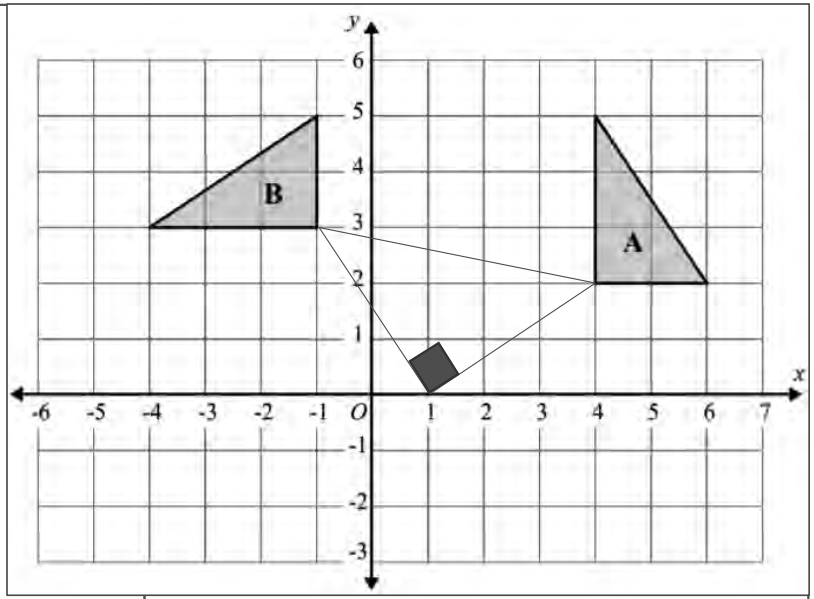
G2: 2D Shapes

Describe a rotation through a centre of rotation (continued)

Reflect a shape using a diagonal or horizontal line

G2.30

Continued



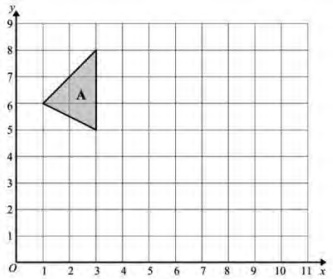
This is a rotation, 90° anticlockwise, from (1,0)

G2.31

Reflect a shape using a diagonal line or horizontal line

e.g.

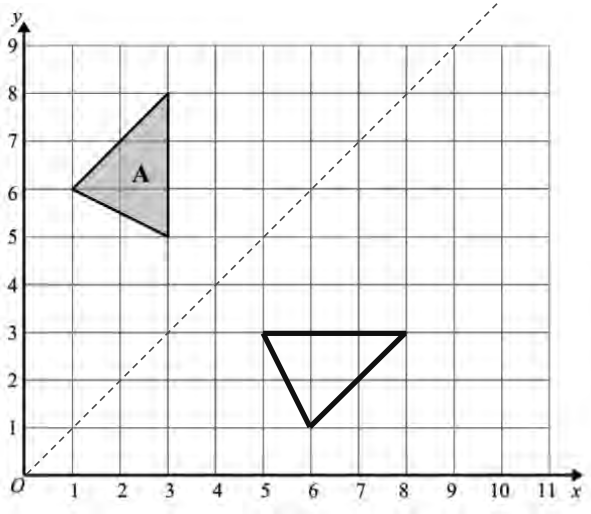
Reflect the following shape in the line y = x



Firstly, you must find the mirror line. In the line y = x the y coordinate is the same as the x coordinate.

This means if you y coordinate is 1 your x coordinate is 1. This creates a diagonal line from the origin.

You then count the distance from each vertex to the mirror line and replicate it on the other side of the mirror line.



G2: 2D Shapes

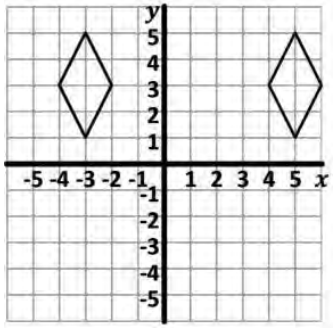
Describe a reflection using the equation of a line
Calculate the area of a trapezium

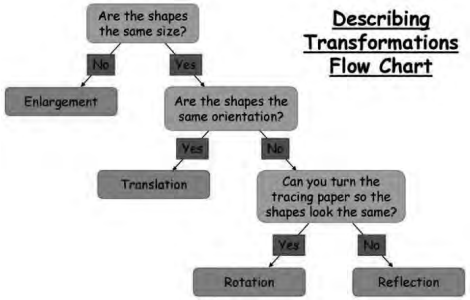
G2.32

Describe a reflection using the equation of a line

e.g.

Describe the single transformation that maps shape A to B.

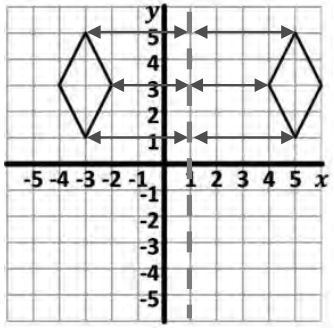




Firstly you need to decide which of the transformations it is.

When you have found that it is a reflection , you need to find the mirror line.

To do this you need to find a line in which all the points of each shape will be equidistant to the corresponding point.



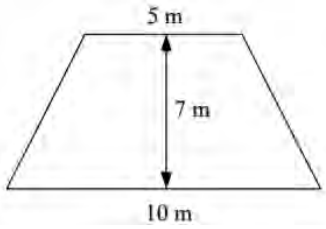
So this is a reflection in the line x=1

G2.33

Calculate the area of a trapezium

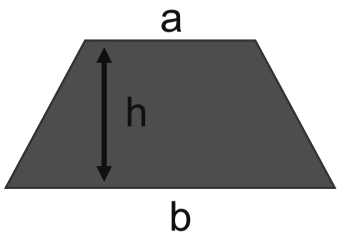
e.g.

Calculate the area of the following shape

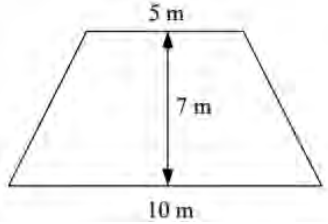


To find the area of a trapezium you need to use a specific formula.

$$A = \frac{(a+b)}{2} \times h$$



e.g. Calculate the area of the following shape



Area = $\frac{(5+10)}{2}$ x 7

Area = $\frac{15}{2}$ x 7

Area = 7.5 x7

Area = 52.5 m^2

G2: 2D Shapes

Calculate the area of a circle

Calculate the circumference of a circle

G2.34

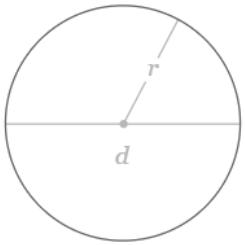
Calculate the area of a circle

e.g.

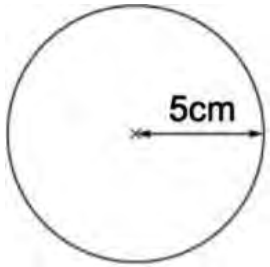
Work out the area of the following circle

To find the area of a circle you need to follow a specific formula.

$$A = \pi r^2$$



e.g. work out the area of the following circle



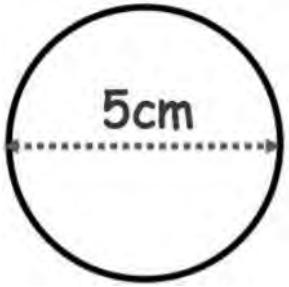
Area = πr^2
Area = π x 5^2
Area = 78.5398163…
Area = 78.5 cm² 1dp

G2.35

Calculate the circumference of a circle

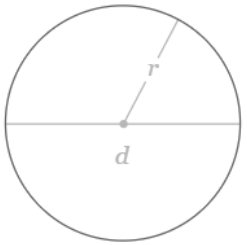
e.g.

Work out the circumference of the following circle

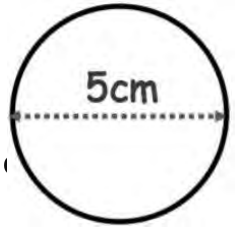


To find the circumference of a circle you need to follow a specific formula.

C = 2 πr or c = πd



e.g. Work out the circumference of the following circle



Circumference = πd
Circumference = π x 5
Circumference = 15.707…
Circumference = 15.7cm 1

G2: 2D Shapes

Calculate the area of a sector

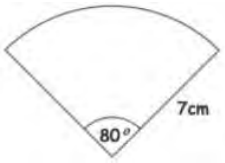
Calculate arc length

G2.36

Calculate the area of a sector

e.g.

Find the area of the following sector

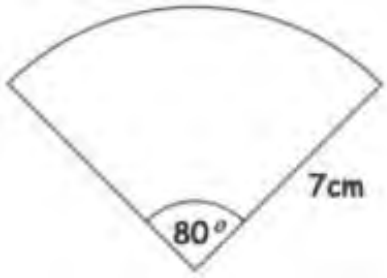


We can find the area of a sector using the formula:

$$\frac{\theta}{360} \times \pi r^2$$

θ is the angle of the secto r is the radius

e.g. Find the area of the following sector



Area = $\frac{80}{360}$ x π x 7^2

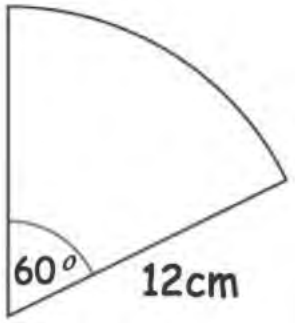
Area = 34.208…
Area = 34.2cm² 1dp

G2.37

Calculate arc length

e.g.

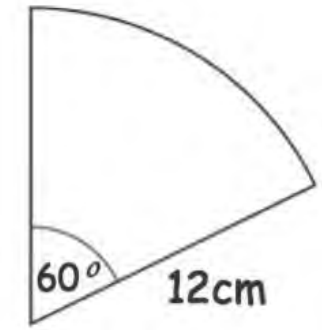
Evaluate the length of the following arc



To *calculate arc length you use*

$$\text{Arc length} = \frac{\text{angle}}{360^\circ} \times \pi \times d$$

e.g. Find the length of the following arc



Arc length = $\frac{60}{360}$ x π x 24
Arc length = 12.566…
Arc length = 12.6 cm

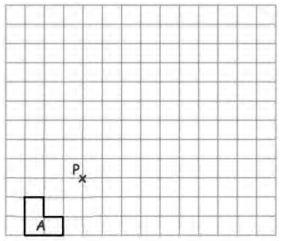
G2: 2D Shapes

Enlarge a shape using a negative scale factor
Convert metric units of area and volume

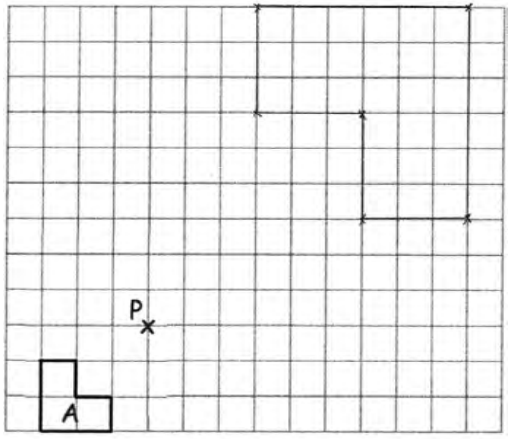
G2.38

Enlarge a shape using a negative scale factor

e.g. Enlarge the following shape with a scale factor of -3 from point 3



An **enlargement** using a **negative scale factor** will cause the **enlargement** to appear on the other side of the centre of **enlargement**; and will be inverted (upside down). The **shape** will also change size depending on the value of the **enlargement**.



To enlarge by a negative scale factor, you need to work out the vector from P to each corner of the shape.

You then multiply each vector by the scale factor.

You will end up with new vectors that you draw from p.

In this example you multiply each vector by -3.

G2.39

Convert metric units of area or volume

e.g. Convert $5m^2$ to cm^2

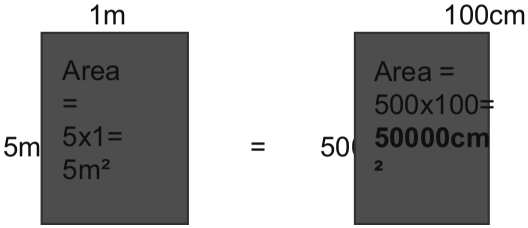
e.g. Convert 5,000 mm^3 to cm^3

The method for converting between units works the same as the one for converting units of area and volume.

When you are converting one sort of unit to another, you need to know how many smaller units are needed to make 1 larger unit.

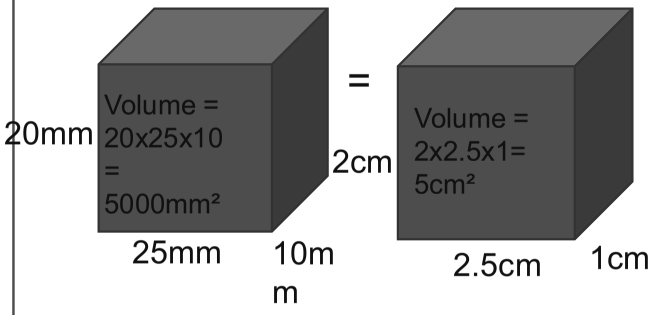
Area

Convert $5m^2$ to cm^2



Volume

Convert 5,000 mm^3 to cm^3



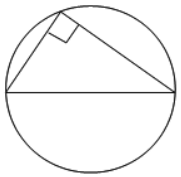
G2: 2D Shapes

Recognise the circle theorems

G2.40

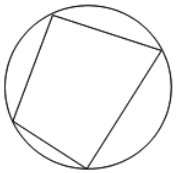
Recognise the circle theorems

e.g. What are the eight circle theorems?



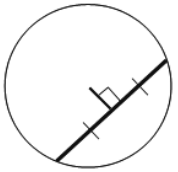
The angle at the centre = 2 x angle at the circumference

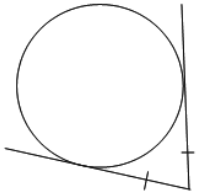
The angle in a semi-circle is a right angle



Angles in the same segment are equal

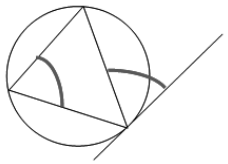
Opposite angles in a cyclic quadrilateral add up to 180°



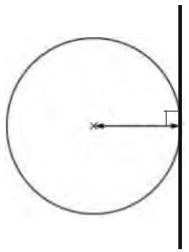


The perpendicular from the centre to the chord bisects the chord

Tangents from a point to a circle are equal



The angle between a tangent and a chord is equal to the angle in the alternate segment

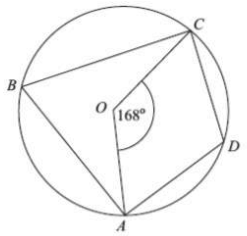


The angle between a tangent and a radius is always 90°

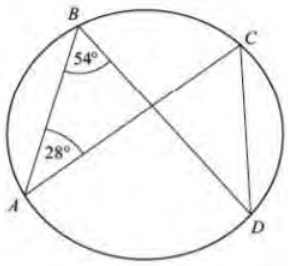
G2: 2D Shapes
Use circle theorems to solve problems

G2.41

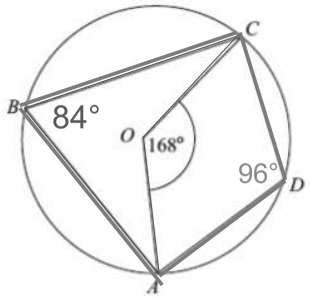
Use circle theorems to solve problems



e.g. Work out angle ADC

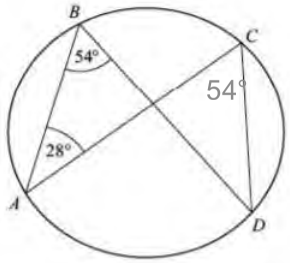


e.g. Work out the angle ACD, give reasons for your answer



Work out angle ADC

Angle ABC = 84° Angle at the centre is 2x the angle at the circumference.
Angle ADC = 96° Opposite angles in a cyclic quadrilateral add up to 180°

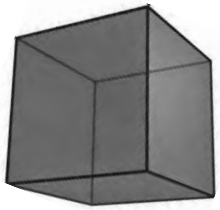
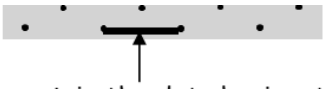
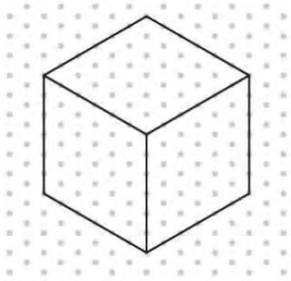


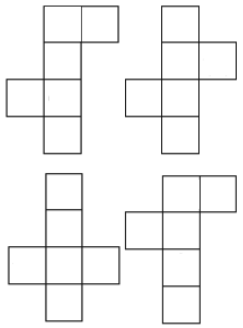
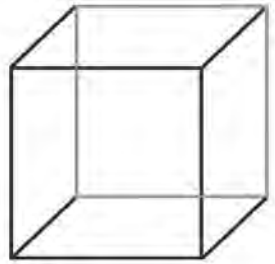
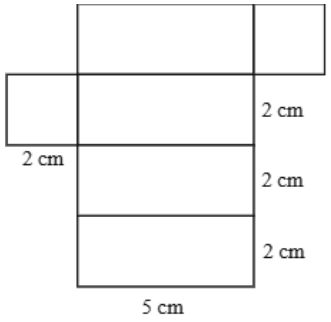
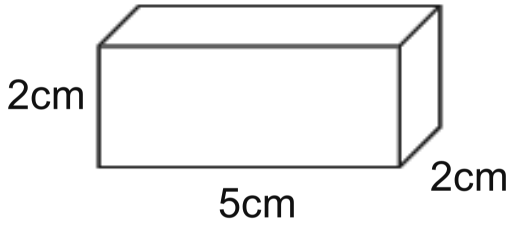
Work out the angle ACD, give reasons for your answer

ACD = 54° because angles in the same segment are equal.

G3: 3D Shapes

Identify properties of a 3D shape
Represent a 3D shape on an isometric grid
Identify a net of a cube
Identify a net of other 3D cuboids

G3.1 Identify properties of a 3D shape E.g. Name the properties of a Cube. 	**3D shapes have faces (sides), edges and vertices (corners).** **Faces** A face is a flat or curved surface on a 3D shape. E.g. a cube has 6 faces, a cylinder has 3 and a sphere 1. **Edges** An edge is where two faces meet. E.g. a cube has 12 edges, a cylinder has 2 and a sphere has none. **Vertices** A vertex is a corner where edges meet. The plural is vertices. E.g. a cube has 8 vertices, a cone has 1 vertex and a sphere has none. **A cube has 6 identical faces, 12 edges and 4 vertices.**
G3.2 Represent a 3D shape on an isometric grid E.g. Create an isometric drawing of a cube measuring 6cm x 6cm x 6cm.	Isometric paper is used to accurately draw 3D shapes.  Never join the dots horizontally 

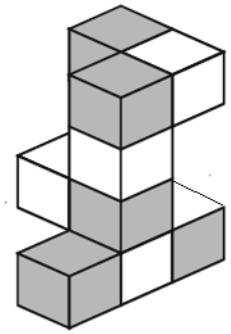
G3.3 Identify a net of a cube. E.g. What 3D shape do all of these nets form? 	A cube 
G3.4 Identify a net of other 3D cuboids. E.g. Draw and name the shape this would create and include the measurements. 	A cuboid. 

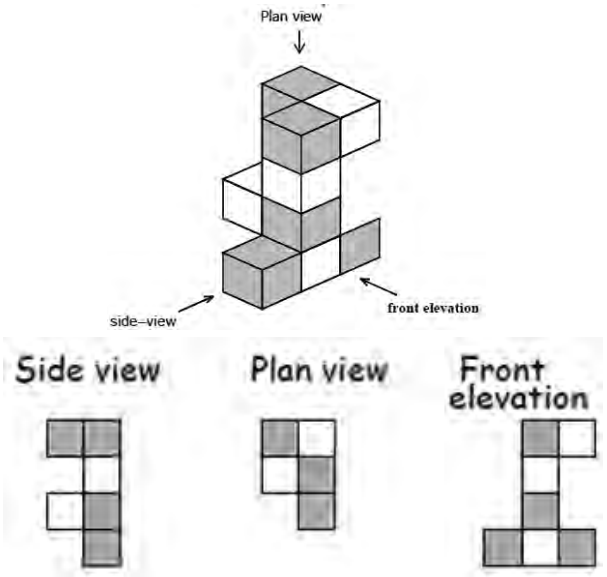
G3: 3D Shapes

Identify a 3D shape from plans and elevations
Calculate the volume of a cuboid
Calculate the surface area of a cuboid
Recognise the net of a cylinder

G3.5
Interpret a 3D shape from plans and elevations

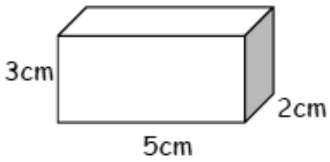
E.g. Draw the Side view, Plan View and Front Elevation of this shape.



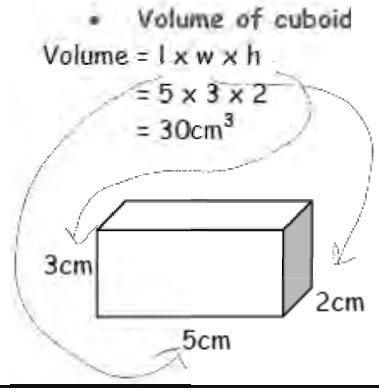


G3.6
Calculate the volume of a cuboid

E.g. Calculate the volume of this cuboid.

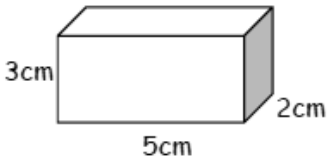


Volume is the amount of space a 3D shape takes up.



G3.7
Calculate the surface area of a cuboid

E.g. Calculate the surface area of this cuboid.



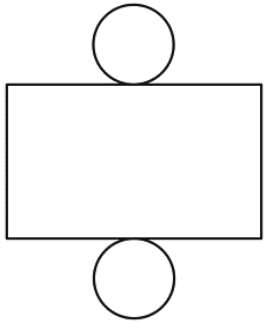
Surface area is the amount of space covering the outside of a three-dimensional shape
Remember a cuboid has 6 faces, you need to include all 6.

- Surface area of cuboid

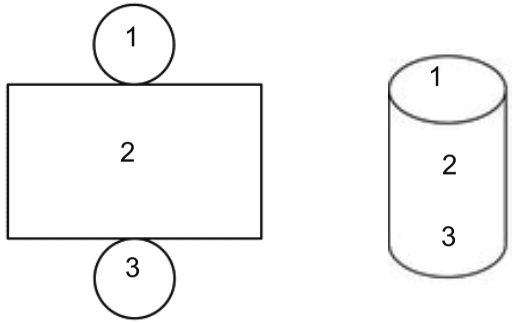
Front = 5x3 = 15
Back = 5x3 = 15
Top = 5x2 = 10
Bottom = 5x2 = 10
Side = 3x2 = 6
Side = 3x2 = 6

Total Surface Area = 62cm²

G3.8
Recognise the net of a cylinder
E.g. What 3D shape does this net form?



A cylinder.

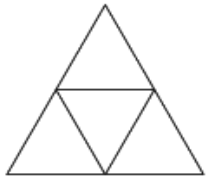


G3: 3D Shapes

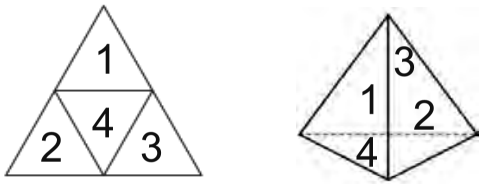
Recognise the net of a tetrahedron
Recognise the net of prisms
Calculate the volume of a prism
Calculate the volume of a prism

G3.9
Recognise the net of a tetrahedron

E.g. What 3D shape does this net create?

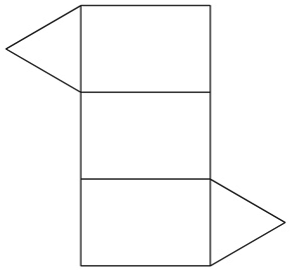


A Tetrahedron. also known as a triangular pyramid, is a polyhedron composed of four triangular faces, six straight edges, and four vertex corners.

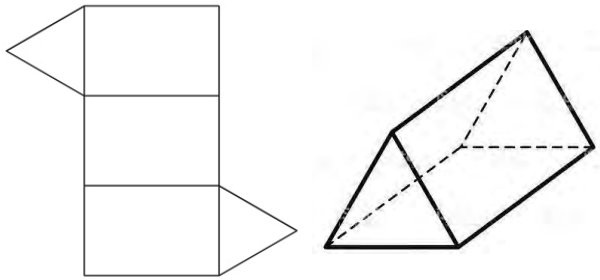


G3.10
Recognise the net of prisms

E.g. What 3D Shape would this net form?



A Triangular Prism. A triangular prism is a prism composed of two triangular bases and three rectangular sides.



G3.11
Calculate the volume of a prism

E.g. What is the formula for working out the volume of any prism?

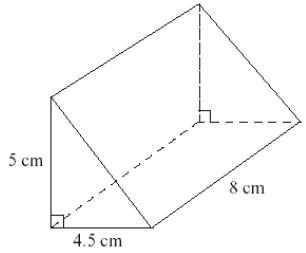
To find the volume of any prism, calculate the area of the cross-section and multiply by the length.

Volume = Area of cross-section x length

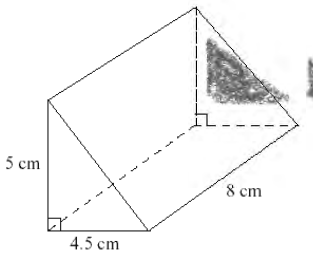
With any prism there is a shape which is repeated throughout the length - this is the cross section.

G3.12
Calculate the volume of a prism

E.g. Calculate the volume of this Triangular Prism



Volume = Area of cross-section x length



Area of cross section

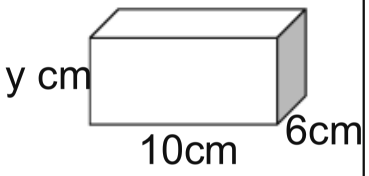
$= \frac{5 \times 4.5}{2} = 11.25\text{cm}^2$

Volume =
$11.25 \times 8 = 90\text{cm}^3$

G3: 3D Shapes

Calculate missing sides from volume
Calculate the surface area of a cylinder
Use the formula for volume of a sphere
Use the formula for the volume of a cone

G3.13
Calculate missing sides from volumes
E.g. The volume of this cube is 420cm³. What is the length the missing side?

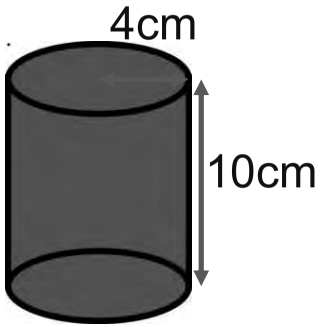


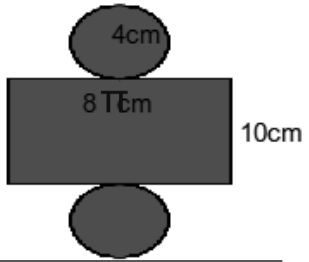
Volume of a cuboid = Length x Height x Width

420 = 10 x 6 x y
420 = 60y
Y = 7cm

G3.14
Calculate the surface area of a cylinder

E.g. Calculate the surface area of this cylinder.





Circle = 4²x π
2 x Circle = 32π

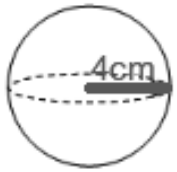
Rectangle = 8π x 10
= 80π

Length of the rectangle = the circumference of the circle.
C= πd
= 8 π

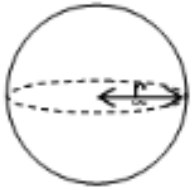
Total Surface area
= 32π + 80π
=112πcm²
(351.86cm²)

G3.15
Use the formula for volume of a sphere

E.g. Calculate the volume of this sphere to one decimal place.



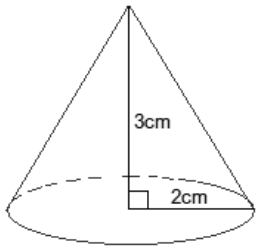
$$\text{Volume of sphere} = \frac{4}{3}\pi r^3$$



$$= \frac{4}{3} \times \pi \times 4^3$$
$$= \frac{4}{3} \times \pi \times 4^3$$
$$\frac{256\pi}{3} = 85.3\text{cm}^3$$

G3.16
Use the formula for the volume of a cone

E.g. Calculate the volume of this cone to one decimal place.



$$\text{Volume} = \frac{1}{3}\pi r^2 h$$

$$v = \frac{1}{3} \times \Pi \times 2^2 \times 3$$

$$v = 4\Pi$$

$$v = 12.6cm^3$$

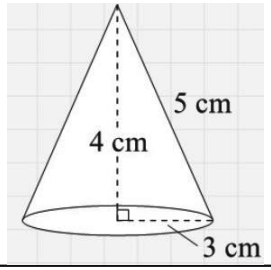
G3: 3D Shapes

Use the formula for curved surface area of a cone

Use the formula to find the surface area of a sphere

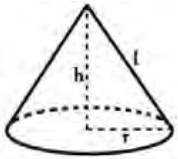
Recognise the net of a cone

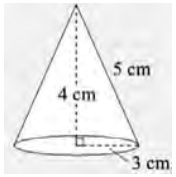
G3.17
Use the formula for curved surface area of a cone
E.g. Work out the area of the curved surface of this cone. Leave in terms of pi.



The area of the curved (lateral) surface of a cone
$= \pi rl$

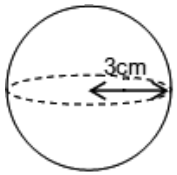
Where,
r is the radius
h is the height
l is the slant height



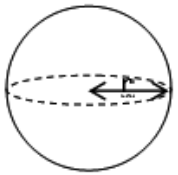


SA = πrl
$= \pi x 3 x 5$
$= 15\pi$

G3.18
Use the formula to find the surface area of a sphere
E.g. Calculate the surface area of this sphere. Leave your answer in terms of pi.

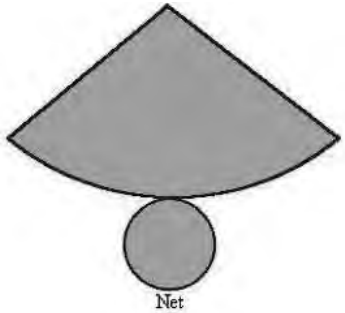


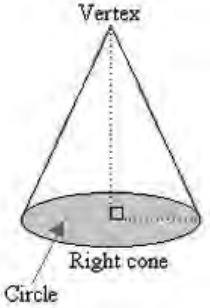
Curved surface area of a sphere = $4\pi r^2$



SA = $4\pi r^2$
$= 4 \times \pi \times 3^2$
$= 4 \times \pi \times 9$
$= 36\pi$

G3.19
Recognise the net of a cone
E.g. What 3D shape does this net create?





A Cone.

The **net** of a cone consists of the following two parts:

- a circle that gives the base; and
- a sector that gives the curved surface

G3: 3D Shapes

Calculate the volume of a frustum

Calculate the curved surface area of a frustum

G3.20
Calculate the volume of a frustum

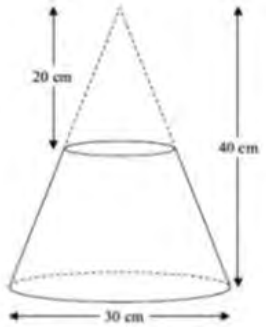
E.g. Below is the frustum of a cone.

The height of the small cone is 20cm.

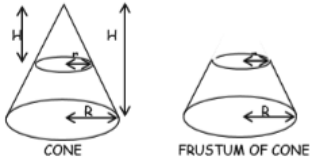
The height of the large cone is 40cm.

The diameter of the base of the large cone is 30cm.

Work out the volume of the frustum. Leave your answer correct to 3.s.f.



A frustum is a cone that has had a smaller cone removed from the top.



Volume of a Cone = $\frac{\pi r^2 H}{3}$

Radius is half of diameter

Large cone = $\frac{\pi 15^2 \times 40}{3}$

= 3000π

To find the radius of the small cone we have to remember it is in proportion. The height goes from 40cm to 20cm ..It has halved.
So we can half the radius too.

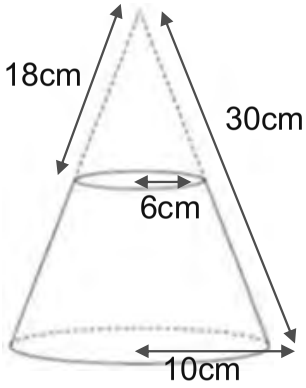
Small cone = $\frac{\pi 7.5^2 \times 20}{3}$

= 375π

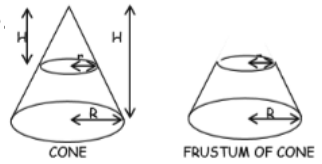
Large cone - small cone = $2625\ \pi$
= $8250 cm^3$

G3.21
Calculate the curved surface area of a frustum

E.g. Work out the curved surface area of the frustum of the cone below. Leave your answer in terms of pi.



A frustum is a cone that has had a smaller cone removed from the top.



So we want to find the curved surface area of the large cone and take away the curved surface area of the small cone.

Curved surface area of a cone = πrl
Where l is the slanted height of the cone.

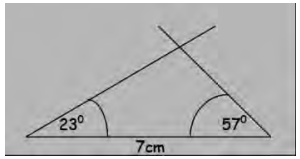
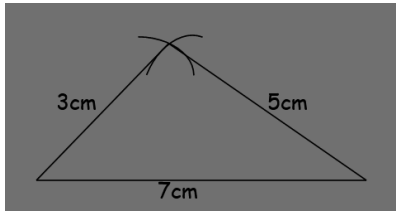
Large cone = π x 10 x 30
= 300π

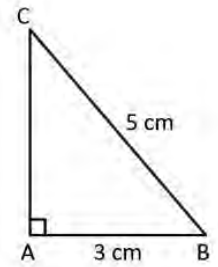
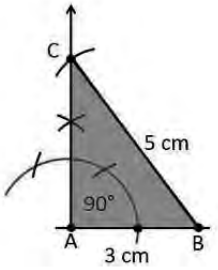
Small cone = π x 6 x 18
= 108π

Total surface area of the frustum
= large cone - small cone
300π - 108π = 192π

G4: Constructions and Loci

Construct a triangle given two angles and a side
Construct a triangle given two sides and an angle
Construct a triangle given all three sides
Construct a right angled triangle given the hypotenuse

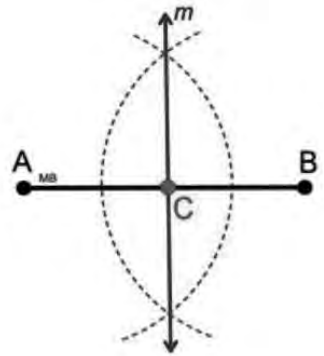
G4.1 Construct a triangle given two angles and a side (ASA)	Measure out the base using a ruler Use a protractor to construct the angles Leave construction lines 
G4.2 Construct a triangle given two sides and an angle (SAS)	Draw the base using a ruler Use a protractor and draw in the angle Measure second side using a ruler and draw it in. Complete the triangle
G4.3 Construct a triangle given all three sides (SSS)	 Use a compass and leave the arcs.

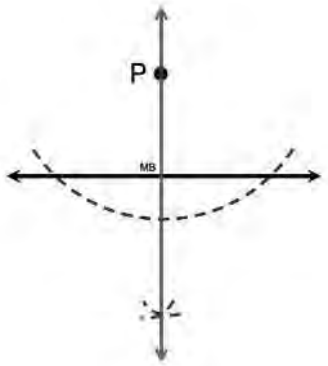
G4.4 Construct a right angled triangle given the hypotenuse	**Example:**  Draw line segment of 3cm to form the base Construct a perpendicular bisector from A Using a compass construct an arc from B, crossing the perpendicular bisector at C Draw in the sides of your triangle, leaving the construction marks. 

G4: Constructions and Loci

Construct a perpendicular bisector

Construct a perpendicular bisector from a point to a line

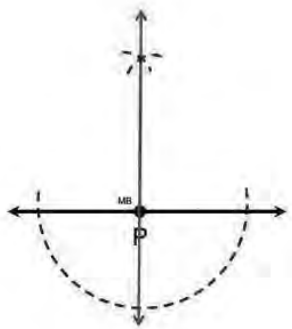
G4.5 Construct a perpendicular bisector	Using a compass construct arcs from points A & B. Make sure the distance between your pencil and the compass point is the same for both. Complete your bisection by drawing a line through the intersecting points of the two arcs, going through C on the diagram 

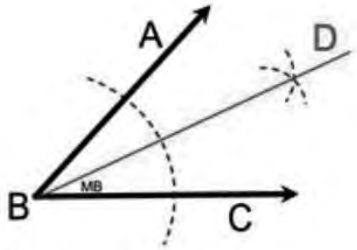
G4.6 Construct a perpendicular bisector from a point to a line segment	Using a compass construct a semicircle below the line segment, placing your compass point at P. Construct a perpendicular as you did before, using the points where the semicircle crosses the line segment as point A & B as in the example given in G4.5 

G4: Constructions and Loci

Construct a perpendicular bisector through a point on a line segment

Construct an angle bisector

G4.7 Construct a perpendicular bisector through a point on a line segment	Using a compass construct a semicircle below the line segment, placing your compass point at P. Construct a perpendicular as you did before, using the points where the semicircle crosses the line segment as point A & B as in the example given in G4.5 

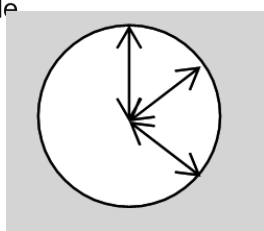
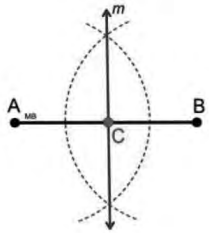
G4.8 Construct an angle bisector	Using a compass construct an arc from B, passing through both AB and BC. Draw an arc, placing the compass point at the intersection on AB. Repeat for the intersection on BC. The arcs with intersect at D. Draw a line segment through D to B as shown in the diagram. 

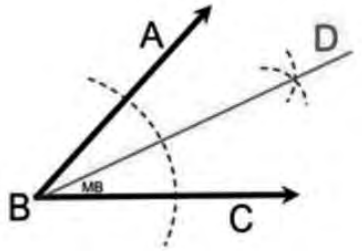
G4: Constructions and Loci

Draw a locus of points a given distance from a point (circle)

Draw a locus of points equidistant from two points

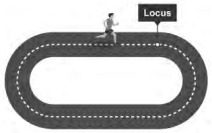
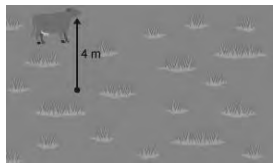
Draw a locus of points equidistant from two lines

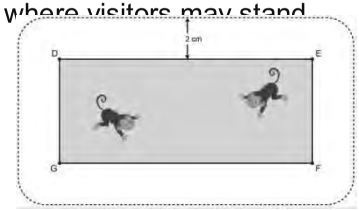
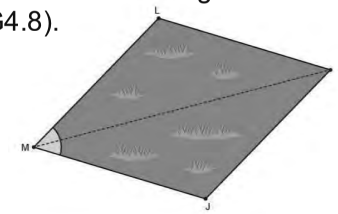
G4.9 Draw a locus of points a given distance from a point (circle)	A **locus** is the path or region a point covers as it moves according to a rule. A series of points a fixed distance (equidistant) from a point is a circle 
G4.10 Draw a locus of points equidistant from two points	The locus of points equidistant from two points is a perpendicular bisector (see G4.5, G4.6, G4.7) 

G4.11 Draw a locus of points equidistant from two lines	The locus of points equidistant from two intersecting lines is an angle bisector (see G4.8) 

G4: Constructions and Loci

Apply loci techniques to more complex problems

G4.12 Apply loci techniques to more complex loci problems	Some **examples** of more complex loci problems. Remember that loci is the plural of locus. The runner is following a path. The path is a locus.  The hands of a clock move around the clock and create a locus.  A cow is tied to a post by a 4m length of rope. The area of grass she can reach is a locus. 

G4.12 Apply loci techniques to more complex loci problems	Some **examples** of more complex loci problems. Remember that loci is the plural of locus. Visitors must stand 2m away from the walls of a monkey enclosure. The diagram shows where visitors may stand.  The path is equidistant between the edges of the field, MJ and ML. The locus is an angle bisector (G4.8). 

G5: Pythagoras and Trigonometry

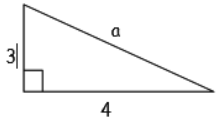
Use Pythagoras' theorem to find a missing side

Use Pythagoras' theorem to calculate a missing side

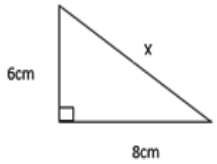
G5.1 Use Pythagoras' theorem to find a missing hypotenuse

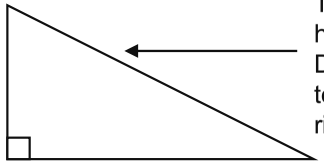
e.g

Find a in the triangle below



e.g
Find x in the triangle below





The hypotenuse DOESN'T touch the right angle

If you are finding the hypotenuse, square the two shorter sides, add them together and square root the number you get

e.g

$$3^2 + 4^2 = a^2$$
$$9 + 16 = a^2$$
$$\sqrt{25} = a$$
$$5 = a$$

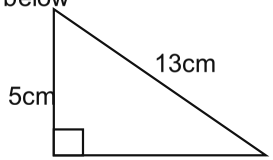
e.g

$$6^2 + 8^2 = x^2$$
$$36 + 100 = x^2$$
$$\sqrt{136} = x$$
$$11.7 = x$$

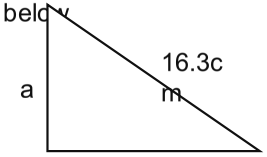
G5.2 Use Pythagoras' theorem to calculate a missing side

e.g

Find x in the triangle below



e.g
Find a in the triangle belo



If you are finding one of the two shorter sides (not the hypotenuse), square the two sides you have, subtract the shorter from the longer and square root the answer

e.g

$$5^2 + x^2 = 13^2$$
$$x^2 = 13^2 - 5^2$$
$$x^2 = 169 - 25$$
$$x = \sqrt{144}$$
$$x = 12$$

e.g

$$7.4^2 + a^2 = 16.3^2$$
$$a^2 = 16.3^2 - 7.4^2$$
$$a^2 = 265.69 - 54.76$$
$$a = \sqrt{210.93}$$
$$a = 14.5 \quad 1dp$$

G5: Pythagoras and Trigonometry

Use trigonometry for right angle triangles to find a missing side

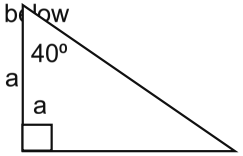
Use trigonometry for right angle triangles to find missing angles

Use vector column notation

G5.3 Use Trigonometry for right angled triangles to find a missing side

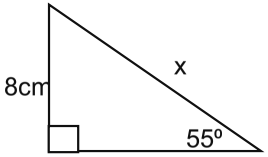
e.g

Find a in the triangle below



e.g

Find x in the triangle below

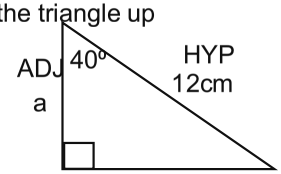


Remember SOHCAHTOA.

Label the sides of the triangle you have with Opposite, Adjacent or Hypotenuse. Choose the correct trigonometric ratio to use. Substitute into the relevant formula and solve the equation

e.g

Label the triangle up



We have adj and hyp so use Cosine

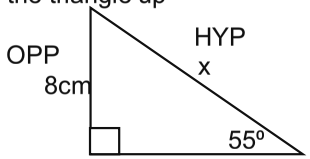
$$\cos(40) = \frac{a}{12}$$

$$12 \times \cos(40) = a$$

$$9.19cm = a$$

e.g

Label the triangle up



We have opp and hyp so use Sine

$$\sin(55) = \frac{8}{x}$$

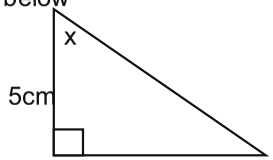
$$x = \frac{8}{\sin(55)}$$

$$x = 9.77cm$$

G5.4 Use Trigonometry for right angled triangles to find missing angles

e.g

Find x in the triangle below

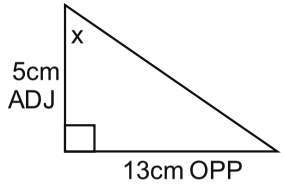


Remember SOHCAHTOA

Label the sides of the triangle you have with Opposite, Adjacent or Hypotenuse. Choose the correct trigonometric ratio to use. Substitute into the relevant formula and solve the equation using inverse functions

e.g

Label the triangle up



We have opp and adj so use Tan

$$\tan(x) = \frac{13}{5}$$

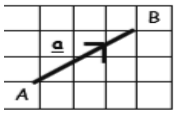
$$x = \tan^{-1}(\frac{13}{5})$$

$$x = 69.0°$$

G5.5 Use Vector column notation

e.g

Give the vector that represents a



In your vector the top value indicates spaces right or left (+ means right, - means left) and the bottom value means up or down (+ means up, - means down)

e.g

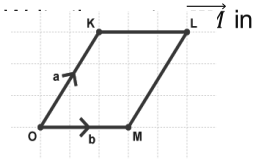
Moves 3 spaces right and 2 spaces up so vector is $\begin{pmatrix} 3 \\ 2 \end{pmatrix}$

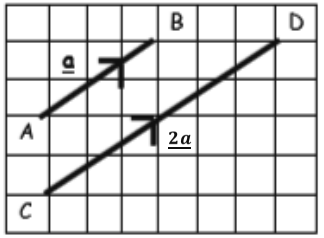
G5: Pythagoras and Trigonometry

Add and subtract two column vectors

Use unknown vector notation

Know how to show two vectors are parallel

G5.6 Add and Subtract two column vectors e.g If $a = \begin{pmatrix}4\\7\end{pmatrix}$ and $b = \begin{pmatrix}2\\-3\end{pmatrix}$ calculate $a + b$ $a - b$	Vectors must have the same number of elements in them to be added or subtracted from each other. Match up each corresponding element and do the required calculation e.g $a + b$ gives $\begin{pmatrix}4\\7\end{pmatrix} + \begin{pmatrix}2\\-3\end{pmatrix}$ $= \begin{pmatrix}4+2\\7+-3\end{pmatrix}$ $= \begin{pmatrix}6\\4\end{pmatrix}$ $a - b$ gives $\begin{pmatrix}4\\7\end{pmatrix} - \begin{pmatrix}2\\-3\end{pmatrix}$ $= \begin{pmatrix}4-2\\7--3\end{pmatrix}$ $= \begin{pmatrix}2\\10\end{pmatrix}$
G5.7 and 5.8 Use unknown vector notation e.g  $\overrightarrow{1}$ in	Vectors are often represented simply using letters rather than numbers. These can be added and subtracted to find expressions for other unknown vectors e.g $\overrightarrow{KM} = \overrightarrow{KO} + \overrightarrow{OM}$ $\overrightarrow{KO} = -a$ and $\overrightarrow{OM} = b$ So $\overrightarrow{KM} = -a + b$ or $b - a$

G5.9 Know how to show two vectors are parallel	If two vectors are parallel one will be a multiple of the other e.g  $\overrightarrow{AB} = a$ and $\overrightarrow{CD} = 2a$ as 2a is a multiple of a $\overrightarrow{AB}$ and $\overrightarrow{CD}$ ARE parallel

G5: Pythagoras and Trigonometry

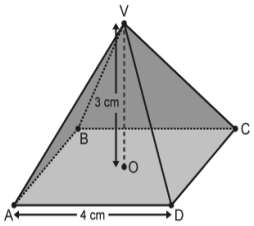
Use Pythagoras and trigonometry in 3D

Use the sine rule to find a missing side

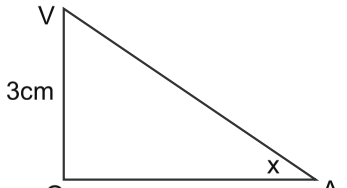
G5.10 and G5.11 Use Pythagoras and Trigonometry in 3D

e.g
ABCDV is a square based pyramid.
O is the **midpoint** of the square base ABCD.
Lengths AD, DC, BC and AB are all 4 cm.
The **perpendicular** height of the pyramid (OV) is 3 cm.

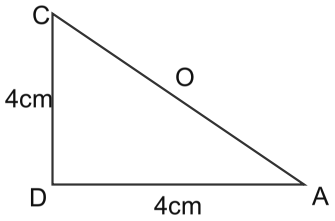
Find the angle between AV and the plane ABCD



Draw out 2D triangles that represent the lengths or angles that you are trying to calculate and apply Pythagoras and/or trigonometry as you would in a 2D shape
e.g:The angle between AV and ABCD is represented by the triangle below



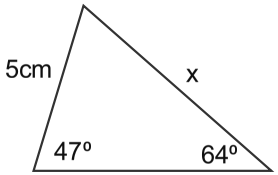
Either find length AV or length OA in order to use trigonometry to find x. We will find OA using the triangle below



Using Pythagoras' theorem from 5.1 AC is 5.66cm. As) is the midpoint of this line OA is 2.83cm. Use trigonometry to find an angle from section 5.4 on the top triangle the angle is 46.7º

G5.12 Use the sine rule to find a missing side

e.g
Find the missing side in the triangle below

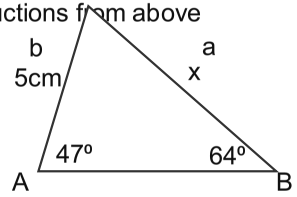


In order to find a missing side using Sine rule label the side you are trying to find as a and the angle that is opposite that as A. Then label the other side you know as b and the angle opposite that as B. Following that substitute into the below formula and solve for a

$$\frac{a}{sin(A)} = \frac{B}{\sin(B)}$$

e.g

First relabel the triangle using the instructions from above



Then substitute into the formula and solve

$$\frac{x}{\sin(47)} = \frac{5}{\sin(64)}$$

Multiply both sides by sin 47

$$x = \frac{5 \times \sin(47)}{\sin(64)}$$

$$x = 4.07cm$$

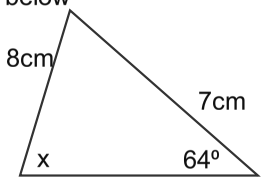
G5: Pythagoras and Trigonometry

Use the sine rule to find a missing angle

Use cosine rule to find a missing side

G5.13 Use the sine rule to find a missing angle

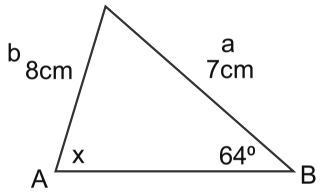
e.g
Find the missing angle in the triangle below



In order to find a missing angle using Sine rule label the angle you are trying to find as A and the side that is opposite that as a. Then label the other angle you know as B and the side opposite that as b. Following that substitute into the below formula and solve for A

$$\frac{\sin(A)}{a} = \frac{\sin(B)}{\mathrm{b}}$$

e.g
First relabel the triangle using the instructions from above



Then substitute into the formula and solve

$$\frac{\sin(x)}{7} = \frac{\sin(64)}{8}$$

Multiply both sides by 7

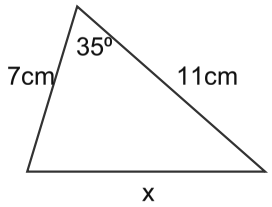
$$\sin(x) = \frac{7 \times \sin(64)}{8}$$

Take $\sin^{-1}$

$x = 51.9°$

G5.14 Use the cosine rule to find a missing side

e.g
Find the missing side in the triangle below

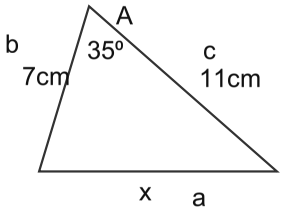


In order to find a missing side using Cosine rule label the side you are trying to find as a and the angle that is opposite that as A. Then label the other two sides you know as b and c (it doesn't matter which is which. Following that substitute into the below formula and solve for a

$$a^2 = b^2 + c^2 - 2bcCos(A)$$

e.g

First relabel the triangle using the instructions from above



Then substitute into the formula and solve

$$x^2 = 7^2 + 11^2 - 2 \times 7 \times 11 \times \cos(35)$$

Square root both sides

$$x = \sqrt{43.85}$$
$$x = 6.62cm$$

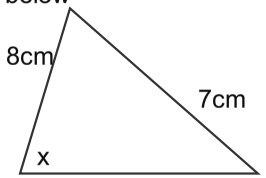
G5: Pythagoras and Trigonometry

Use the cosine rule to find a missing angle

Find the area of a triangle of unknown height or find a side or angle when given the area of a triangle

G5.15 Use the cosine rule to find a missing angle

e.g
Find the missing angle in the triangle below

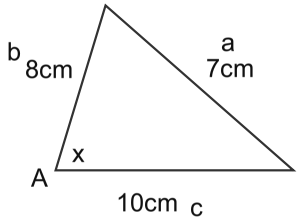


In order to find a missing angle using Sine rule label the angle you are trying to find as A and the side that is opposite that as a. Then label the other two sides you know as b and c (it doesn't matter which is which.) Following that substitute into the below formula and solve for A

$$\cos(A) = \frac{b^2 + c^2 - a^2}{2bc}$$

e.g

First relabel the triangle using the instructions from above



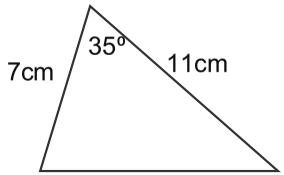
Then substitute into the formula and solve

$$\cos(A) = \frac{8^2 + 10^2 - 7^2}{2 \times 8 \times 10}$$

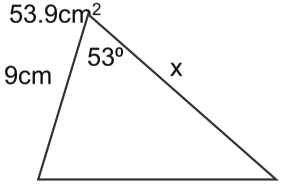
Take $\cos^{-1}$

$$x = 44.0°$$

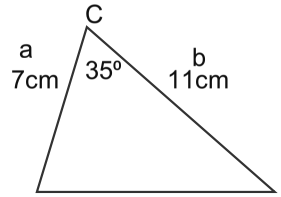
G5.16 and G5.17
Find the area of a triangle of unknown height or find a side or angle when given the area of a triangle
e.g Find the area of the triangle below



e.g Find the length of the unknown side given the area is $53.9cm^2$

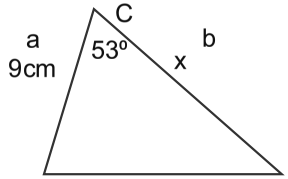


The formula for finding the area of a non- right angled triangle is $Area = \frac{1}{2}absin(C)$ where a and b are known sides and C is a known included angle.
e.g
Label up the triangle and substitute into the formula



$$Area = \frac{1}{2} \times 7 \times 11 \times \sin(35)$$
$$Area = 22.1cm$$

e.g Label up the triangle as previously



Substitute into formula and solve for x using inverse functions

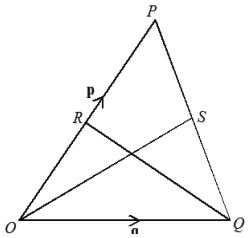
$$53.9 = \frac{1}{2} \times 9 \times x \times \sin(53)$$
$$x = 15.0cm$$

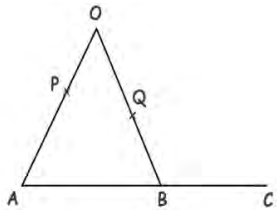
G5: Pythagoras and Trigonometry

Calculate the length of a vector

Prove that two vectors are parallel

Prove that two vectors are co-linear

G5.18 Calculate the length of a vector e.g Find the length of the vector $\begin{pmatrix} 3 \\ -4 \end{pmatrix}$	To calculate the length of a vector you use a simplified version of pythagroas' theorem. For a vector $\begin{pmatrix} x \\ y \end{pmatrix}$ you calculate $\sqrt{x^2+y^2}$ to find the length e.g $\sqrt{3^2+-4^2}$ $vector\ length = 5\ units$
G5.19 Prove that two vectors are parallel e.g OPQ is a triangle $\overrightarrow{OQ} = q$ and $\overrightarrow{OR} = p$ R is the midpoint of $\overrightarrow{OP}$ and S is the midpoint of $\overrightarrow{PQ}$ Prove that $\overrightarrow{RS}$ and $\overrightarrow{OQ}$ are parallel  	Use the skills built in G5.7/G5.8 and G5.9 to prove that two unknown vectors are parallel. Firstly by using vector notation to combine the vectors you require then showing that they are multiples of each other e.g For $\overrightarrow{RS}$ to be parallel to $\overrightarrow{OQ}$ it will need to be a multiple of q $\overrightarrow{PQ} = \overrightarrow{PO} + \overrightarrow{OQ}$ so $\overrightarrow{PQ} = q - p$ $\overrightarrow{RS} = \overrightarrow{RP} + \overrightarrow{PS}$ and as R is the mid point of $\overrightarrow{OP}$ and S is the midpoint of $\overrightarrow{PQ}$ then $\overrightarrow{RP} = \frac{p}{2}$ and $\overrightarrow{PS} = \frac{q}{2} - \frac{p}{2}$ That means that $\overrightarrow{RS} = \frac{p}{2} + \frac{q}{2} - \frac{p}{2} = \frac{q}{2}$ Therefore $\overrightarrow{OQ} = \frac{\overrightarrow{RS}}{2}$ so $\overrightarrow{RS}$ and $\overrightarrow{OQ}$ are parallel

G5.20 Prove that two vectors are co-linear (lie in a straight line) e.g AOB is a triangle P is a point on $\overrightarrow{AO}$ $\overrightarrow{AB} = 2a, \overrightarrow{AO} = 6b$ and $\overrightarrow{AP}:\overrightarrow{PO} = 2:1$ B is the midpoint of $\overrightarrow{AC}$ Q is the midpoint of $\overrightarrow{OB}$ Prove that PQC is a straight line  	To prove that two vectors are co-linear, or make a straight a straight line you need to prove that two vectors are parallel as in G5.19 but also that they both go through a common point e.g To prove that PQC is a straight line we will show that $\overrightarrow{PQ}$ and $\overrightarrow{PC}$ are parallel and as they both go through P they will make a straight line $\overrightarrow{OB} = \overrightarrow{OA} + \overrightarrow{AB} = 2a - 6b$ $\overrightarrow{PQ} = \overrightarrow{PO} + \overrightarrow{OQ}$ where $\overrightarrow{PO} = \frac{\overrightarrow{AO}}{3} = 2b$ and $\overrightarrow{OQ} = \frac{\overrightarrow{OB}}{2} = \frac{2a-6b}{2} = a - 3b$ Therefore $\overrightarrow{PQ} = 2b + a - 3b = a - b$ $\overrightarrow{PC} = \overrightarrow{PA} + \overrightarrow{AC}$ where $\overrightarrow{PA} = -\frac{2\overrightarrow{AO}}{3} = -4b$ and $\overrightarrow{AC} = 2\overrightarrow{AB} = 4a$ Therefore $\overrightarrow{PC} = -4b + 4a$ or $4a - 4b$ That means that $\overrightarrow{PC} = 4\overrightarrow{PQ}$ which proves that these two vectors are parallel. As they also both go through the common point P that proves that PQC is a straight line

N1: Calculating with Numbers

Understand the use of place value
Multiply by a two digit number
Multiply by 10, 100, 1000 etc,
Divide by a one digit number

N1.1 Understand the use of place value

e.g. What value is the 6 in the number 6700

Th H T U.
6 7 0 0

The '6' is in the thousands column. Therefore the value of the 6 is six thousand.

N1.2 Multiply by a two-digit number

e.g. 152 x 34

Draw a grid.
Write the hundreds, tens and units across the top.
Write the tens and units down the side.
Multiply each number together.
Add all the numbers from inside the box.

	100	50	2
30	3000	1500	60
4	400	200	8

152 x 34 = 3400 +1700+ 68 = **5168**

N1.3 Multiply by 10, 100, 1000 etc.

e.g. 3.52 x10
3.52 x 100
3.52 x 1000

To multiply by powers of ten, move all the digits to the left by the same number of places as the power

3.52 x 10 = 35.2 (move 1 place)
3.52 x 100 = 352 (move 2 places)
3.52 x 1000 = 3520 (move 3

N1.4 Divide by a one-digit number

e.g. 756 ÷ 3

Draw a bus stop.
The number you divide by goes on the outside.
Divide the number into the first number underneath.
If it does not go, write 0 on top and carry the number underneath.
Divide into the next number.

```
      2   5   2
   ┌──────────
 3 │ 7   5   6
     -6  ↓
   ──────
     1   5   ↓
     1   5
   ──────
         0   6
```

e.g. 756 ÷ 3 =252

N1: Calculating with Numbers

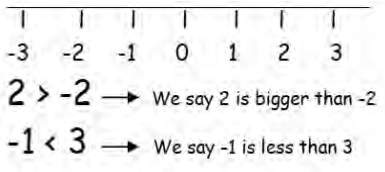
Divide by a two digit number
Use BIDMAS to order operations
Add and subtract decimals
Multiply decimals

N1.5 Divide by a two-digit number e.g. 4928 ÷ 32	Draw a bus stop. The number you divide by goes on the outside. Divide the number into the first number underneath. If it does not go, write 0 on top and carry the number underneath. Divide into the next number. 0 1 5 4 3 2 | 4 9 2 8 -3 2 ↓ 1 7 2 ↓ -1 6 0 1 2 8 -1 2 8 4928 ÷ 32 = 154
N1.6 Use BIDMAS to order operations e.g. 3 + 4 x 6 - 5	**B**racket **I**ndices **D**ivide **M**ultiply } Do these in the order they appear **A**dd **S**ubtract } Do these in the order they appear e.g. 3 + 4 x 6 - 5 = 22 ↑ first

N1.7 Add and subtract decimals e.g. 4.32 + 5.6	4.32 + 5.60 9.92 Line up the decimal point. Fill any blank spaces with 0. Add the numbers starting from the right. 4.32 + 5.6 = 9.92
N1.8 Multiply Decimals e.g. 2.5 x 1.1	Take out the decimal points. Multiply as with long multiplication. Put the decimal back in. e.g. 2.5 x 1.1 25 x 11 = 275 There are 2 decimal places in the question, so the answer is 2.75 2.5 x 1.1 = 2.75

N1: Calculating with Numbers

Divide by decimals
Order negative numbers
Add and subtract negative numbers
Multiply and divide by negative numbers

N1.9 Divide by decimals e.g. 2.84 ÷ 0.2	Make the divisor into a whole number. Multiply both numbers. e.g. 2.84 ÷ 0.2 (multiply both by 10) 28.4 ÷ 2 = 14.1 2.84 ÷ 0.2 = 14.1
N1.10 Order negative numbers e.g. order the numbers in ascending order: -3, 5, -1, -2, 0	 -3, -2, -1, 0, 5

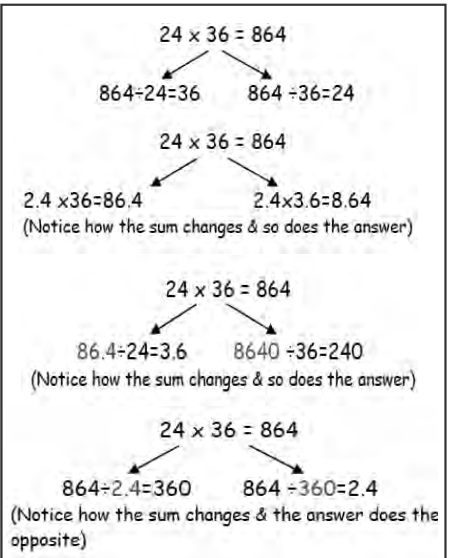
N1.11 Add and subtract negative numbers e.g. 8 + -2 8 - +2 8 - -2	Remember the rules: • When subtracting go down the number line • When adding go up the number line • 8 + - 2 is the same as 8 – 2 = 6 • 8 - + 2 is the same as 8 – 2 = 6 • 8 - - 2 is the same as 8 + 2 = 10
N1.12 Multiply and divide by negative numbers e.g. -8 x -2 -8 ÷ -2	When multiplying negatives remember: + x + = + + x - = - - x + = - - x - = + When dividing negatives remember: + x + = + + x - = - - x + = - - x - = + 8 x -2 = -16 -8 ÷ -2 = 4

N1: Calculating with Numbers

Use one calculation to work out another

Use a calculator efficiently for simple calculations

Use a calculator efficiently for powers, roots and more complex calculations

N1.13 Use one calculation to work out another e.g. 24 x 36 = 864, what is 2.4 x 3.6?	
N1.14 Use a calculator efficiently for simple calculations	Know your keys Addition: + Subtraction: - Multiply: x Divide: ÷ Equals: = Brackets: ()

N1.15 Use a calculator efficiently for powers, roots and more complex calculations	Know your keys x^2 Square key x^3 Cube key $x^{\blacksquare}$ Power key $\sqrt{\ }$ Square root key $\sqrt[3]{\ }$ Cube root key (-) Negative key $\frac{\blacksquare}{\square}$ Fraction key

N2: Fractions, Decimals and Percentages

Write equivalent fractions
Simplify a fraction
Add and subtract fractions (same denominator)
Add fractions (different denominators)
Subtract fractions (different denominators)

N2.1 Write equivalent fractions e.g. write equivalent fractions for: $\frac{4}{5}$	To write an equivalent fraction you must multiply the numerator and denominator by the same number. $\frac{4}{5} = \frac{16}{20}$ (multiply by 4) $\frac{4}{5} = \frac{40}{50}$ (multiply by 10) $\frac{4}{5} = \frac{8}{10}$ (multiply by 2)
N2.2 Simplify a fraction e.g. simplify: $\frac{8}{12}$ $\frac{15}{40}$	See what number divides exactly into both the numerator and denominator e.g. $\frac{8}{12} \xrightarrow[\div 4]{} \frac{2}{3}$ e.g. $\frac{15}{40} \xrightarrow[\div 5]{} \frac{3}{8}$

N2.3 Add and subtract fractions (same denominator) e.g. $\frac{2}{3} + \frac{2}{3}$	Add & subtract with same denominator e.g. $\frac{2}{3} + \frac{2}{3} = \frac{4}{3} = 1\frac{1}{3}$
N2.4 Add fractions (different denominators) e.g. $\frac{1}{5} + \frac{7}{10}$	Make denominators the same then add the numerators e.g. $\frac{1}{5} + \frac{7}{10}$ $= \frac{2}{10} + \frac{7}{10}$ $= \frac{9}{10}$
N2.5 Subtract fractions (different denominators) $\frac{4}{5} - \frac{2}{3}$	Make denominators the same then subtract the numerators $\frac{4}{5} - \frac{2}{3}$ $= \frac{12}{15} - \frac{10}{15}$ $= \frac{2}{15}$

N2: Fractions, Decimals and Percentages

Multiply fractions
Find a fraction of a quantity
Divide a fraction by a whole number
Order fractions
Convert common fractions, decimals and percentages

N2.6 Multiply fractions e.g. $\frac{2}{7} \times \frac{2}{3}$	When multiplying fractions, multiply the numerators and multiply the denominators. Cancel down if possible before or after the calculation. $\frac{2}{7} \times \frac{2}{3} = \frac{4}{21}$
N2.7 Find fraction of a quantity e.g. Find $\frac{4}{5}$ of £40	$\frac{4}{5}$ **means ÷ 5 x 4.** e.g. To find $\frac{4}{5}$ of £40 £40 ÷ 5 x 4 = £32
N2.8 Divide a fraction by a whole number e.g. $\frac{2}{7} \div 3$	Make the whole number a fraction e.g. 3 becomes $\frac{3}{1}$ Then Keep Change Flip: Keep first fraction the same Change ÷ to x Flip the second fraction and calculate $\frac{2}{7} \times \frac{1}{3} = \frac{2}{21}$

N2.9 Order fractions e.g. order: $\frac{5}{6}, \frac{7}{12}, \frac{2}{3}, \frac{3}{4}$	Fractions must have the same denominator They must have the same denominator e.g. $\frac{5}{6}$ $\frac{7}{12}$ $\frac{2}{3}$ $\frac{3}{4}$ ↓ ↓ ↓ ↓ $\frac{10}{12}$ $\frac{7}{12}$ $\frac{8}{12}$ $\frac{9}{12}$ $\frac{7}{12}, \frac{2}{3}, \frac{3}{4}, \frac{5}{6}$
N2.10 Convert common fractions, decimals and percentages e.g. 0.5, 0.25	LEARN THESE = 0.25 = 25% = ¼ = 0.5 = 50% = ½ = 0.75 = 75% = ¾

N2: Fractions, Decimals and Percentages

Order decimals
Find a percentage of a quantity
Converting fractions to decimals
Convert a decimal to a fraction
Convert from a percentage to a decimal to a fraction
Convert from a decimal to a percentage to a fraction
Convert fractions to decimals to percentages

N2.11 Order decimals e.g. order: 0.3, 0.304, 0.32, 0.33	Decimals need the same number of digits Give them all the same number of digits e.g. 0.3, 0.304, 0.32, 0.33 ↓ ↓ ↓ ↓ 0.300 0.304 0.320 0.330 Now the decimals can be ordered 0.3, 0.304, 0.32, 0.33
N2.12 Find percentage of a quantity e.g. 8% of £240 12.5% of 80kg 80% of 52 litres	e.g. 8% of £240 = 0.08 x 240 = £19.20 12 ½ % of 80kg = 0.125 x 80 = 10kg 80% of 52 litres = 0.8 x 52 = 41.6 litres
N2.13 Converting fraction to decimal e.g. $\frac{4}{5}$ $\frac{9}{12}$ $\frac{3}{8}$	Fractions to decimals - by changing e.g. $\frac{4}{5} = \frac{8}{10} = 0.8$ e.g. $\frac{9}{12} = \frac{3}{4} = 0.75$ Fractions to decimals - by dividing e.g. $\frac{3}{8} = 3 \div 8 = 0.375$

N2.14 Convert decimal to a fraction e.g. 0.74	To convert see what column the number ends in. In this case the hundredths. Therefore put the number over 100 and simplify. $0.74 = \frac{74}{100} = \frac{37}{50}$
N2.15 Convert from percentage to decimal to fraction e.g. 27% 7% 70%	$27\% = 0.27 = \frac{27}{100}$ $7\% = 0.07 = \frac{7}{100}$ $70\% = 0.7 = \frac{70}{100} = \frac{7}{10}$
N2.16 Convert from decimal to percentage to fraction e.g. 0.3 0.03 0.39	$0.3 = 30\% = \frac{3}{10}$ $0.03 = 3\% = \frac{3}{100}$ $0.39 = 39\% = \frac{39}{100}$
N2.17 Convert fractions to decimals to percentages e.g. $\frac{4}{5}$ $\frac{3}{8}$	$\frac{4}{5} = \frac{80}{100} = 80\% = 0.8$ Change to 100 $\frac{3}{8} = 3 \div 8 = 0.375 = 37.5\%$

N2: Fractions, Decimals and Percentages

Divide fractions
Increase by a percentage
Decrease by a percentage
Order fractions, decimals and percentages

N2.18 Divide fractions e.g. $\frac{2}{7} \div \frac{2}{3}$	Invert fraction after ÷ Multiply numerator Multiply denominators. Keep Change Flip $\frac{2}{7} \div \frac{2}{3} = \frac{2}{7} \times \frac{3}{2}$ $= \frac{6}{14} = \frac{3}{7}$
N2.19 Increase by a percentage e.g. Increase £12 by 5%	• To increase £12 by 5% 10% of £12 = £1.20 5% of £12 = £0.60 (OR 0.05 x 12 = 0.6) *Increased amount=£12 + £0.60=£12.60* If using a calculator: Multiplier needed to increase a quantity. To increase a quantity by 5% Multiply the quantity by 1.05 (100 + 5 = 105) 12 x 1.05 = £12.60

N2.20 Decrease by a percentage. e.g. Decrease £50 by 15%	• To decrease £50 by 15% 10% of £50 =£5 5% of £50 = £2.50 15% of £50 = £7.50 (OR 0.15x50=7.5) *Decreased amount = £50-£7.50=£42.50* If using a calculator: Multiplier needed to decrease a quantity. To decrease a quantity by 15%. Multiply the quantity by 0.85 (100 - 15) 50 x 0.85 = £42.50
N2.21 Order Fractions, Decimals, Percentages e.g. Order: $0.3, \frac{3}{5}, 40\%, 0.56$	You need to convert them all to the same form. In this case it is easier to convert all to decimals and then order 0.3 $\frac{3}{5}$ = 0.6 40% = 0.4 0.56 Therefore the correct order in ascending order is: 0.3, 40%, 0.56, $\frac{3}{5}$

N2: Fractions, Decimals and Percentages

Change a recurring decimal into a fraction

Prove that a recurring decimal is equal to a fraction

N2.22 Change a recurring decimal into a fraction e.g. Convert = 0.44444444444 into a fraction	Set the recurring decimal = x. Multiply by a power of 10. The power is the same as the number of digits recurring. Subtract the smaller decimal from the larger. This will give an equation. Solve the equation, leaving your answer as a fraction in its simplest terms. Let x = 0.44444444444… 10x = 4.4444444444… 9x = 4 x = $\frac{4}{9}$
N2.23 Prove that a recurring decimal is equal to a fraction e.g. prove that 0.44444 = $\frac{4}{9}$	A proof will need every step clearly written. Use the method shown in N2.22.

N3: Accuracy and Measures

Round to the nearest 1,10,100 etc

Round to 1 decimal place.

Round to 1 or more decimal places

Round to 1 significant figure

N3.1
Round to the nearest 1, 10, 100 etc.

Round 2548.6 to the nearest 1, 10, 100 & 1000.

Numbers can be **rounded to the nearest whole number, the nearest ten**, the **nearest hundred**, the **nearest thousand**, the **nearest** million, and so on.
If the digit you are **rounding** is followed by a 5, 6, 7, 8, or 9, **round** the number up. If the number you are **rounding** is followed by a 0, 1, 2, 3, or 4, **round** the number down.

1	10	100	1000
2549	2550	2500	3000

N3.2
Round to 1 decimal place.

Round to 1 decimal place:
a) 34.64
b) 53.271
c) 102.956

Numbers can be **rounded to one decimal place**.
If the digit in the 2nd decimal place is a 5, 6, 7, 8, or 9, **round** the number up. If it is a 0, 1, 2, 3, or 4, **round** the number down.

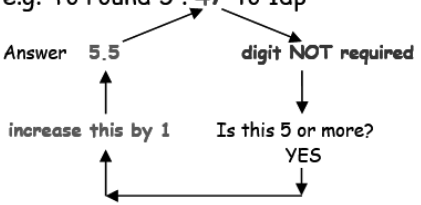
a) 34.6
b) 53.3
c) 103.0

N3.3
Round to 1 or more decimal places.

a) Round 43.568 to 2dp.
b) Round 5.6741 to 3dp.
c) Round 4.7955 to 2dp.

- Look at the digit required
- Look at the first digit NOT required

e.g. To round 5 . 47 to 1dp



a) 43.57
b) 5.674
c) 4.80

N3.4
Round to 1 significant figure.
The first s.f. is the first non-zero digit from the left.

Round to 1 significant figure:
a) 289.6
b) 4489
c) 0.000763

Look at the first non-zero digit.
Look at the next digit.
If this next digit is **5 or more**, increase the previous digit by one
If this next digit is **4 or less**, keep the previous digit the same
Replace all the digits after the first non-zero digit with zeros, stopping at the decimal point if there is one.

a) 300
b) 4000
c) 0.0008

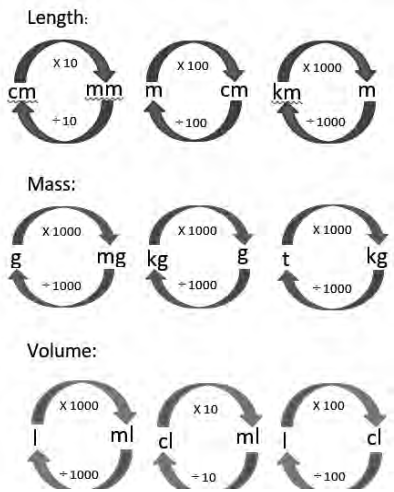
N3: Accuracy and Measures

Round to 2 or more significant figures

Estimate a calculation using rounding

Calculate with metric units

N3.5 Round to 2 or more significant figures. a) Round 65590 to 2sf. b) Round 674.82 to 3sf. c) Round 0.01362 to 2sf.	Look at the digit after the first non-zero digit. Look at the next digit. If this next digit is **5 or more**, increase the previous digit by one. If this next digit is **4 or less**, keep the previous digit the same. Replace all these other digits with zeros, stopping at the decimal point if there is one a) 66000 b) 675 c) 0.014
N3.6 Estimate a calculation using rounding. Estimate: a) 423 x 28 b) 1589 ÷ 0.473	When estimating always round each number to 1 significant figure first. a) 400 x 30 = 12000 b) 2000 ÷ 0.5 = 4000

N3.7 Calculate with metric units. Convert : a) 6m to cm b) 7200g to kg c) 34cl to l	 a) 6 x 100 = 600cm b) 7200 ÷ 1000 = 7.2 kg c) 34 ÷ 100 = 0.34 l

N3: Accuracy and Measures

Calculate with time

Calculate with money

Convert units of time

N3.8 Calculate with time.	For adding time: 1) Add the hours 2) Add the minutes 3) It the minutes are 60 or more subtract 60 from the minutes and add 1 hour.
What is 2:45 + 1:20?	Add the hours, 2 + 1 = 3. Add the minutes 45 + 20 = 65. The minutes are more than 60, so subtract 60 from the minutes, 65 – 60 = 5, and add 1 to the hours, 3 + 1 = 4. The answer is 4:05.
	For subtracting time: 1) Subtract the hours 2) Subtract the minutes 3) If the minutes are negative add 60 to the minutes and subtract 1 hour.
What is 9:15 - 3:35?	Subtract the hours, 9 - 3 = 6 Subtract the minutes 15 - 35 = -20 The minutes are negative, so add 60 to the minutes, -20 + 60 = 40, and subtract 1 from the hours, 6 - 1 = 5. The answer is 5:40.

N3.9 Calculate with money.	Use the same method of adding numbers that have 2 decimal places.
Richard buys a notebook that costs £6.78 and a pen that costs £4.19. Work out the total cost.	6.78 + 4.19 10.97 1 Total cost = £10.97
N3.10 Convert units of time.	1 century = 100 years 1 decade = 10 years 1 year = 365 days (except leap years) 1 day = 24 hours 1 hour = 60 minutes 1 minute = 60 seconds
How many seconds are there in 1 week?	7 x 24 x 60 x 60 = 604,800 seconds

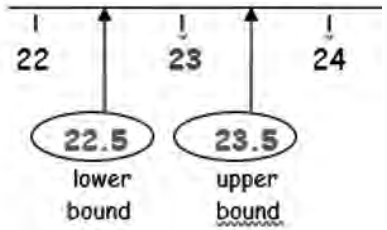
N3: Accuracy and Measures

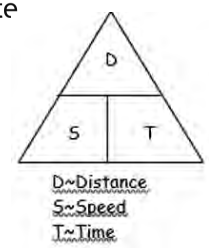
Write the upper bound and lower bound of a number or measurement

State an error interval for a rounded number

State an error interval for a truncated number

Calculate using the compound measure speed

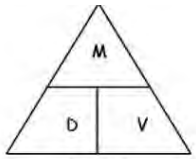
N3.11 Write the upper bound and lower bound of a number or measurement What is the lower and upper bound of 23cm if rounded to the nearest centimetre?	Bounds tell us the largest possible value of a number and the smallest possible value. 
N3.12 State an error interval for a rounded number The mass m of a table is 45.7kg rounded to 1dp. Write the error interval for this.	Lower and upper bounds can be written as error intervals with the use of inequalities. Look out for the word “rounded” when doing this type of error interval. 45.65 ≤ m < 45.75 kg

N3.13 State an error interval for a truncated number. The volume v of a tank is 78.7 litres truncated to 1dp. Write the error interval for this.	Lower and upper bounds can be written as error intervals with the use of inequalities. Look out for the word “truncated” when doing this type of error interval. 78.7 ≤ v < 78.8 litres
N3.14 Calculate using the compound measure speed. How long does a journey last if a car travels 180 miles at an average speed of 40 mph?	Use this triangle to help you to remember the different formulae. Cover up the quantity that you want to calculate S = D ÷ T D = S x T T = D ÷ S  Time taken = 180 ÷ 40 = 4.5 hours

N3: Accuracy and Measures

Calculate using the compound measure density

Use bounds to find the upper limit or lower limit of a calculation

N3.15 Calculate using the compound measure density.	Use this triangle to help you to remember the different formulae. Cover up the quantity that you want to calculate.  D = M ÷ V M = D x V V = M ÷ D M~Mass D~Density V~Volume
What is the density of a rod of aluminium that has a mass of 575.4g and a volume of 210cm³	Density = 575.4 ÷ 210 = 2.74 g/cm³

N3.16 Use bounds to find the upper limit or lower limit of a calculation	
If a is rounded to the nearest x	1.8 is rounded to 1 dp.
Upper bound = a + ½ x.	Upper bound = 1.8 + ½(0.1) = 1.85
Lower bound = a – ½ x.	Lower bound = 1.8 - ½(0.1) = 1.75
Calculating using bounds.	
Adding: Maximum = upper + upper Minimum = lower + lower	 1.85 + 1.85 = 3.70 1.75 + 1.75 = 3.50
Subtracting: Maximum = upper – lower Minimum = lower – upper	 1.85 – 1.75 = 0.10 1.75 – 1.85 = -0.10
Multiplying: Maximum = upper x upper Minimum = lower x lower	 1.85 x 1.85 = 3.4225 1.75 x 1.75 = 3.0625
Dividing: Maximum = upper ÷ lower Minimum = lower ÷ upper	 1.85 ÷ 1.75 = 1.06 (2 dp) 1.75 ÷ 1.85 = 0.95 (2 dp)

N4: Factors, Multiples and Primes

Understand the term factor
Understand the term Prime
Understand the term multiples
Understand the term square

N4.1 Understand the term 'factor'. e.g. define a factor.	**<u>FACTORS</u> are what divides exactly into a number** Factors of 12 are: 1 12 2 6 3 4
N4.2 Understand the term 'prime'. e.g. define a prime.	**<u>PRIMES</u> have exactly TWO factors** Factors of 7 are 1 and 7 **<u>7 is PRIME</u>**
N4.3 Understand the term 'multiple. e.g. define a multiple.	**Multiples are what you get when you multiply a number by successive numbers** Multiples of 12 are: 12 (= 12 x 1), 24 (= 12 x 2), 36 (= 12 x 3), and so on.
N4.4 Understand the term 'square'. e.g. define a square number.	**<u>SQUARES</u> are the result of multiplying a number by itself** 3 x 3 = 3^2 = 9 8 x 8 = 8^2 = 64 **9 & 64 are square numbers**

Understand the term cube
Calculate the power of a number
Calculate the root of a number

N4.5 Understand the term 'cube'. e.g. define a cube number.	**<u>Cubes</u> are the result of multiplying a number by itself and by itself again** 2 x 2 x 2 = 2^3 = 8 4 x 4 x 4 = 4^3 = 64 **8 & 64 are cube numbers**
N4.6 Calculate the power of a number. e.g. Calculate 4^2. Calculate 5^3. Calculate 3^4.	4^2 is 4 **squared**, or the square of 4. It means 4 x 4 = 16 5^3 is 5 **cubed**, or the cubes of 5. It means 5 x 5 x 5 = 125 3^4 is 3 **to the power of** 4. It means 3 x 3 x 3 x 3 = 81
N4.7 Calculate the root of a number. e.g. Calculate $\sqrt{16}$ $\sqrt[3]{125}$ $\sqrt[4]{81}$	The **inverse** operation for '**power**' is '**root**' $\sqrt{16} = 4$ $\sqrt[3]{125} = 5 \quad \sqrt[4]{81} = 3$ **There are keys on the calculator to all of these**

N4: Factors, Multiples and Primes

Find factors of a number
Find multiples of a number
Identify a prime number

N4.8 Find Factors of a number. e.g. find the factors of 24.	**<u>FACTORS</u> are what divides exactly into a number** You can find factors using factor pairs: <u>Factors of 24</u> 1 x 24 2 x 12 3 x 8 4 x 6 **1, 2 , 3, 4, 6, 12 and 24 are all factors of 24**
N4.9 Find Multiples of a number. e.g. list the first 6 multiples of 5.	**<u>Multiples</u> are the numbers in a times table** The first 6 multiples of 5 are… 5, 10, 15, 20, 25, 30

N4.10 Identify a Prime Number. e.g. list the prime numbers less than 30.	**<u>Prime numbers</u>** only have two factors, 1 and themselves. These are the only numbers you can divide into a prime number <u>Factors of 17</u> 1 x 17 only 17 ÷ 1 = 17 17 ÷ 17 = 1 **This means 17 is a prime number.** **2 is the only even prime number.** **1 isn't a prime number**
	The prime numbers less than 30 are… **2, 3, 5, 7, 11, 13, 17, 19, 23, 29**

N4: Factors, Multiples and Primes

Find the highest common factor of two or more numbers

Find the lowest common multiple of two or more numbers

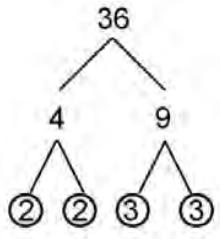
N4.11 Find the Highest Common Factor (HCF) of two or more numbers. e.g. find the HCF of 36 and 54.	Find the factors of the numbers. The **highest common factor (HCF)** is the biggest factor that is common to both. **HCF of 36 and 54** Factors of 36 1 x 36 2 x 18 3 x 12 4 x 9 6 x 6 Factors of 54 1 x 54 2 x 27 3 x 18 6 x 9 18 is the biggest factor of both, and so… **the HCF of 36 and 54 is 18** You would never be asked to find the lowest common factor as 1 is a factor of all numbers. This means there will always be an HCF for two or more numbers.

N4.12 Find the Lowest Common Multiple (LCM) of two or more numbers. e.g. find the LCM of 9 and 12.	List the multiples (times tables) of the numbers. The **Lowest Common Multiple (LCM)** is the first number common to both (in both lists). **LCM of 9 and 12** Multiples of 9 9, 18, 27, 36, 45, 54, 63, 72, 90… Multiples of 12 12, 24, 36, 48, 60, 72, 84…. **The LCM of 9 and 12 is 36** (note that 72 is also common to both, but this isn't the lowest) You would never be asked for the highest common multiple, as there are an infinite number of common multiples.

N4: Factors, Multiples and Primes

Write a number as its product of prime factors

Write large numbers in standard form

N4.13 Write a number as its product of prime factors. e.g. write 36 as the product of its prime factors.	To find the **product of prime factors** for a number, produce a factor tree. Stop when you get to prime numbers, which you circle **Product of prime factors for 36**  36 = 2 x 2 x 3 x3 **(product of prime factors)** 36 = 2^2 x 3^2 **(index form)**

N4.14 Write large numbers in standard form. e.g. Write 50000 in standard form Write 320000 in standard form	**Standard Form** is a shorthand method for writing large and small numbers. **Large Numbers in Standard Form** $5 \times 10^4 = 5000$ A number between 1 and 9.9 recurring A power of 10 $3.2 \times 10^5 = 320\,000$ 46×10^3 not standard form $= 4.6 \times 10^4$ $= 46\,000$

N4: Factors, Multiples and Primes

Write small numbers in standard form

Write a number in standard form as a regular number

N4.15
Write small numbers in standard form.

e.g.
Write 0.005 in standard form

Write 0.000041 in standard form

Standard Form is a shorthand method for writing large and small numbers.

Small Numbers in Standard Form

$5 \times 10^{-3} = 0.005$

3 zeros before the 5

A number between 1 and 9.9 recurring

A power of 10

$4.1 \times 10^{-5} = 0.000041$

32×10^{-4} not standard form

$= 3.2 \times 10^{-3}$

$= 0.0032$

N4.16
Write a number given in standard form as a regular number

e.g.
Write 5×10^4 as a number

Write 5×10^{-3} as a number.

Positive Powers

5×10^4

$= 5 \times 10000$

$=50000$

The digit 5 has moved 4 places to the left.
Positive power moves to the left by the number of places equal to the index number

Negative Powers

$5 \times 10^{-3} =$

0.005

The digit moves 3 places to the right.
Negative power moves to the left by the number of places equal to the number in the index.

N4: Factors, Multiples and Primes

Apply the law of indices for multiplying powers
Apply the law of indices for dividing powers
Apply the law of indices for powers of powers
Evaluate fractional indices

N4.17 Apply the law of indices for multiplying powers. e.g. simplify $5^3 \times 5^6$ $4^7 \times 4^{-2}$	When **multiplying indices** add the powers $5^3 \times 5^6 = 5^9$ $4^7 \times 4^{-2} = 4^5$
N4.18 Apply the law of indices for dividing powers. e.g. simplify $\frac{8^7}{8^2}$ $\frac{6^2}{6^9}$	When **dividing indices** subtract the powers $\frac{8^7}{8^2} = 8^5$ $\frac{6^2}{6^9} = 6^{-7}$ When applying the laws of indices the base number (the 8 and the 6 in the above examples) must be the same.

N4.19 Apply the law of indices for powers of powers e.g. simplify $(4^6)^2$ $(6^3)^5$ $(7^5)^{-4}$	Multiply out the brackets $(4^6)^2 = 4^6 \times 4^6$ $= 4^{12}$ $(6^3)^5 = 6^{15}$ $(7^5)^{-4} = 7^{-20}$
N4.20 Evaluate fractional indices e.g. evaluate $16^{\frac{1}{2}}$ $8^{\frac{1}{3}}$ $25^{\frac{3}{2}}$	**Fractional indices** are roots. 'Evaluate' means to show your answer as a number value, and not as an index power. $16^{\frac{1}{2}} = \sqrt{16} = 4$ $8^{\frac{1}{3}} = \sqrt[3]{8} = 2$ $25^{\frac{3}{2}}$ Denominator is the root, numerator the power. $= (\sqrt{25})^3 = 125$

N4: Factors, Multiples and Primes

Evaluate negative indices

Evaluate indices involving both negative and fractional

Simplify a surd

Simplify a surd expression

N4.21 Evaluate negative indices e.g. evaluate 4^{-2} 10^{-3}	**Negative indices** are equivalent to fractions and decimals. $4^{-2} = \frac{1}{4^2} = \frac{1}{16}$ $10^{-3} = \frac{1}{10^3} = \frac{1}{1000} = 0.001$ Give your answer as a fraction unless told otherwise.
N4.22 Evaluate indices involving both negative and fractional e.g. evaluate $16^{-\frac{3}{2}}$	$16^{-\frac{3}{2}}$ Turn into a fraction. Denominator is the root, numerator the power. $= \frac{1}{(\sqrt{16})^3} = \frac{1}{64}$

N4.23 Simplify a surd e.g. simplify $\sqrt{18}$ $\sqrt{75}$	$\sqrt{25}$ is NOT a surd because it is exactly 5. $\sqrt{3}$ is a surd because the answer is not exact. **A surd is an irrational number** **To simplify surds look for square number factors** $\sqrt{18} = \sqrt{9} \times \sqrt{2} = 3\sqrt{2}$ $\sqrt{75} = \sqrt{25} \times \sqrt{3} = 5\sqrt{3}$
N4.24 Simplify a surd expression e.g. simplify $5\sqrt{3} + 2\sqrt{3}$ $5\sqrt{3} \times 2\sqrt{3}$	$5\sqrt{3} + 2\sqrt{3} = 7\sqrt{3}$ When adding the root stays the same $5\sqrt{3} \times 2\sqrt{3} = 10\sqrt{9}$ $= 10 \times 3 = 30$

N4: Factors, Multiples and Primes

Rationalise the denominator of a fraction

Multiply two surd brackets together

N4.25
Rationalise the denominator of a fraction (simple surd)

e.g. Rationalise $\frac{3}{\sqrt{2}}$

Rationalising the denominator of a surd is removing the surd from the denominator of a fraction by multiplying the numerator and denominator of that fraction by the denominator.

In general:

$$\frac{a}{\sqrt{b}} \times \frac{\sqrt{b}}{\sqrt{b}} = \frac{a\sqrt{b}}{b}$$

Example:

$$\frac{3}{\sqrt{2}} \times \frac{\sqrt{2}}{\sqrt{2}} = \frac{3\sqrt{2}}{2}$$

These are equivalent fractions

N4.26
Multiply two surd brackets together

e.g. simplify fully

$(5-\sqrt{3})(1+\sqrt{3})$

Multiply **surd brackets** together in the same way you would in algebra with double brackets to form a quadratic expression. Using the grid method is the most straightforward way.

Example:
Simplify fully

$(5-\sqrt{3})(1+\sqrt{3})$

×	1	$\sqrt{3}$
5	5	$5\sqrt{3}$
$-\sqrt{3}$	$-\sqrt{3}$	-3

$$= 5 - \sqrt{3} + 5\sqrt{3} - 3$$

Collecting terms gives…

$$= 4\sqrt{3} + 2$$

N4: Factors, Multiples and Primes

Rationalise the denominator of a fraction (surd expression)

Calculate with numbers in standard form

N4.27 Rationalise the denominator of a fraction (surd expression) e.g. rationalise this surd $\frac{5}{3-\sqrt{2}}$	**Rationalising the denominator** of a surd is removing the surd from the denominator of a fraction by multiplying the numerator and denominator of that fraction by the denominator. **Example**: Rationalise this surd $\frac{5}{3-\sqrt{2}}$ $\frac{5}{3-\sqrt{2}} \times \frac{(3+\sqrt{2})}{(3+\sqrt{2})}$ $= \frac{5(3+\sqrt{2})}{(3-\sqrt{2})(3+\sqrt{2})}$ $= \frac{15+5\sqrt{2}}{9+3\sqrt{2}-3\sqrt{2}-2}$ $= \frac{15+5\sqrt{2}}{7}$

N4.28 Calculate with numbers in standard form (1) e.g. calculate, giving your answer in standard form, $(3 \times 10^4) \times (2 \times 10^6)$ $(4 \times 10^4) \times (6 \times 10^6)$ $(8 \times 10^9) \div (4 \times 10^3)$	When **multiplying in standard form,** use the laws of indices for the powers, while multiplying the whole numbers as usual. $(3 \times 10^4) \times (2 \times 10^6) = 6 \times 10^{10}$ $(4 \times 10^4) \times (6 \times 10^6)$ $= 24 \times 10^{10}$ $= 2.4 \times 10^{11}$ Make sure numbers are in standard form. When **dividing in standard form**, use the laws of indices for the powers, while dividing the whole numbers as usual. $(8 \times 10^9) \div (4 \times 10^3) = 2 \times 10^6$

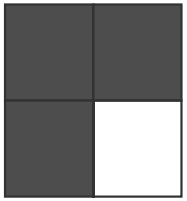
N4: Factors, Multiples and Primes

Calculate with numbers in standard form continued

N4.28 Calculate with numbers in standard form (2) e.g. Calculate, giving your answer in sta $\frac{1.2 \times 10^{12}}{2.4 \times 10^{4}}$, $(3.5 \times 10^{4}) + (6.2 \times 10^{5})$	When **dividing in standard form**, use the laws of indices for the powers, while dividing the numbers as usual. $\frac{1.2 \times 10^{12}}{2.4 \times 10^{4}} = 0.5 \times 10^{8}$ $= 5 \times 10^{7}$ Make sure numbers are in standard form. When **adding and subtracting in standard form**, turn the numbers given in standard form back into ordinary numbers first, add or subtract them, then convert your answer to standard form. $(3.5 \times 10^{4}) + (6.2 \times 10^{5})$ $= 35\,000 + 620\,000$ $= 655\,000$ $= 6.55 \times 10^{5}$

P1: Ratio and Proportion

Use proportion to describe a part of a whole
Use a ratio and a quantity to find another quantity
Simplify a ratio
Write a ratio in the form 1:n

P1.1 Use proportion to describe a part of a whole.  Describe the proportion of the shape that is white	One white square out of 4 squares altogether. So as a fraction $\frac{1}{4}$ Part is the numerator Whole is the denominator Proportion can also be a decimal or percentage. The fraction needs to be converted. As a decimal 0.25 As a percentage 75%
P1.2 Use a ratio and a quantity to find another quantity e.g. The ratio of squash to water is 1:7. How much squash do I need for 50ml of squash	Ratio Squash : Water 1:7 X 50 on this side Multiply by the same number on this side 50:350

P1.3 Simplify a ratio e.g. simplify 12:15 Simplify 30cm:1m	e.g. 12 : 15 => 4 : 5 e.g. 30cm : 1m => 30 : 100 => 3 : 1 Divide both sides by a common factor. Convert the amounts to the same units if required,
P1.4 Write a ratio in the form 1:n e.g. Write 2:5 in the form 1:n	e.g. 2 : 5 (÷ both parts by 2) => 1 : 2.5

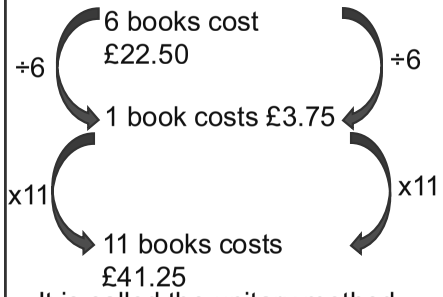
P1: Ratio and Proportion

Use a ratio to solve a problem, turning one ratio into another equivalent ratio

Changing an amount in proportion. The unitary method

Change an amount to compare two values

P1.5 Use ratio to solve a problem, turning one ratio into another equivalent ratio. e.g. A model ship is made using scale 1:600. The model ship length is 40cm. What is the real length of the ship?	e.g. A model ship is made using scale 1:600. The model ship length is 40cm. What is the real length of the ship?  Want to find what 40cm will be. So multiply 1 by 40 gives 40. Do the same to the other side of the ratio. Convert answer into sensible units. 24000cm = 240m

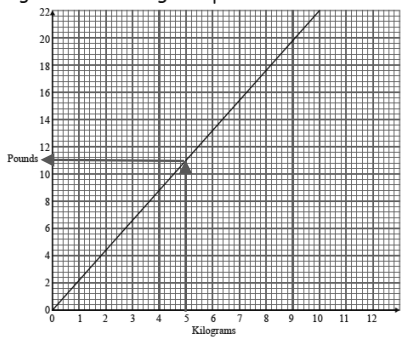
P1.6 Changing an amount in proportion. The unitary method. e.g. If 6 books cost £22.50, how much will 11 books cost?	 It is called the unitary method because you find what 1 would be before multiplying up to find the amount you need.
P1.7 Change an amount to compare two values. A best buy problem. e.g A pack of 5 pens cost £6.10 A pack of 8 pens cost £9.20 Which is the best value?	Find the cost or value of one item in each case. Divide the cost by how many. 5 cost £6.10, so 1 costs £6.10 ÷ 5 So 1 pen costs £1.22 8 cost £9.20, so 1 costs £9.20 ÷ 8 So 1 pen costs £1.15 The pack of 8 pens is the best value as the price of 1 pen is lower than in a pack of 5

P1: Ratio and Proportion

Reading a conversion graph

Dividing into a given ratio

Use multiplier to increase by a percentage

P1.8 Reading a conversion graph One unit will be on the x-axis, the other unit will be on the y-axis. Find the unit value on one axis draw a line to the graph's line and another to the other axis. Read off your value. e.g. Convert 5kg into pounds.	e.g. To convert kg and pounds  • Draw lines on to take readings • Read the scale carefully e.g. Convert 5kg into pounds. From the line we can see 5kg = 11lbs
P1.9 Dividing into a given ratio Finding different amounts given a total and different ratios e.g. Divide £40 in the ratio 1:3:4	e.g. Divide £40 in the ratio of 1 : 3 : 4 Total number of shares = 1+3+4 = 8 1 share = £40 ÷ 8 = £5 3 shares = 3 x £5 = £15 4 shares = 4 x £5 = £20 1:3:4 = £5:£15:£20

P1.10 Dividing into a given ratio Using a quantity and a number of shares to find another quantity. e.g A and B share some sweets in ratio 3:2 A gets 12 sweets, how many sweets does B get?	e.g A and B share some sweets in ratio 3:2 A gets 12 sweets, how many sweets does B get? so 3 shares = 12 1 share = 12 ÷ 3 = 4 B gets 2 x 4 = 8 sweets
P1.11 Use multiplier to increase by a percentage. e.g. What is the multiplier to increase an amount by 5%?	e.g. To increase a quantity by 5% Amount Increased from 100% by 5% so 100 + 5 = 105 105% as a decimal = 1.05 Multiply the quantity by 1.05

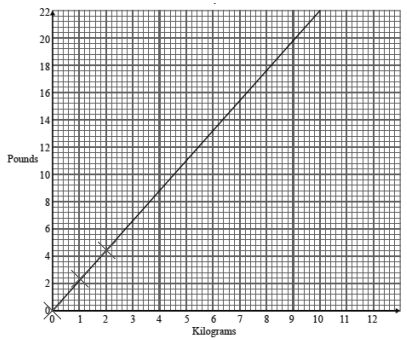
P1: Ratio and Proportion

Use multiplier to decrease by a percentage

Calculate the original amount before a percentage change (Reverse percentage)

Plotting a conversion graph

P1.12 Use multiplier to decrease by a percentage. e.g. What is the multiplier to decrease an amount by 5%?	e.g. To decrease a quantity by 5% Amount decreases from 100% by 5% so 100 - 5 = 95 95% as a decimal = 0.95 Multiply the quantity by 0.95
P1.13 Calculate the original amount before a percentage change. (Reverse Percentage) e.g. A bag costs £40 in a sale where everything has 20% off What was the original price of the bag?	e.g. A bag costs £40 in a sale where everything has 20% off What was the original price of the bag? If 20% has been taken off, then the bag is 80% of its original value. (100 - 20 = 80) So the original multiplier was 0.8 for 80% Original x 0.8 = 40 So Original = 40 ÷ 0.8 = £50

P1.14 Plotting Conversion Graphs e.g. Plot a conversion graph for Kilograms to pounds. If 1kg = 2.2lbs	e.g. Plot a conversion graph for Kilograms to pounds. If 1kg = 2.2lbs Draw suitable axes with Kilograms on one axis and Pounds on the other axis. As 1kg = 2.2lbs, plot this point on your graph. You need two more points. Double both values 2kg = 4.4lbs, plot this point Make one value zero, what happens to the other? 0kg = 0lbs, plot this point Draw a straight line through the three points with a ruler. 

P2 Proportion and Repeated Percentage Change

Understand how direct proportion affects two variables

Understand how inverse proportion affects two variables

Solve problems of direct proportion

P2.1 Understand how direct proportion affects two variables e.g. If two variables A and B are in direct proportion to one another what happens as A increase?	If A and B are in direct propotion. Then If A increases then B increases If A decreases then B decreases If A is multiplied by 2 then B is multiplied by 2. If 1 worker costs £200 to hire Then 2 workers cost £400 to hire The cost to hire is in direct proportion to how many workers are hired
P2.2 Understand how inverse proportion affects two variables e.g. If two variables A and B are in direct proportion to one another what happens as A increase?	If A and B are in inverse propotion. Then If A increases then B decreases If A decreases then B increases If A is multiplied by 2 then B is divided by 2. If 1 worker takes 2 hours to complete a job Then 2 workers will take 1 hour to complete the same job. The time taken to complete a job is inversely proportional to the amount of workers..

P2.3 Solve Problems of Direct Proportion e.g. The distance you walk is directly proportional to the time you spend walking. If I can walk 9 miles in 3 hours, how far can I walk in 5 hours?	Use Unitary Method to find how far in one hour. Divide by three then multiply by 5 9 miles : 3 hours 3 miles : 1 hour 15 miles : 5 hours Or recognise the scale factor from one value to the other. Multiply the number of hours by 3

P2 Proportion and Repeated Percentage Change

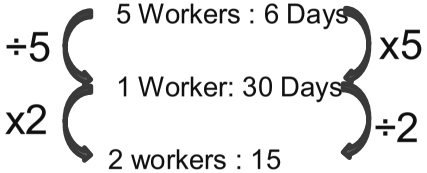
Solve problems of inverse proportion

Use similarity to find missing lengths

P2.6
Solve Problems of Inverse Proportion

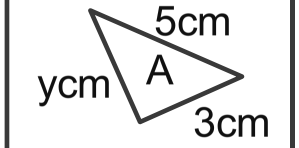
The amount of time you spend on a job is inversely proportional to the amount of people doing the job.
If it takes 5 workers 6 days to build a shed. How long will it take 2 workers?

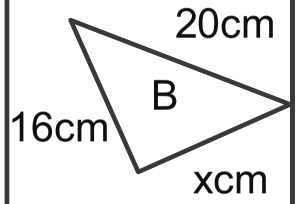
Find how long it will take for 1 worker.



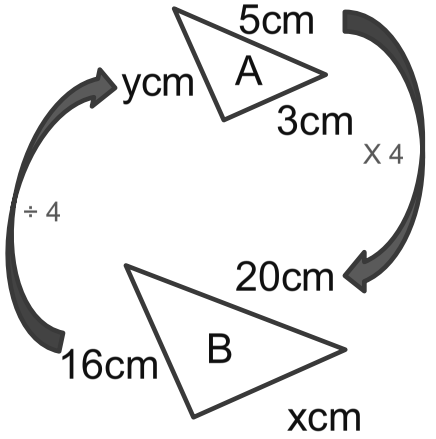
Because it is inverse proportion what you do to one value, you do the inverse to the other. So when you divide the number of workers to find 1 worker, you multiply the time by 5

P2.7
Use Similarity to Find Missing Lengths





e.g. Triangle A and B are similar. What are the lengths of the missing sides?



The multiplier from one shape to the other is the same for every corresponding side
From A to B you go from 5 cm to 20cm
20 ÷ 5 = 4. So you multiply by 4
3 x 4 = 12cm, so x = 12cm
To go from B to A you do the inverse and divide by 4.
16 ÷ 4 = 4cm so y = 4cm

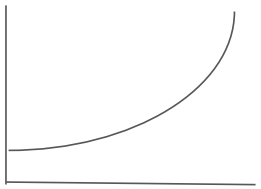
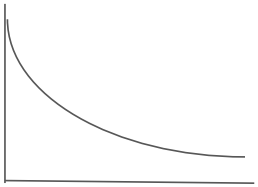
P2 Proportion and Repeated Percentage Change

Write the formula for a repeated percentage change

Use calculations of repeated percentage change

Recognise graphs of exponential growth and decay

P2.8 Write the formula for a repeated percentage change	Find the multiplier for the percentage increse or decrease. Remember Increase by 20% then multiplier is 1.2 Decrease by 20% the multiplier is 0.8 Final amount = (multiplier)$^{\text{number of years}}$ x initial amount
P2.9 Use calculations of repeated percentage change e.g. £400 is placed in a savings account that pays 5% interest PA. How much money will be in the savings account after 5 years? Round you answer to 2d.p.	Use the formula: Final amount = (multiplier)$^{\text{number of years}}$ x initial amount PA stands for per annum which means every year. So there is a 5% increase every year. The multiplier for a 5% increase is 1.05 Using the formula Final Amount = 1.05^5 x 400 = 510.512625.... =£510.51 to 2d.p.

P2.10 Recognise Graphs of Exponential Growth and Exponential Decay e.g. What would a graph of bacteria growth look like? e.g. What would a graph of radioactive decay look like?	e.g. What would a graph of bacteria growth look like? This would be a repeated percentage increase.  e.g. What would a graph of radioactive decay look like? This would be a repeated percentage decrease 

P2 Proportion and Repeated Percentage Change

To find a formula for two variables in direct proportion

To find a formula for two variables in inverse proportion

P2.11 To Find a Formula for Two Variables in Direct Proportion e.g. y is directly proportional to x. When y = 21, x = 3. Find a formula for y in terms of x	The symbol □ means 'varies as' or 'is proportional to'. Direct proportion If y □ x then y = kx If y □ x^2 then y = kx^2 If y □ x^3 then y = kx^3 e.g. y is directly proportional to x. When y = 21, x = 3. y □ x therefore y = kx 21 = k x 3 k = 7 so, y = 7x

P2.12 To Find a Formula for Two Variables in Inverse Proportion e.g. a is inversely proportional to b. When a = 12, b = 4. Find a formula for a in terms of b	The symbol □ means 'varies as' or 'is proportional to'. Inverse proportion If y □ 1/x then y = k/x If y □ $1/x^2$ then y = k/x^2 If y □ $1/x^3$ then y = k/x^3 e.g. a is inversely proportional to b. When a = 12, b = 4. Find a formula for a in terms of b a □ 1/b therefore a = k/b 12 = k/4 k = 48 so, a = 48/b

P2 Proportion and Repeated Percentage Change

Finding the multiplier or percentage change for a repeated change

Use trial and error to find the year term of a repeated change

P2.13 Finding the multiplier or percentage change for a repeated percentage change. e.g. A savings account had £2000 in it, after three years of interest, the amount in the account was £2315.25. What was the percentage interest rate on the savings account?	Formula for repeated percentage change is Final amount = (multiplier)$^{\text{number of years}}$ x initial amount e.g. A savings account had £2000 in it, after three years of interest, the amount in the account was £2315.25. What was the percentage interest rate on the savings account? Initial amount = 2000 Final amount = 2315.25 Number of years =3 Substitute into the formula 2315.25=(multiplier)^3 x 2000 Divide by 2000 1.157625 = (multiplier)$^{3`}$ Take cube root of both sides to undo the power 1.05 = multiplier 1.05 = 105% So increase has been 5% each year.

P2.14 Use Trial and Error to find the year term of a repeated percentage change e.g. A savings account had £2000 in it, after x years of interest of 5% PA, the amount in the account was £2315.25. How long were the savings in the account?	Formula for repeated percentage change is Final amount = (multiplier)$^{\text{number of years}}$ x initial amount e.g. A savings account had £2000 in it, after x years of interest of 5% PA, the amount in the account was £2315.25. How long were the savings in the account? Initial Amount = 2000 Percentage interest per year =5% 100+5 = 105 So multiplier = 1.05 Substitute these into the formula Keep trying the next value of x. Final amount = 1.05^x x 2000 Try x=1, then 1.05 x 2000 = 2100 (not the final amount) so try x=2 1.05^2 x 2000 = 2205 (not the final amount) so try x=3 1.05^3 x 2000 = 2315.25 9correct amount) So x=3 years

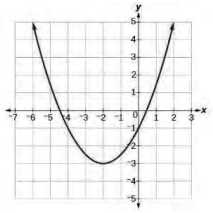
P2 Proportion and Repeated Percentage Change

Find the average or instantaneous rate of change from graph

What is the rate of change where x=0

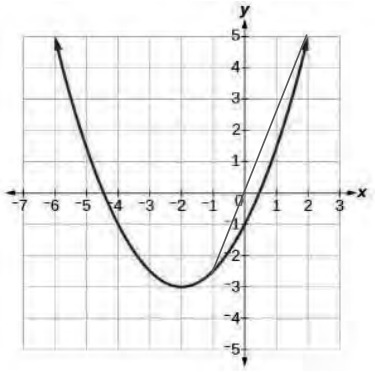
P2.15
Find the average or instantaneous rate of change from a graph

What is the average rate of change between x = -1 and x = 2?

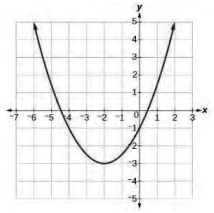


The rate of change is represented on a graph by the gradient.
The average gradient of a curve between two points is the gradient of the chord joining the two points

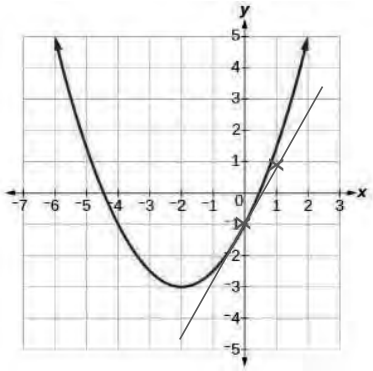
What is the average rate of change between x = -1 and x = 2?
Draw a chord on the graph between x = -1 and x = 2.
Find the gradient of the chord.
The chord passes through (-1 , -2.5) and (2 , 5)
Gradient = $\frac{5 - -2.5}{2 - -1} = \frac{7.5}{3} = 2.5$



P2.16
What is the rate of change where x = 0?



The instantaneous rate of change is the gradient at a point on the curve.
Rate of change at a point on a curve = gradient of the tangent
Draw a tangent to the curve at that point and find the gradient of the tangent.
Two points on the tangent are (0 , -1) and (1 , 1)
Calculate Gradient
= $\frac{1 - -1}{1 - 0} = 2$
Rate of change at x = 0 is 2



P2 Proportion and Repeated Percentage Change

Interpret the rate of change of graph

Using similarity to find missing areas

Using similarity to find missing volumes

P2.17 Interpret the rate of change of graph e.g. What would the rate of change represent on A) A graph of number of bacteria against time. B) A graph of the number of radioactive atoms In a substance against time. C) A Distance / Time graph D) A Speed / Time graph	The rate of change of a graph is its gradient. A gradient is how much the y-axis value changes for every one value on the x-axis. e.g. What would the rate of change represent on A) A graph of number of bacteria against time. B) A graph of the number of radioactive atoms In a substance against time. C) A Distance / Time graph D) A Speed / Time graph Answers A) The rate of growth of the bacteria B) The rate of decay of the radioactive substance C) The rate of change of distance over time which is SPEED D) The rate of change of speed over time which is ACCELERATION

P2.18 Using similarity to find missing areas. If height of shape A is 4cm, height of shape B is 6cm A and B are similar shapes. If the surface area of A is $20cm^2$ what is the surface area of B?	If Length scale factor = k Then Area scale factor = $\mathbf{k^2}$ If height of shape A is 4cm, height of shape B is 6cm A and B are similar shapes. If the surface area of A is $20cm^2$ what is the surface area of B? Length scale factor = 6 ÷ 4 = 1.5 Area scale factor = 1.52 = 2.25 Surface area of B = 20 x 2.25 = $45cm^2$
P2.19 Using similarity to find missing volumes. If height of shape A is 4cm, height of shape B is 6cm A and B are similar shapes. If the surface area of A is $10cm^3$ what is the volume of B?	If Length scale factor = k Then Volume scale factor = $\mathbf{k^3}$ If the surface area of A is $10cm^3$ what is the volume of B? Length scale factor = 6 ÷ 4 = 1.5 Volume scale factor = $1.5^3 = 3.375$ Volume of B = 10 x 3.375 = $33.75cm^3$

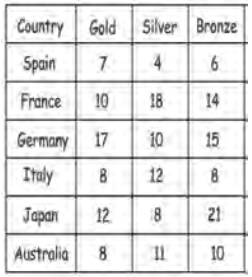
S1: Data Handling

Understand how to collect data

Understand the concept of bias when collecting data

Reading data from a table

S1.1 Understand how to collect data e.g. describe different methods of data collection.	Ways to collect data: **Data collection sheets** which are also called tally charts. (see S1.4) **Two-way tables** are a way of sorting data from more than one category, so that the frequency of each category can be seen quickly and easily. **Questionnaires** are used for most surveys. They have questions and choices of responses.
S1.2 Understand the concept of bias when collecting data e.g. explain what is meant by bias.	**Bias** occurs when one answer is favoured over another. It can lead to unreliable results. Data collection should be planned to minimise **bias**. Random samples minimise **bias**.

S1.3 Reading data from a table e.g. using the table, answer the questions.  (a) How many Gold medals did Australia win? (b) Which country won the most Silver medals? (c) Which countries won more than 12 Bronze medals?	Read the table carefully. Cross reference the columns and rows to find the values you are looking for. a) Australia won 8 gold medals b) France won the most silver medals (18) c) France, Germany and Japan won more than 12 Bronze medals

Country	Gold	Silver	Bronze
Spain	7	4	6
France	10	18	14
Germany	17	10	15
Italy	8	12	8
Japan	12	8	21
Australia	8	11	10

S1: Data Handling

Collect data in a tally chart
Draw a bar chart
Interpret a bar chart
Draw a pictogram

S1.4
Collect data in a tally chart
e.g. 10 students were asked which type of movie they preferred. Their responses were horror, action, comedy, action, action, romance, comedy, action, action, horror.
Show this data in a tally chart.

On a tally chart each occurrence is shown by a tally mark.

Every fifth tally is drawn across to make a "gate".

The tallies are counted to give the frequency (f).

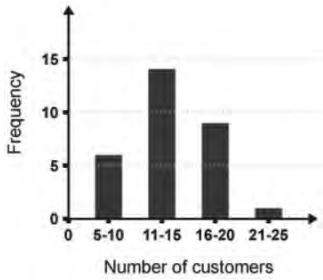
Movie Type	Tally	f
Action	𝍸	5
Horror	II	2
Romance	I	1
Comedy	II	2

S1.5
Draw a bar chart

e.g. draw a bar chart from this table

Customers	f
5 - 10	6
11 – 15	14
16 - 20	9
21 - 25	1

On a **bar chart** the height of the bar is the frequency.



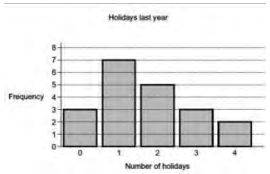
A bar chart is used for discrete data. There must be gaps between the bars.

S1.6
Interpret a bar chart

e.g. how many people went on 1 holiday?

The x axis shows the category.
The y axis shows the frequency.

The number of people who went on 1 holiday was 7.

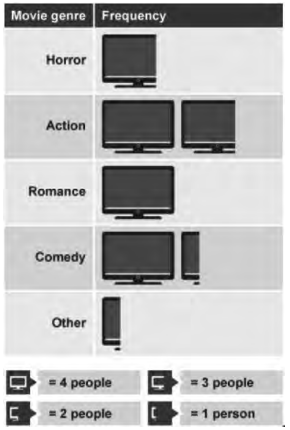


S1.7
Draw a pictogram

e.g. draw a pictogram for this table.

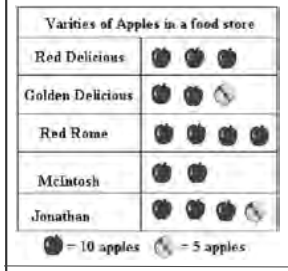
Movie Genre	f
Horror	3
Action	7
Romance	4
Comedy	5
Other	1

A **pictogram** shows frequency using pictures.
A key shows what each picture is worth.



S1: Data Handling

Interpret a pictogram
Calculate a mean from a list of numbers
Find the mode of a list of numbers
Find the median for a list of numbers

S1.8 Interpret a pictogram e.g. how many Golden Delicious were there?  	Use or interpret part of a symbol to count quantities. For Golden Delicious: 2 whole apples = 20; 1 half apple = 5; 25 apples in total.
S1.9 Calculate a mean from a list of numbers e.g. calculate the mean of 3, 4, 6, 7.	Add all the numbers. Divide by how many there are. Mean of 3, 4, 6, 7 $\frac{3+4+6+7}{4} = 5$ The mean is 5

S1.10 Find the mode of a list of numbers e.g. what is the mode of 1, 2, 3, 3, 3, 3, 5, 5? 1, 1, 2, 2, 4, 6, 7, 8, 9? 1, 2, 3, 4, 5?	The Mode is the most common number or object. 3 occurs the most so 3 is the mode. 1 and 2 occur twice, so they are the modes. The data set is bimodal.
S1.11 Find the median for a list of numbers. e.g. find the Median of 2, 7, 4, 3, 5 2, 6, 4, 7, 5, 3	All occur once so there is no mode. The Median is the middle number, or middle value of a middle pair, in an ordered list. Order the numbers - 2, 3, 4, 5, 7. 4 is in the middle, so 4 is the median. Order the numbers – 2, 3, 4, 5, 6, 7. 4 and 5 are in the middle. The middle of 4 and 5 is 4.5, so 4.5 is the median.

S1: Data Handling

Find the range of a list of numbers
Compare data distributions using averages and range
Draw a stem and leaf chart
Interpret a stem and leaf chart

S1.12 Find the range of a list of numbers e.g. what is the range of 1, 2, 3, 4? -4, 2 , 7 , 8?	The Range is the difference between the largest and smallest value. It is the largest value minus the smallest value. 4 - 1 = 3, so the range is 3. 8 - -4 = 8 + 4 = 12, so 12 is the range.
S1.13 Compare data distributions using averages and range e.g. compare the heights of boys and girls using this table. B G Mean 1.75m 1.69m Range 32cm 25cm	To compare two or more data sets you <u>must;</u> Compare an average for each data set, Compare the spread of each data set. Comments should relate to the context of the data sets. The boys are taller, on average, than the girls since the mean is larger for the boys. The heights of the girls are more consistent since the range for the girls is lower.

S1.14 Draw a stem and leaf chart e.g. draw a stem and leaf chart for these data; 8, 8, 9, 11, 12, 13, 14, 14, 18, 19, 20, 23, 25, 25, 27, 27, 28, 32, 32, 33, 33, 36, 36, 38, 38, 41, 42, 43, 43, 45	Make sure data is in order. Include a key. 0 | 8 8 9 1 | 1 2 3 4 4 8 9 2 | 0 3 5 5 7 7 8 3 | 2 2 3 3 6 6 8 8 4 | 1 2 3 3 5 Key: 1 | 3 = 13 This number here is 42.
S1.15 Interpret a stem and leaf chart. e.g. find the median, range and mode from this stem and leaf. Key: 3|1 means 31 Stem | Leaf 1 | 9 9 2 | 0 4 7 8 3 | 1 2 2 2 6 4 | 0 5 5 5 | 5	Key: 3|1 means 31 Stem | Leaf 1 | 9 9 2 | 0 4 7 8 3 | 1 2 2 2 6 4 | 0 5 5 5 | 5 Median = middle number = 32. Mode = 32 (this occurs three times). Range = 55 – 19 = 36.

S1: Data Handling

Construct a pie chart

Interpret a pie chart

Understand the different types of data

S1.16 Construct a pie chart e.g. if the frequency is 60, what is the angle that represents each person?	Divide 360 degrees by the total frequency Multiply each frequency by this number to find the angle of each sector. Number of people = 60. 360º ÷ 60 = 6º so each person = 6º.
S1.17 Interpret a pie chart e.g. which country has more people under 15? 	Pie charts show proportion. Without information on the size of the survey, actual numbers are not known. Here we are not told how many people are in each population. We can only comment on proportion by comparing the sizes of sectors in each pie chart. There is a larger proportion of the population under 15 in Ireland than there is in Greece.

S1.18 Understand the different types of data e.g. describe the following data types.	**Data** is a collective name for information recorded for statistical purposes. There are many types of data.
Qualitative	**Qualitative data** can only be written in words, e.g. the colours of cars.
Quantitative	**Quantitative data** can be written in numbers, e.g. heights of children.
Discrete	**Discrete data** is numerical data that are usually integer values, e.g. the number of children in a classroom.
Continuous	**Continuous data** is numerical data that can be shown in decimals, e.g. the weights of babies.
Primary	**Primary data** is data collected from the original source, e.g. via a survey.
Secondary	**Secondary data** is data collected from other sources, e.g. national statistics.

S1: Data Handling

Understand how to take and use a sample of data

Find the median and quartiles from a list of data

S1.19 Understand how to take and use a sample of data. e.g. describe how to take a sample.	A sample should be: a small group of the population, an adequate size, representative of the population. <u>Simple random sampling</u> Everyone has an equal chance of being part of the sample. <u>Systematic sampling</u> Arranged in some sort of order. e.g. every 10th item in the population.

S1.20 Find the median and quartiles from a list of data e.g. find the median, lower quartile, upper quartile and interquartile range from the data set; 1, 4, 7, 8, 9, 13, 16	n is the number of items in the data set (in this case 7 items). Write the values in order. **Median** is the $\frac{(n+1)}{2}th$ value. $\frac{7+1}{2}$ = 4. 4th item is 8. **Lower Quartile (LQ)** is the $\frac{(n+1)}{4}th$ value. $\frac{7+1}{4}$ = 2. 2nd item is 4. **Upper Quartile (UQ)** is the $\frac{3(n+1)}{4}th$ value. $\frac{3(7+1)}{2}$ = 6. 6th item is 13. **Interquartile Range (IQR)** IQR = UQ – LQ = 13 – 4 = 9.

S1: Data Handling

Compare distributions by comparing mean and range in context of the distributions

Draw a two way table

Interpret a two way table

S1.21
Compare distributions by comparing the mean
and the range in context
of the distributions

e.g. compare the heights of boys and

	B	G
Median	1.65m	1.54m
IQR	33cm	27cm

To compare two or more data sets you must:
Compare an average for each data set,
Compare the spread of each data set,
Comments should relate to the context of the data sets.

The boys are taller on average than the girls since the median is higher for the boys.

The heights of the girls are more consistent since the IQR is lower.

S1.22
Draw a two-way table

e.g. draw a two way table for data about how boys and girls travel to school.

The IQR covers the middle 50%.

Two-way tables are a way of sorting
data with two variables, showing the frequency of each category quickly and easily.

To sort data by category
e.g. how students travel to school

	Bus	Walk	Cycle	Total
Boys				
Girls				
Total				

S1.23
Interpret a two way table

e.g. from the table: what is the probability a student walks?

What is the probability
of walking, given you

	Walk	Bus	Other	Total
Boys	20			55
Girls		12		
Total	36		42	100

Complete the information in the table

	Walk	Bus	Other	Total
Boys	20	10	25	55
Girls	16	12	17	45
Total	36	22	42	100

From the completed two way table:

P(Walk) = $\frac{36}{100} = \frac{9}{25}$

P(Walk given you are a girl) = $\frac{16}{45}$

S1: Data Handling

Understand how to take a stratified sample

S1.24
Understand how to take a stratified sample

e.g. given the table below, show how to take a stratified

Language	Number of students
Greek	145
Spanish	121
German	198
French	186
Total	**650**

Sample is divided into groups according to criteria. These groups are called strata.
A simple random sample is taken from each group in proportion to its size using the formula:

Number from each group =
$\frac{\text{stratum size}}{\text{population}}$ x sample size.

Number from Greek
$= \frac{145}{650} \times 70 \approx 16$

Number from Spanish
$= \frac{121}{650} \times 70 \approx 13$

Number from German
$= \frac{198}{650} \times 70 \approx 21$

Number from French
$= \frac{186}{650} \times 70 \approx 20$

This only tells us 'how many' to take. Take a random sample from each Language.

S2: Grouped Frequency

To be able to group data into a grouped frequency table

Draw and interpret a frequency polygon

Find mean from a frequency table

S2.1
To be able to group data into a grouped frequency table

e.g. put these number of customers in a grouped frequency table.

13	8	16	12	12	16
7	18	11	16	15	7
11	12	13	21	17	19
11	14	10	19	13	12
7	16	6	14	12	18

When a lot of **data** needs to be sorted, use a **grouped frequency table**.

Consider class width carefully. The smallest number is 6 and the biggest number is 21, so groups with a width of 5 are reasonable.

Customers	Tally	Frequency
6 - 10	𝍸 I	6
11 – 15	𝍸 𝍸 IIII	14
16 – 20	𝍸 IIII	9
21 - 25	I	1

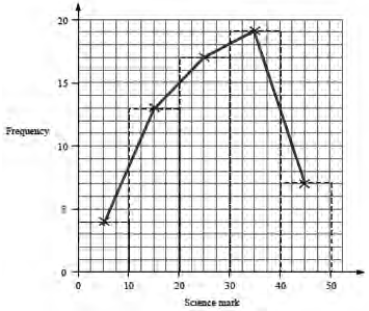
S2.2
Draw and interpret a frequency polygon.

e.g. draw a frequency polygon for the following information.

Science Mark	Frequency
0 - 10	4
10 – 20	13
20 – 30	16
30 – 40	19
40 – 50	7

A **frequency polygon** shows the frequencies for different groups.

To plot a frequency polygon of grouped data, plot the frequency at the midpoint of each group.



S2.3
Find mean from a frequency table

e.g. find the mean from this table.

Goals (x)	Frequency (f)
0	2
1	2
2	5
3	1
	10

The **mean** is found by adding up all the numbers and dividing by how many numbers there are.

The total amount of goals can be worked by multiplying goals (x) by the frequency (f), to give fx.

Goals (x)	Frequency (f)	fx
0	2	0 x 2 = 0
1	2	1 x 2 = 2
2	5	2 x 5 = 10
3	1	3 x 1 = 3
	10	15

The total number of goals is 15.
There were 10 football games.
15 ÷ 10 = 1.5, so the mean is 1.5.

S2: Grouped Frequency

Find median from a frequency table
Find range from a frequency table
Find the mode from a frequency table
Construct a scatter graph

S2.11
Find median from a frequency table

e.g. find the median from this table.

Goals (x)	Frequency (f)
0	2
1	2
2	5
3	1
	10

The **median value** is the middle value
when all items are in order.
Median = $\frac{n+1}{2}$ th value.
n (total frequency) is 10.
Median = $\frac{10+1}{2} = \frac{11}{2}$ = 5.5th value.
The median is halfway between the 5th and 6th items of data.

Goals (x)	Frequency (f)	Cumulative
0	2	2
1	2	2 + 2 = 4
2	5	4 + 5 = 9
3	1	9 + 1 = 10

The 5th item of data is 2.
The 6th item of data is 2.
The median number of goals is 2.

2.4
Find range from a frequency table

e.g. find the range from this table.

Goals (x)	Frequency (f)
0	2
1	2
2	5
3	1
	10

The **range** is the highest value take away the lowest value.

The highest value in the table is 3 goals.
The lowest value is 0 goals.
The range is 3 – 0 = 3 goals.

2.5
Find the mode from a frequency table

e.g. find the mode from this table.

Goals (x)	Frequency (f)
0	2
1	2
2	5
3	1
	10

The **modal value** is the value with the highest **frequency**.

There were five football matches where 2 goals were scored, which is a higher frequency than any other amount of goals.

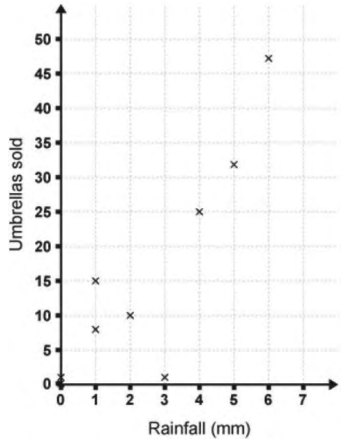
The modal amount of goals scored is 2.

2.6
Construct a scatter graph

e.g. construct a scatter graph from this data.

Rainfall (mm)	Umbrellas Sold
3	1
2	10
4	25
0	0
0	1
5	32
6	47
1	8
1	15

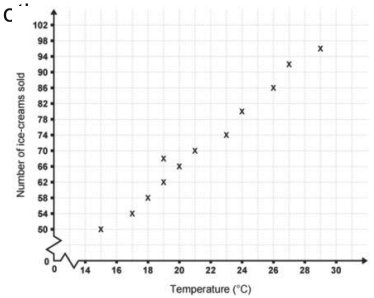
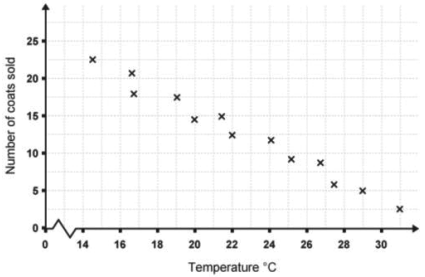
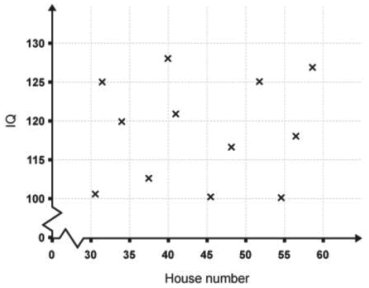
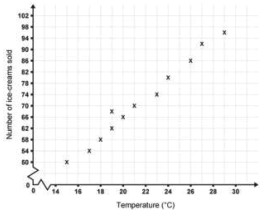
Scatter graphs are used to see if there is a **correlation** between two sets of data.



S2: Grouped Frequency

Identify the correlation of a scatter graph

Describe the relationship presented by a scatter graph

2.7 Identify the correlation of a scatter graph e.g. sketch a scatter graph showing positive correlation and a scatter graph showing negative correlation.	Graphs can either have positive correlation, negative correlation or no correlation. **Positive correlation** means as one variable increases, so does the c…  **Negative correlation** means as one variable increases, the other decreases. 
	No correlation means there is no connection between the two va… 
2.8 Describe the relationship presented by a scatter graph e.g. describe the relationship shown in this scatter graph. 	The relationship presented by a scatter graph is described by its correlation. It is important that you mention both variables in your description of the relationship. There is a positive correlation between sales of ice cream and the temperature, so temperatures rises so does the sale of ice cream.

S2: Grouped Frequency

Find Draw a line of best fit for a scatter graph

Use a scatter graph to estimate results

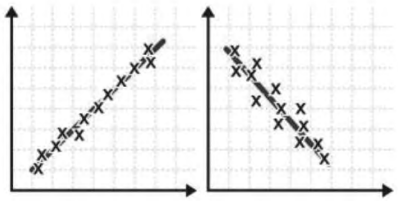
Estimate the mean from a grouped frequency table

2.9
Draw a line of best fit for a scatter graph.

e.g. draw a line of best fit for positive and negative correlation.

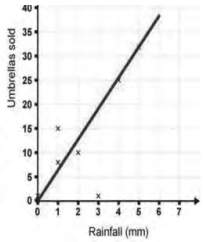
A **line of best fit** is a sensible straight
line that goes as centrally as possible
through the coordinates plotted.

There should roughly be the same

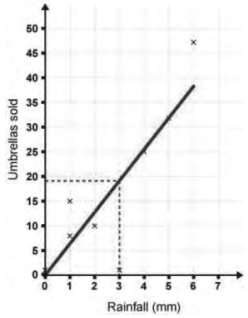


2.10
Use a scatter graph to estimate results

e.g. estimate how many umbrellas will be sold given 3mm of rainfall?



Estimate results using the line of best fit.
Find 3 mm of rainfall on the graph.
Draw a line going up from 3 mm, then draw a line across to the y axis.



2.12
Estimate the mean from a grouped frequency table.

e.g. estimate the mean from this table.

Minutes Late (m)	Frequency
0 < m ≤ 4	11
4 < m ≤ 8	13
8 < m ≤ 12	7
12 < m ≤ 16	9
16 < m ≤ 20	4

We don't know the exact value of each item of data in each group.

The best estimate we can make is to use the midpoint of each group.

Minutes Late (m)	Frequency	Midpoint
0 < m ≤ 4	11	2
4 < m ≤ 8	13	6
8 < m ≤ 12	7	10
12 < m ≤ 16	9	14
16 < m ≤ 20	4	18

The total number of minutes late can be found by multiplying the frequencies by the midpoints.

Minutes Late (m)	Frequency	Midpoint	mp x f
0 < m ≤ 4	11	2	22
4 < m ≤ 8	13	6	78
8 < m ≤ 12	7	10	70
12 < m ≤ 16	9	14	126
16 < m ≤ 20	4	18	72
	44		368

The estimate of the mean is calculated by dividing the total minutes late by the total number of trains (total frequency).

Mean $\approx \frac{368}{44} \approx 8.4$ minutes.

S2: Grouped Frequency

Identify the modal class of a grouped frequency table

Identify the class containing the median from a grouped frequency table

Understand the terms extrapolation and interpolation related to scatter graphs

Calculate cumulative frequency

2.13
Identify the modal class of a grouped frequency table.

e.g. find the modal class from this frequency table.

Minutes Late (m)	Frequency
$0 < m \leq 4$	11
$4 < m \leq 8$	13
$8 < m \leq 12$	7
$12 < m \leq 16$	9
$16 < m \leq 20$	4

The modal class is the group with the highest frequency.

The group with the highest frequency is $4 < m \leq 8$ which occurs 13 times.

The modal class is $4 < m \leq 8$.

2.14
Identify the class containing the median from a grouped frequency table

e.g. find the class containing the median from this table.

Minutes Late (m)	Frequency
$0 < m \leq 4$	11
$4 < m \leq 8$	13
$8 < m \leq 12$	7
$12 < m \leq 16$	9
$16 < m \leq 20$	4

The **median value** is the middle value when all items are in order.

Median = $\frac{n+1}{2}$ the value.

n (total frequency) is 44.

Median = $\frac{44+1}{2} = \frac{45}{2}$ = 22.5th value.

The median is halfway between the 23rd and 24th items of data.

Using cumulative frequency, the 24th item is at the end of the $4 < m \leq 8$ class, so the 23rd item is also in that class.

The median value is in the $4 < m \leq 8$ class.

2.15
Understand the terms extrapolation and interpolation related to scatter graphs

Interpolation is predicting within the range of the data.
This is seen as a reliable estimation.

Extrapolation is predicting from outside of the range of the data.
It is subject to greater uncertainty.

2.16
Calculate cumulative frequency

e.g. use this table to calculate cumulative frequency.

Length (cm)	Frequency
$30 < l \leq 35$	4
$35 < l \leq 40$	10
$40 < l \leq 45$	11
$45 < l \leq 50$	12
$50 < l \leq 55$	3

To calculate the cumulative frequencies, add the frequencies together.

Length (cm)	Frequency	Cum Freq
$30 < l \leq 35$	4	4
$35 < l \leq 40$	10	14
$40 < l \leq 45$	11	25
$45 < l \leq 50$	12	37
$50 < l \leq 55$	3	40

S2: Grouped Frequency

Plot a cumulative frequency chart

Read median and quartiles from cumulative frequency chart

2.17
Plot a cumulative frequency chart

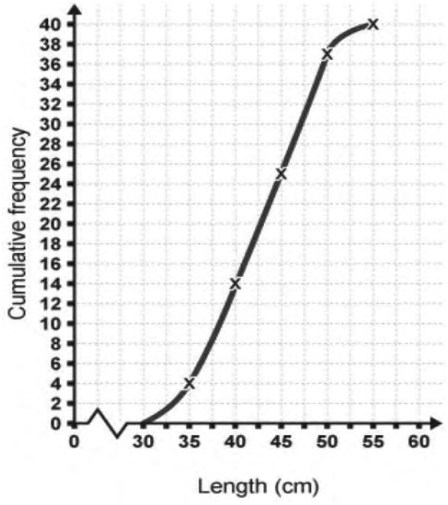
e.g. plot a cumulative frequency chart or graph from this table.

Length (cm)	f	Cum Freq
30 < l ≤ 35	4	4
35 < l ≤ 40	10	14
40 < l ≤ 45	11	25
45 < l ≤ 50	12	37
50 < l ≤ 55	3	40

A cumulative frequency diagram is drawn by plotting the upper class boundary with the cumulative frequency.

Cumulative frequency is plotted on the vertical axis and length is plotted on the horizontal axis.

Points are joined with a smooth curve.



2.18
Read median and quartiles from cumulative frequency chart

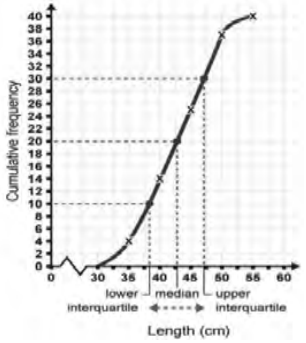
e.g. find the median, lower quartile and upper quartile from the cumulative frequency graph in section 2.17.

To find values, draw a line across from the position and read down from the curve.
s the number of items in the data set (40).
Median is the $\frac{n}{2}th$ value.
$\frac{40}{2}$ = 20. 20th item is approximately 43.

Lower Quartile (LQ) is the $\frac{n}{4}th$ value.
$\frac{40}{4}$ = 10. 10th item is approximately 38.

Upper Quartile (UQ) is the $\frac{3n}{4}th$ value.
$\frac{3(40)}{4}$ = 30. 30th item is approximately 47.

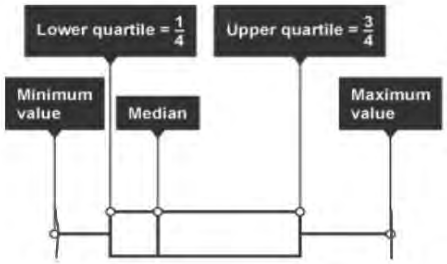
Interquartile Range (IQR)
IQR = UQ – LQ = 47 – 38 = 9.

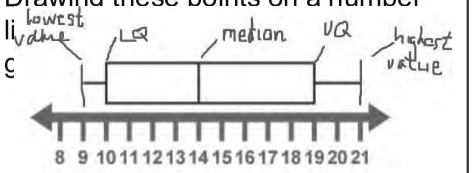


S2: Grouped Frequency

Draw a box plot

Draw a box plot from a list of numbers

2.19 Draw a box plot e.g. show the values required to draw a box plot.	A **box plot** is a visual representation of the **median** and **quartiles** of a set of **data**. To draw a box plot, the following values are needed: minimum; **lower quartile;** median; **upper quartile;** 

2.19 a) Draw a box plot from a list of numbers. e.g. draw a box plot from this list of numbers: 9, 10, 10, 12, 13, 14, 17, 18, 19, 21, 21.	Box plots can be created from a list of numbers by finding the median, lower and upper quartiles. Minimum value = 9. Maximum value = 21. **Median** is the $\frac{n+1}{2}th$ value. $\frac{11+1}{2}$ = 6. 6th item is 14. **Lower Quartile (LQ)** is the $\frac{n+1}{4}th$ value. $\frac{11+1}{4}$ = 3. 3rd item is 10. **Upper Quartile (UQ)** is the $\frac{3(n+1)}{4}th$ value. $\frac{3(11+1)}{4}$ = 9. 9th item is 19. Drawing these points on a number li c 

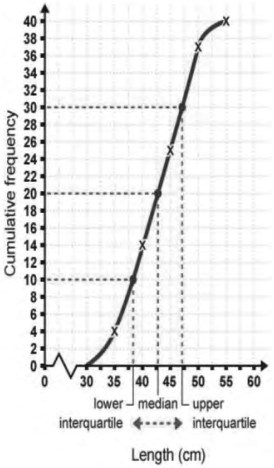
S2: Grouped Frequency

Drawing a box plot from a cumulative frequency graph

Compare distributions displayed as box plots by comparing the median and the interquartile range in context

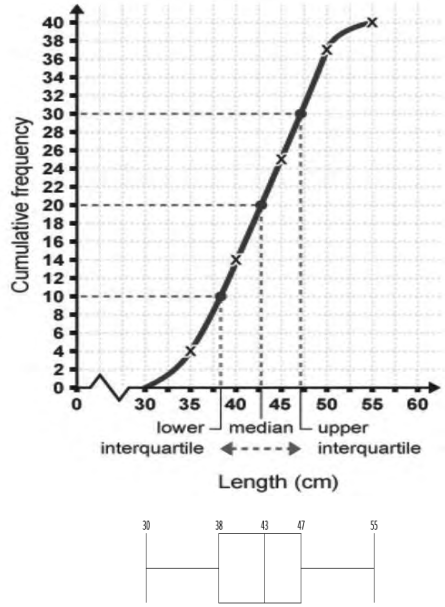
2.19
b) Drawing a box plot from a cumulative frequency graph

e.g. draw a box plot for the cumulative frequency chart.



Find the maximum, minimum, median and quartiles from the **cumulative frequency** graph.

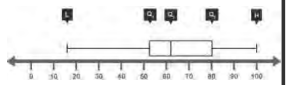
The minimum and maximum values of the box plot are where the cumulative frequency begins and ends.



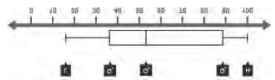
2.20
Compare distribution displayed as box plots by comparing the median and the interquartile range (IQR) in context

e.g. give two comparisons for these two boxplots.

Mr Wilson's Maths class.



Mr Galbraith's English class.



Compare the median for both box plots.

The median for Mr Wilson's results (62) is higher than median for Mr Galbraith's results (53).
On average, Mr Wilson's class performed better in the test in Maths than Mr Galbraith's class did in English.

Compare the IQR for both box plots.

The pupils in Mr Galbraith's class had more varied results as their IQR (53) is greater than the IQR (28) in Mr Wilson's class.

S2: Grouped Frequency

Know how to calculate frequency density for a histogram of unequal widths

Calculate frequencies from a histogram of unequal widths

2.21
Know how to calculate frequency density for a histogram of unequal widths

e.g. calculate the frequency density from these values.

Age (a)	Frequency
$5 \leq a < 11$	6
$11 \leq a < 16$	15
$16 \leq a < 17$	4

On a **histogram** the area of the bar shows the frequency of the **data**.

Histograms are typically used when the data is in groups of unequal width.

Frequency density is used instead of frequency.

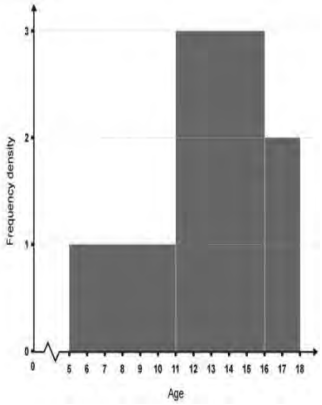
Frequency density (FD) = $\frac{frequency}{class\ width}$

Age (a)	Frequency	Class Width	FD
$5 \leq a < 11$	6	6	1
$11 \leq a < 16$	15	5	3
$16 \leq a < 17$	4	2	2

2.22
Plot a histogram of unequal widths.

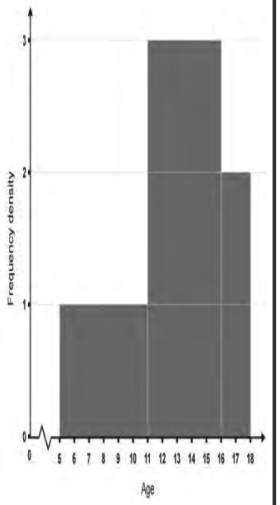
e.g. plot a histogram from this table in section 2.21.

Plot Frequency Density on the y axis.



2.23
Calculate frequencies from a histogram of unequal widths

e.g. calculate the frequency for each category from the histogram.



Frequency = Frequency Density x Class Width

Children aged 5 – 11:
Frequency = 1 x 6 = 6.

Children aged 11 – 16:
Frequency = 3 x 5 = 15.

Children aged 16 – 18:
Frequency = 2 x 2 = 4.

S3: Probability

Calculate the theoretical probability of an event
Use the exhaustive rule of probability,
Use a sample space to find the probability of a combined event
Use the property that the sum of mutually exclusive probabilities is 1

S3.1
Calculate the theoretical probability of an event

e.g. What is the theoretical probability of rolling a 6 on a single die?

- Calculate probability

$$P(\text{event}) = \frac{\text{No. of outcomes which give the event}}{\text{Total number of outcomes}}$$

Probability of rolling a 6
There is only one 6 on the die
There are 6 numbers on the die

$$P(6) = \frac{1}{6}$$

S3.2
Use the exhaustive rule of probability, the probability of an event + the probability of that event not happening = 1

e.g. The probability it will rain today is 0.7. What is the probability it won't rain today?

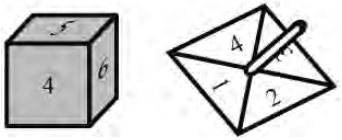
Probability of an event NOT happening

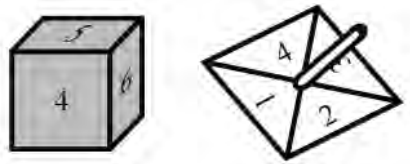
If P (event) = p
P (event NOT happening) = 1 – p

e.g. P (rain) = 0.7
P (not rain) = 1 – 0.7 = 0.3

S3.3
Use a sample space to find the probability of a combined event

e.g. A dice is rolled and a spinner is spun and the scores are added together. Create a sample space diagram to show all possible outcomes from spinning a spinner and rolling a dice.





		Dice					
	+	1	2	3	4	5	6
Spinner	1	2	3	4	5	6	7
	2	3	4	5	6	7	8
	3	4	5	6	7	8	9
	4	5	6	7	8	9	10

S3.4
Use the property that the sum of mutually exclusive probabilities is 1

e.g. If outcomes A and B are mutually exclusive and the probability of A occurring is 0.47 … what is the probability of B occurring?

If 2 outcomes cannot occur together they are mutually exclusive
If 2 outcomes A and B are mutually exclusive
P(A) + p(B) = 1

1 - P(A) = P(B)
1 - 0.47 = P(B)
P(B) = 0.53

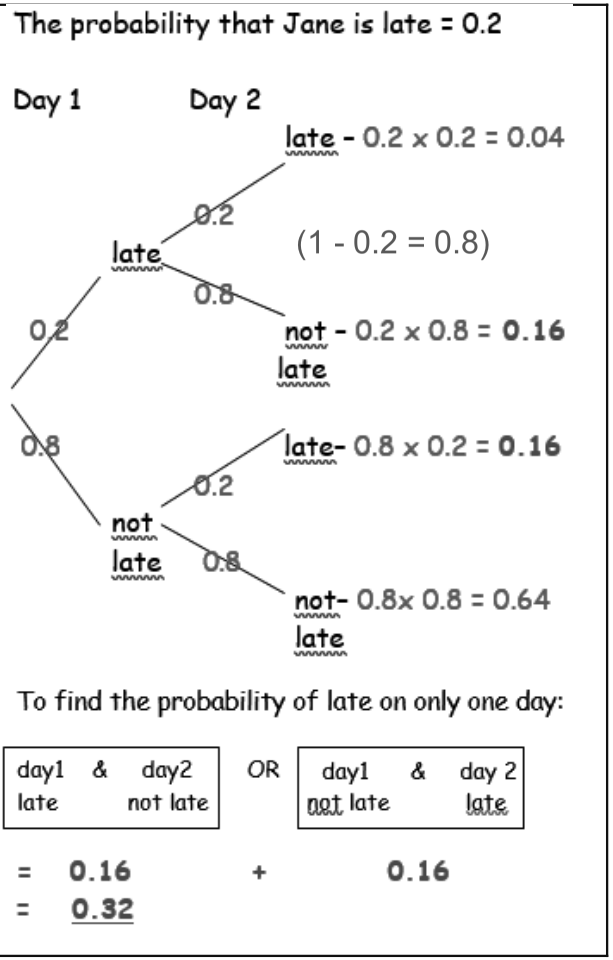
S3: Probability

Calculate relative frequency

Understand the limitations and use of elative frequency

Draw a tree diagram for independent events

S3.5 Calculate relative frequency e.g. St Benedict's Football Club has won 7 matches out of the 10 this season. What is the probability they will win their next match?	Relative frequency = $\frac{\text{Number of times outcome occurs}}{\text{Total number of trials}}$ $= \frac{7}{10}$ = 0.7
S3.6 Understand the limitations and use of relative frequency e.g. Lily scored 4 out of the 10 shots during netball training. Lily says "The probability of me scoring is 40%". Is Lily correct? How could Lily improve the accuracy of her estimate?	Yes Lily is correct. $\frac{4}{10}$ = 40% Increase the amount of trials. The more times that an experiment has been carried out, the more reliable the relative frequency is as an estimate of the probability.

S3.7 Draw a tree diagram for independent events e.g. The probability Jane is late for school is 0.2. What is the probability she is only late one day on Monday and Tuesday next week?	

S3: Probability

Draw a tree diagram for dependent events

Add two probabilities using the OR rule

Multiply two probabilities using the AND rule

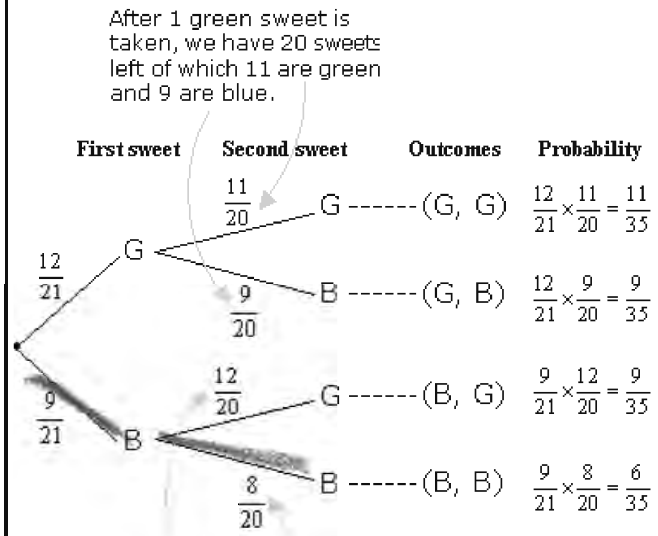
S3.8
Draw a tree diagram for dependent events

And

S3.11
Calculate probabilities from a tree diagram

e.g. A jar consists of 21 sweets. 12 are green and 9 are blue. William picked one sweet and then picked another without replacing the first.

Draw a tree diagram to represent the experiment and find the probability that both sweets are blue.



P(both sweets are blue) = P(B, B)

$$= \frac{9}{21} \times \frac{8}{20} = \frac{6}{35}$$

S3.9
Add two probabilities using the OR rule.

e.g. The probability of picking a spade from a deck of cards is $\frac{1}{4}$. The probability of picking a club from a deck of cards is $\frac{1}{4}$. What is the probability of picking a spade or a club?

P(A or B) = P(A) + P(B)

Use this addition rule to find the probability of either of two mutually exclusive events occurring.

P(S or C) = P(S) + P(C)

$$P(S \text{ or } C) = \frac{1}{4} + \frac{1}{4}$$

$$= \frac{2}{4} = \frac{1}{2}$$

S3.10
Multiply two probabilities using the AND rule.

e.g. A fair die is rolled. What is the probability that the number is even and less than 4?

P(A and B) = P(A) x P(B)

Use this multiplication rule to find the probability of both of two independent events occurring.

P(E and <4) = P(E) x P(<4)

$$= \frac{1}{3} \times \frac{1}{2}$$

$$= \frac{1}{6}$$

S3: Probability

Draw a Venn diagram from given information or probabilities

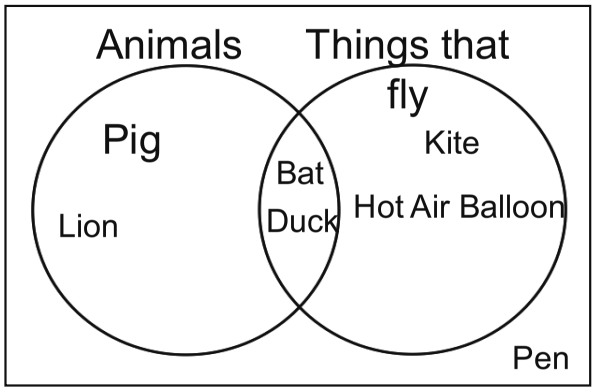
Use set notation

S3.12
Draw a Venn diagram from given information or probabilities.

e.g. Draw a Venn diagram to show categories of "Things that fly" and "Animals" for the following;

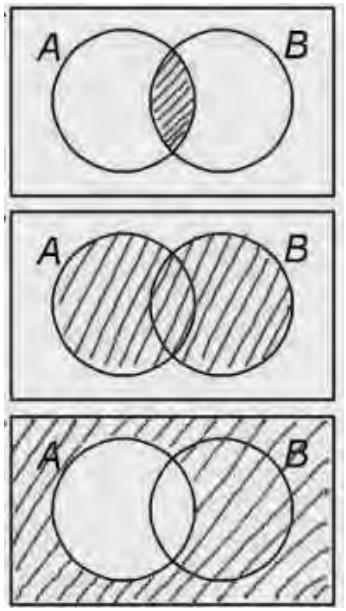
- Pig
- Hot Air Balloon
- Pen
- Bat
- Lion
- Kite
- Duck

1. Draw a rectangle
2. Draw two or three circles according to how many categories you have. There are two categories in the sample question: Make sure the circles overlap.
3. Write your items in the relevant circle. If items fit both categories, write those where the circles overlap (the "intersection").
4. If you have something which doesn't fit a category (pen) write it within the rectangle but outside the circles.



S3.13
Use set notation

e.g. Write the three areas shaded set notation.



∪: Union of two sets.
Things that are in either set A or set B

∩: Intersection of two sets.
Things that are in set A and also in set B.

A′: Complement of a set.
The elements not in Set A.

1. $A \cap B$
2. $A \cup B$
3. A'

S3: Probability

Use intersection, union and complement with sets and Venn diagrams

Find probabilities using a Venn diagram

S3.14

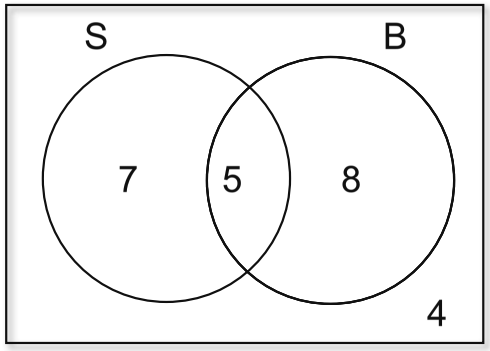
Use intersection, union and complement with sets and Venn diagrams.

e.g. Mr Peake asks 24 pupils in his class about their families.
He sorts them into:
S - Has sisters
B - Has brothers

He then displays his findings in a Venn diagram.

Using this Venn diagram, work out:

1. $S \cap B$
2. $S' \cap B$



(See previous page for Set Notation)

1. Means S AND B so people who have sisters and brothers - the intersection.

= **5**

2. S' means NOT S.
   $\cap B$ Means AND B

There are 12 people who do not have sisters but only 8 of those don't have a brother.

= **8**

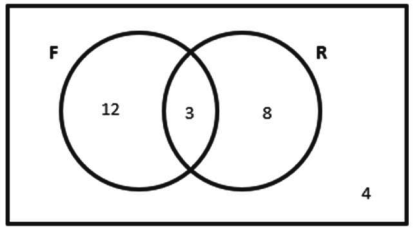
S3.15

Find probabilities using Venn diagrams

e.g. The Venn Diagram below shows if students play Football or Rugby.

A pupil is chosen at random.
What is the probability:

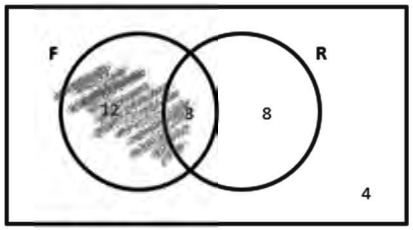
a) They play football
b) They play football and rugby
c) The don't play either



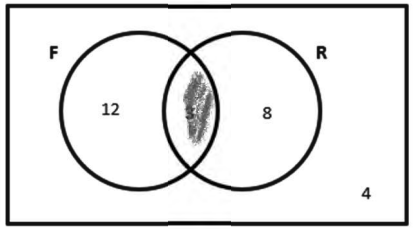
Total number of students = 12 + 3 + 8 + 4 = 27
This is the denominator!

a) 12 + 3 = 15

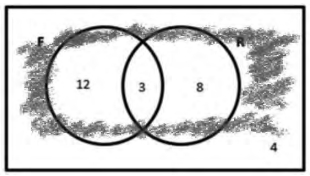
$\frac{15}{27}$



b) $\frac{3}{27}$



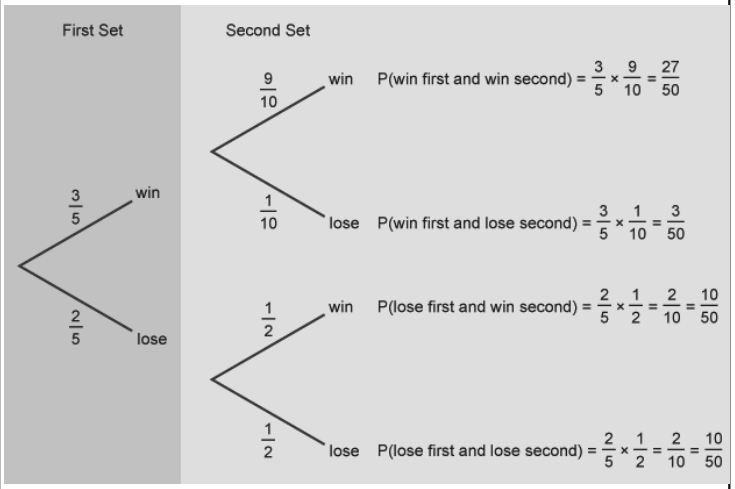
c) $\frac{4}{27}$



S3: Probability

Calculate conditional probability

Use formula to prove two events are independent

S3.16 Calculate conditional probability. e.g. The probability that a tennis player wins the first set of a match is $\frac{3}{5}$. If she wins the first set, the probability that she wins the second set is $\frac{9}{10}$. If she loses the first set, the probability that she wins the second set is $\frac{1}{2}$. Given that the tennis player wins the second set, find the probability that she won the first set.	First, represent the information on a tree diagram:  From the tree diagram, the probability of winning the second set = $\frac{27}{50} + \frac{10}{50} = \frac{37}{50}$. This means that in every 50 matches, she may win the second set 37 times (37 becomes the denominator of the conditional probability). Out of those 37 times, on 27 occasions she won the first set and on 10 occasions she lost the first set. Therefore, given that she wins the second set, the probability she won the first set is $\frac{27}{50}$. There is also a formula that can be used for conditional probability: $P(A \text{ given } B) = \frac{P(A \text{ and } B)}{P(B)} = \frac{\frac{27}{50}}{\frac{37}{50}} = \frac{27}{37}$

S3.17 Use formula to prove two events are independent e.g. You toss a coin and roll a dice. Are these events independent?	An independent event is an event that has **no connection** to another event's chances of happening. Events A and B are independent if: P (A ∩ B) = P(A) x P(B). P (5 on the dice) = $\frac{1}{6}$ P (Heads) = $\frac{1}{2}$ P (5 and Head) = $\frac{1}{12}$ (a sample space would show this) Since $\frac{1}{6}$ x $\frac{1}{2}$ = $\frac{1}{12}$ they are independent.

S3: Probability

Find combinations and permutations

S3.18 Find combinations and permutations. e.g. A pizza restaurant offers a choice of toppings: ham (H), pepperoni (P), mushroom (M) and chicken (C). How many ways can two different toppings be chosen? e.g. A man owns three cars: 1 red, 1 blue and 1 white. How many ways can they be parked on his drive?	When you make a selection of items from a group and the order doesn't matter, it is a **Combination**. Like ingredients in a smoothie - they're all getting blended together! List the combinations: HP, HM, HC, PM, PC, MC. There are 6 combinations. When you select all the items in a group and the order **does** matter it is a **Permutation**. Like the code to a safe - it only works if you put the numbers in in the right order. List the permutations: RBW, RWB, BWR, BRW, WRB, WBR. There are 6 permutations.

Advent 1 – Creation and Covenant

Key Terms

These words will form part of your assessment:
It is important you learn them and their meaning.

Key Term	Definition
Catholic Social Teaching	Teachings that the Catholic Church has given on how things should be in society.
Compatibilism	The belief that science and faith can both be accepted because they are compatible.
Conscience	The ability to know right from wrong. The conscience is a God-given gift.
Creation	The production of material and spiritual things in their whole substance, done by God and of nothing.
Creationism	The belief that the world was created exactly as it says in Genesis.
Dignity	The belief that every person is precious because they are made in God's image.
Ex nihilo	Latin for 'out of nothing'. Catholics believe God created the whole world 'out of nothing'.
General revelation	Knowledge of God revealed through human reason, experience and the created world.
God	The one Supreme and Infinite Personal Being, the Creator and Ruler of the universe, to whom man owes obedience and worship.

Advent 1 – Creation and Covenant

Key Terms

Key Term	Definition
Imago dei	the Latin for 'image of God'. Catholics believe God created humans in 'the image of God.'
Literal sense	The meaning, taking in to account the author, the time it was written and the literary form
Literary form	Different types of writing, for example, poetry and letters
Prayer	A way for believers to communicate with God.
Revelation	How God makes Godself known to human beings
Sanctity of life	Life is sacred and deserves dignity as we are made in the image of God,
Scientism	The belief that science has all the answers
Special revelation	Knowledge of God revealed through the Bible and the teachings of the Church
Stewardship	The God-given duty to take care of the earth that God created.

Creation and Covenant

Revelation

The mystery of God

God is a mystery because God is beyond our understanding.

Humans can only understand God partly, but not fully. Catholics believe they can begin to understand God through **analogy.**

An analogy is when you compare one thing to another thing to explain something.

Our human words always fall short of the mystery of God .
Catechism of the Catholic Church (CCC) 42

Creation and Covenant

General Revelation

Revelation

Revelation is how God makes himself known to people.
God is the source of all revelation.
There are two types of revelation: general and special.

General revelation

Knowledge of gained through natural means is called general revelation.
Catholics believe God can make himself known through **nature**, **reason** and the **conscience**.

General revelation - nature

A Catholic believes God created the world.
When looking at the natural world, Catholics believe they can come to know more about God.

General revelation - reason

Humans have the ability to work things out for themselves and weigh ideas up.
This is called reason and was given to humans by God.

General revelation - conscience

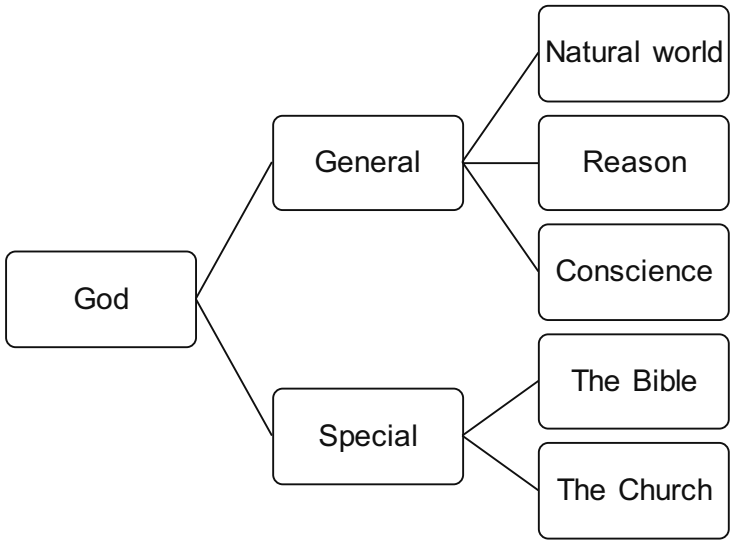
God gave humans the ability to make decisions about right and wrong.
God can be known through the conscience by thinking deeply about making the right choices.

Creation and Dignity

Special Revelation

Special Revelation

Knowledge about God cannot always come through natural means.
Scripture is needed to reveal further knowledge about God.
The Church also reveals more about God.



Creation and Dignity

Revelation through the Bible

The Bible

The Bible is useful for Catholics and other Christians to know and know about God.

The Bible is a collection of books written at different times by different authors.

The Bible also contains different **literary forms**.

Each of the different books and forms have different purposes.

Literary forms in the Bible

Law

Prophecy

History

Gospels

Letters

Creation and Covenant

Interpretation of the Bible

Literal Interpretation

Someone who reads the Bible literally is known as a **fundamentalist** Christian.

Fundamental Christians read the Bible as a factual book.

This view of the Bible means that they see the Bible as containing true, historical events.

Symbolic Interpretation

Catholics do not read the Bible literally.

Catholics believe the Bible is full of symbolism.

They read the Bible using the **literal sense**. This means that they ask questions about the Bible.

For Catholics, when reading the Bible, they must think about:
What the literary form is.
What the context of the writer was.
What the author intended to inform the reader about.

There are parts of the Bible Catholics do read literally after careful consideration and study.

Creation and Covenant

The Creation accounts

The Creation accounts

There are two creation accounts in the Bible.
Most **Biblical scholars** believe they are written by two different authors or groups of authors.
The two accounts have different focuses.

Genesis 1
An author named P is thought to have written Genesis 1.
Genesis 1 is well organised and scholars believe it was originally written as a poem.
The poem follows a format of showing what happens over six days.
The author writes about God being transcendent – outside of time and space.

Genesis 1-2:4

In the beginning when God created the heavens and the earth, the earth was a formless void and darkness covered the face of the deep, while a wind from God swept over the face of the waters. Then God said, "Let there be light"; and there was light. And God saw that the light was good; and God separated the light from the darkness. God called the light Day, and the darkness he called Night. And there was evening and there was morning, the first day.

And God said, "Let there be a dome in the midst of the waters, and let it separate the waters from the waters." So God made the dome and separated the waters that were under the dome from the waters that were above the dome. And it was so. God called the dome Sky. And there was evening and there was morning, the second day.

And God said, "Let the waters under the sky be gathered together into one place, and let the dry land appear." And it was so. God called the dry land Earth, and the waters that were gathered together he called Seas. And God saw that it was good.

Creation and Covenant

Genesis 1

Then God said, "Let the earth put forth vegetation: plants yielding seed, and fruit trees of every kind on earth that bear fruit with the seed in it." And it was so. The earth brought forth vegetation: plants yielding seed of every kind, and trees of every kind bearing fruit with the seed in it. And God saw that it was good. And there was evening and there was morning, the third day.

And God said, "Let there be lights in the dome of the sky to separate the day from the night; and let them be for signs and for seasons and for days and years, and let them be lights in the dome of the sky to give light upon the earth." And it was so. God made the two great lights—the greater light to rule the day and the lesser light to rule the night—and the stars. God set them in the dome of the sky to give light upon the earth, to rule over the day and over the night, and to separate the light from the darkness. And God saw that it was good. And there was evening and there was morning, the fourth day.

And God said, "Let the waters bring forth swarms of living creatures, and let birds fly above the earth across the dome of the sky." So God created the great sea monsters and every living creature that moves, of every kind, with which the waters swarm, and every winged bird of every kind. And God saw that it was good. God blessed them, saying, "Be fruitful and multiply and fill the waters in the seas, and let birds multiply on the earth." And there was evening and there was morning, the fifth day.

And God said, "Let the earth bring forth living creatures of every kind: cattle and creeping things and wild animals of the earth of every kind." And it was so. God made the wild animals of the earth of every kind, and the cattle of every kind, and everything that creeps upon the ground of every kind. And God saw that it was good.

Then God said, "Let us make humankind in our image, according to our likeness; and let them have dominion over the fish of the sea, and over the birds of the air, and over the cattle, and over all the wild animals of the earth,

Creation and Covenant

Genesis 1

and over every creeping thing that creeps upon the earth."
Then God said, "Let us make humankind in our image,
according to our likeness; and let them have dominion over
the fish of the sea, and over the birds of the air, and over
the cattle, and over all the wild animals of the earth, and
over every creeping thing that creeps upon the earth."
So God created humankind in his image,
in the image of God he created them;
male and female he created them.
God blessed them, and God said to them, "Be fruitful and
multiply, and fill the earth and subdue it; and have dominion
over the fish of the sea and over the birds of the air and
over every living thing that moves upon the earth." God
said, "See, I have given you every plant yielding seed that is
upon the face of all the earth, and every tree with seed in its
fruit; you shall have them for food. And to every beast of the
earth, and to every bird of the air, and to everything that
creeps on the earth, everything that has the breath of life, I
have given every green plant for food." And it was so.

God saw everything that he had made, and indeed, it was very
good. And there was evening and there was morning, the sixth
day.
Thus the heavens and the earth were finished, and all their
multitude. And on the seventh day God finished the work that
he had done, and he rested on the seventh day from all the
work that he had done. So God blessed the seventh day and
hallowed it, because on it God rested from all the work that he
had done in creation.
These are the generations of the heavens and the earth when
they were created.

Creation and Covenant

Genesis 2

In the day that the LORD God made the earth and the
heavens, when no plant of the field was yet in the earth and
no herb of the field had yet sprung up—for the LORD God
had not caused it to rain upon the earth, and there was no
one to till the ground; but a stream would rise from the
earth, and water the whole face of the ground— then
the LORD God formed man from the dust of the ground, and
breathed into his nostrils the breath of life; and the man
became a living being. And the LORD God planted a garden
in Eden, in the east; and there he put the man whom he had
formed. Out of the ground the LORD God made to grow
every tree that is pleasant to the sight and good for food,
the tree of life also in the midst of the garden, and the tree
of the knowledge of good and evil.
A river flows out of Eden to water the garden, and from
there it divides and becomes four branches. The name of
the first is Pishon; it is the one that flows around the whole
land of Havilah, where there is gold; and the gold of that

land is good; bdellium and onyx stone are there. The name of
the second river is Gihon; it is the one that flows around the
whole land of Cush. The name of the third river is Tigris, which
flows east of Assyria. And the fourth river is the Euphrates.
The LORD God took the man and put him in the garden of Eden
to till it and keep it. And the LORD God commanded the man,
"You may freely eat of every tree of the garden; but of the tree
of the knowledge of good and evil you shall not eat, for in the
day that you eat of it you shall die."
Then the LORD God said, "It is not good that the man should be
alone; I will make him a helper as his partner." So out of the
ground the LORD God formed every animal of the field and
every bird of the air, and brought them to the man to see what
he would call them; and whatever the man called every living
creature, that was its name. The man gave names to all cattle,
and to the birds of the air, and to every animal of the field; but
for the man there was not found a helper as his partner. So
the LORD God caused a deep sleep to fall upon the man, and

Creation and Covenant

Genesis 2

he slept; then he took one of his ribs and closed up its place with flesh. And the rib that the LORD God had taken from the man he made into a woman and brought her to the man. Then the man said,

“This at last is bone of my bones
and flesh of my flesh;
this one shall be called Woman,
for out of Man this one was taken.”

Therefore a man leaves his father and his mother and clings to his wife, and they become one flesh. And the man and his wife were both naked, and were not ashamed.

Creation and Covenant

Scientism

Scientism

Science is not the same as scientism.
Science means knowledge.
Science studies the structure and behaviour of the physical and natural world.
Science relies on observations, experiments and testing theories to come to conclusions.
Scientism is the view that science is the only way to know what is true.
Scientism rejects any situations that science cannot explain, such as God or religion.

Catholic rejection of scientism

"Though faith is above reason, there can never be any real discrepancy between faith and reason. Since the same God who reveals mysteries and infuses faith has bestowed the light of reason on the human mind, God cannot deny himself, nor can truth ever contradict truth." "Consequently, methodical research in all branches of knowledge, provided it is carried out in a truly scientific manner and does not override moral laws, can never conflict with the faith, because the things of the world and the things of faith derive from the same God... for it is God, the conserver of all things, who made them what they are."

CCC 159

Creation and Covenant

Creationism

Creationism

Creationism is the belief that all life was created by God's actions.
Every life form that exists today is the result of God's actions.
Only God can produce new forms of life.
Genesis is the explanation of creation that Creationists believe to be true.
Some modern creationists use scientific evidence to support the Bible.
Young Earth creationism teaches that the book of Genesis is literally true and that the world was created in 6 days.
Old Earth creationism states the physical universe was created by God, but the Book of Genesis is to be taken **figuratively**.

Catholic rejection of creationism

> The question about the origins of the world and of man has been the object of many **scientific studies which have splendidly enriched our knowledge** of the age and dimensions of the cosmos, the development of life-forms and the appearance of man. These discoveries invite us to **even greater admiration for the greatness of the Creator**, prompting us to give him thanks for all his works and for the understanding and wisdom he gives to scholars and researchers.
>
> **CCC 283**

Catholics do not oppose scientific theories.
Science gives Catholics more knowledge of **how** God created.
Catholics believe that science allows us to appreciate more fully what God has done.

Creation and Covenant

Prayer in Christianity

Prayer

Prayer is the way that humans communicate with God.

Prayer can be mental or spoken.

The Catholic Church sees prayer as the way that humans respond to God's self-revelation.

There are many prayers Catholics say, such as the Mass, the Lord's Prayer, the Rosary.

Religious orders pray five times per day.

> Prayer is lived in the first place beginning with the realities of creation... as "walking with God".
>
> **CCC 2569**

> Prayer is the raising of one's mind and heart to God or the requesting of good things from God.
>
> **CCC 2559**

> Noah, like Enoch before him, "walks with God." This kind of prayer is lived by many righteous people in all religions.
> In his indefectible covenant with every living creature, God has always called people to prayer.
>
> **CCC 2569**

Creation and Covenant

Prayer in Abrahamic faiths

Judaism

Prayer helps a person to build their relationship with God.

Jewish people have three set prayer times; morning, afternoon, and evening.

The Shema is prayed twice a day.

> Hear O' Israel, the Lord is our God, the Lord is One
>
> **Deuteronomy 6:5**

Jewish prayers follow the themes of thanksgiving, adoration and petition.

Jewish people believe God will take action to respond to prayers.

> When I call, answer me, O God of my righteousness; in my distress You have relieved me, be gracious to me and hearken to my prayer
>
> **Midrash Tehillim 4:3**

Prayer enhances a person's relationship with God and other Jewish people.

Prayer takes a person into a state of being that is different from their everyday awareness

Regular, formal prayer helps Jewish people to remember their Jewish beliefs and find new insights into their relationship with God and with each other.

Creation and Covenant

Prayer in Abrahamic faiths

Islam

Prayer in Islam is called **Salah**.

Salah is one of the **Five Pillars of Islam**.

Prayer is a daily obligation for all mature Muslims.

Salah is defined as the act of offering prayers to Allah.

The act of salah itself is a conversation the believer and God, for nobody else's benefit but their own.

Muslims must be wearing specific types of clothing which keep areas of their body covered.

Muslims must also face Mecca, the holiest place in Islam.

Phrases and passages from the Qur'an are recited at certain points throughout the prayer.

The five obligatory prayers are performed at certain times of the day.

Fajr is performed before sunrise.
Zohr is performed at midday.
Asr is performed between Zohr and sunset.
Maghrib is performed at sunset.
Isha is performed between Maghrib and midnight.

Creation and Covenant

Imago Dei

The Catholic Church teaches that human beings were created in the likeness and image of God.

Humans are not like God in appearance.

Humans have been given the same mental, moral and social qualities of God.

Humans are given a higher status than other parts of God's creation.

God singled out humans as a special part of creation.

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Catholics will often use the Latin term **'imago dei'** to describe this unique relationship between God and humans.

> Then God said, 'Let us make mankind in our image, in our likeness, so that they may rule over the fish in the sea and the birds in the sky, over the livestock and all the wild animals, and over all the creatures that move along the ground.' So God created mankind in his own image, in the image of God he created them; male and female he created them.
>
> **Genesis 1**

Creation and Covenant

Stewardship

Christians believe that God appointed human beings to be in charge of creation.

Christians should take care of the world as responsible custodians.

> Then God said, 'Let us make man in our image, after our likeness. And let them have dominion over the fish of the sea and over the birds of the heavens and over the livestock and over all the earth and over every creeping thing that creeps on the earth.'
>
> Genesis 1:26

This teaching suggests that humanity's purpose is to look after God's creation. This is known as stewardship

Catholics should be concerned about looking after the environment and the planet.

Catholics need to work to protect the planet, cutting down on pollution, caring for animals and making sure that the world is in the best shape to pass on to future generations.

Pope Francis wrote an encyclical called 'Laudato Si' in 2015, which focuses on 'Care for our Common Home'.

Jesus identified the two greatest commandments: love of God and love of neighbour.

Neighbour means not just those close to us, but people in different countries.

Pope Francis wrote that Catholics should be concerned about those who suffer badly from climate change.

Creation and Covenant

Laudato Si'

It needs to be said that, generally speaking, there is little in the way of clear awareness of problems which especially affect the excluded. Yet they are the majority of the planet's population, billions of people. These days, they are mentioned in international political and economic discussions, but one often has the impression that their problems are brought up as an afterthought, a question which gets added almost out of duty or in a tangential way, if not treated merely as collateral damage. Indeed, when all is said and done, they frequently remain at the bottom of the pile. This is due partly to the fact that many professionals, opinion makers, communications media and centres of power, being located in affluent urban areas, are far removed from the poor, with little direct contact with their problems. They live and reason from the comfortable position of a high level of development and a quality of life well beyond the reach of the majority of the world's population.

This lack of physical contact and encounter, encouraged at times by the disintegration of our cities, can lead to a numbing of conscience and to tendentious analyses which neglect parts of reality.
At times this attitude exists side by side with a "green" rhetoric. Today, however, we have to realize that a true ecological approach always becomes a social approach; it must integrate questions of **justice** in debates on the environment, **so as to hear both the cry of the earth and the cry of the poor.**

Pope Francis, Laudato Si' 49

Creation and Covenant

Catholic Social Teaching

Catholic Social Teaching (CST) is the part of Catholic teaching that addresses matters of social, economic and ecological justice in the world.

CST is how Scripture is put into practice in the modern world.

CST focusing on human dignity and the common good in society.

All humans were made in the image of God, therefore should be treated with respect.

Principles of Catholic Social Teaching

The dignity of the person
All people are made in the image of God. God is the creator and loves creation.

The common good
The fruits of the earth belong to everyone. Resources must be shared fairly and not used wastefully.

Subsidiarity
Communities are the focus of this principle.
Decision making should happen at the most appropriate level so all those affected can contribute.

Solidarity
Catholics must stand together with other humans.
The principle encourages thought and care for the poor.

Creation and Covenant

LiveSimply Award

In response to Laudato Si, the LiveSimply award was created.

The LiveSimply award is an opportunity for Catholic communities to “work with generosity and tenderness in protecting this world which God has entrusted to us”.

Communities and schools earn the award if they can show they have been living simply.

Their community must
show **solidarity with people in poverty**.

Communities must live **sustainably with creation**.

The award celebrates what communities have already done and inspires them to do more.

It helps communities to live, not just more simply, but also more fully.

Creation and Covenant

Sister Dorothy Stang

Sr. Dorothy Stang chose to live in **extreme poverty** in order to help others living in poverty.

She had a passion for people of all cultures, for social justice, peacemaking, fairness, and respect for the environment.

Sr. Dorothy was keen to protect the environment, in particular the deforestation that was occurring in Brazil.

Her frustration grew as she witnessed the destruction of this natural resource so vital to her people's and the planet's future.

Sr. Dorothy tried to protect the environment and the surrounding people to the best of her ability, but was identified by local businessmen as a problem for them.

On February 12, 2005, two hired gunmen fired six shots and killed Sr. Dorothy.

She was murdered because she had put into place programs that created self-sufficient communities of people committed to their own independence as well as to the sustenance of the rain forest.

As the gunmen approached Sister Dorothy, she took her Bible from her bag and began to read the Beatitudes.

Following Sister Dorothy's death, Brazilian President Luiz Inacio da Silva put nearly 20,000 of the Amazon's 1.6 million square miles under environmental protection.

Advent 2 – Prophecy and Promise

Key Terms

These words will form part of your assessment:
It is important you learn them and their meaning.

Key Term	Definition
Baptism	How people become members of the Christian family. In the early Church, they were submerged fully under the water as a sign of washing away sins.
Canon	The books accepted as sacred scriptures by the Christian church
Dei Verbum	Translated as 'The Word of God' from the Latin, this is a document which explains the relationship between sacred scripture and sacred tradition.
Inspiration	From the Latin 'inspirato', which means 'God-breathed'. God influenced the writers of the Bible to write what is good and true.
Liturgy of the Word	The community listens to scriptures to hear what God has done and what they are called to do.
Magisterium	The teaching authority of the catholic church, made up of the pope, bishops and clergy

Advent 2 – Prophecy and Promise

Key Terms

Key Term	Definition
New Testament	God's revelation to humanity as written in the books of the Bible from the Gospels to the book of Revelation.
Old Testament	God revealing Godself to humanity as written in the books before the birth of Jesus, from Genesis to Malachi.
Revelation	The way God is shown through scripture and the person of Jesus.
Salvation history	The story of how God, out of love for humanity, saves humans from sin and death and gives eternal life in God's presence.
Scripture	All religious writings are scripture. The sacred writings of Christianity written in the Bible.
Tanakh	The Jewish scriptures. Tanakh is an acronym for the three texts that make up the Hebrew bible – Torah, Nevi'im and Ketuvim.
Tradition	Tradition is the living transmission of the message of the Gospel in the Church

Prophecy and Promise

Scripture, Tradition and Magisterium

The Great Commission

Now the eleven disciples went to Galilee, to the mountain to which Jesus had directed them. When they saw him, they worshiped him; but some doubted. And Jesus came and said to them, "All authority in heaven and on earth has been given to me. Go therefore and make disciples of all nations, baptizing them in the name of the Father and of the Son and of the Holy Spirit, and teaching them to obey everything that I have commanded you. And remember, I am with you always, to the end of the age."

Matthew 28:16-20

The Great Commission

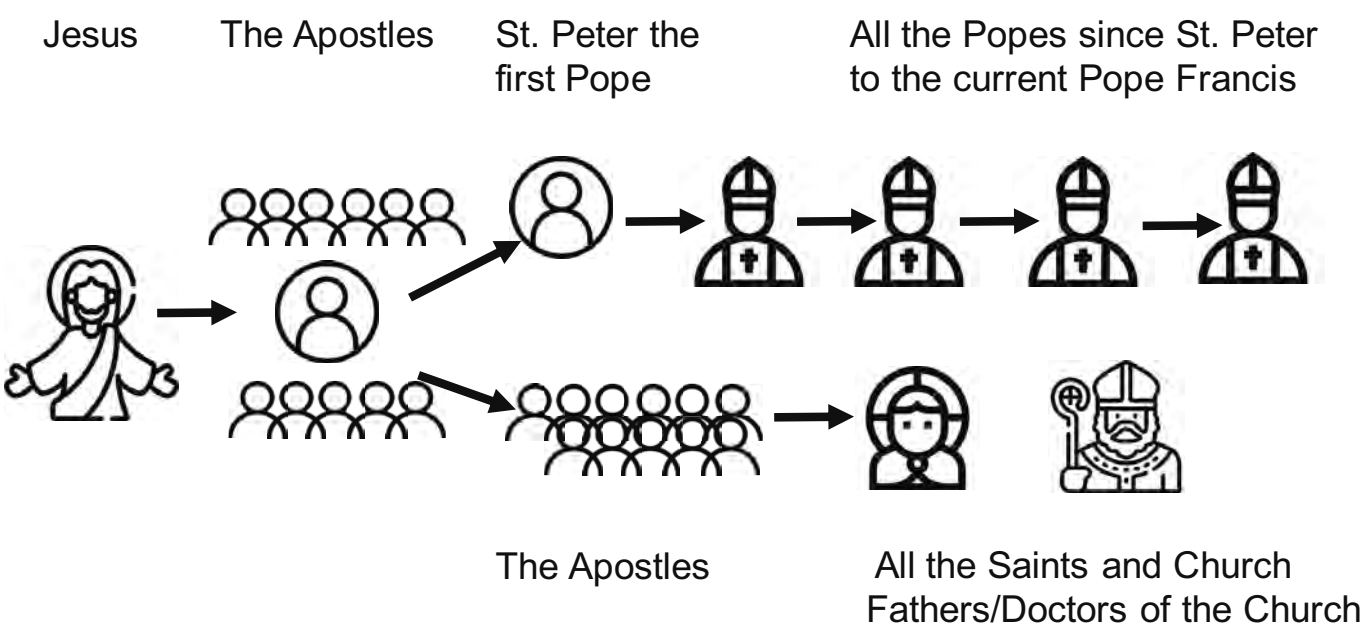
Jesus instructs his disciples to spread the gospel to all the nations of the world.

Jesus calls on his followers to make disciples of and baptize all nations in the name of the Father, the Son, and the Holy Spirit.

From the Great Commission, Christians see the emphasis on ministry, missionary work, evangelism, and baptism.

Prophecy and Promise

Tradition and Apostolic Succession



Prophecy and Promise

The Magisterium

The Magisterium is the teaching authority of the Catholic Church.

The Magisterium has the authority to interpret the Bible and apply it to today's society.

The Magisterium is made up of Bishops, Cardinals and the Pope.

The Pope is the head of the Church.

Cardinals are the elected government.

Bishops are responsible for large areas, known as a diocese

Dioceses are made up of smaller areas called parishes. A priest is responsible for the lay people within the diocese.

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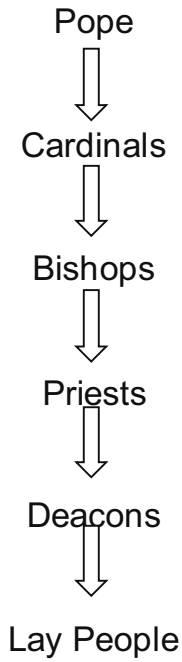


Prophecy and Promise

Dei Verbum

Dei Verbum 9

Hence there exists a close connection and communication between sacred tradition and Sacred Scripture. For both of them, flowing from the same divine wellspring, in a certain way merge into a unity and tend toward the same end. For Sacred Scripture is the word of God inasmuch as it is consigned to writing under the inspiration of the divine Spirit, while sacred tradition takes the word of God entrusted by Christ the Lord and the Holy Spirit to the Apostles, and hands it on to their successors in its full purity, so that led by the light of the Spirit of truth, they may in proclaiming it preserve this word of God faithfully, explain it, and make it more widely known. Consequently it is not from Sacred Scripture alone that the Church draws her certainty about everything which has been revealed. Therefore both sacred tradition and Sacred Scripture are to be accepted and venerated with the same sense of loyalty and reverence.

Summary of the text

Scripture and traditions are closely linked because they both come from God.

Scripture is revealed and inspired by God.

Jesus and the Holy Spirit impart the Word of God.

Jesus passed on his authority to his Apostles to continue to teach.
This teaching became known as tradition.

Meaning for Christian life

Christians should accept both the scripture as the Word of God, as well as Tradition.

The Church relies not just on the Bible, but also teachings of the Church passed down from the Apostles.

All teachings have as much value as the others.

Prophecy and Promise

Dei Verbum

Dei Verbum 11

Those divinely revealed realities which are contained and presented in Sacred Scripture have been committed to writing under the inspiration of the Holy Spirit. For holy mother Church, relying on the belief of the Apostles, holds that the **books of both the Old and New Testaments in their entirety**, with all their parts, are sacred and canonical because written under the inspiration of the Holy Spirit, they have **God as their author** and have been handed on as such to the Church herself. In composing the sacred books, God chose men and while employed by Him they made use of their powers and abilities, so that with Him acting in them and through them, they, as true authors, consigned to writing everything and only those things which He wanted.

Therefore, since **everything asserted by the inspired authors or sacred writers must be held to be asserted by the Holy Spirit**, it follows that the books of Scripture must be acknowledged as teaching solidly. Therefore, since everything asserted by the inspired authors or sacred writers must be held to be asserted by the Holy Spirit, it follows that the books of Scripture must be acknowledged as teaching solidly, faithfully and without error that truth which God wanted put into sacred writings for the sake of salvation. Therefore "**all Scripture is divinely inspired and has its use for teaching the truth and refuting error, for reformation of manners and discipline in right living, so that the man who belongs to God may be efficient and equipped for good work of every kind**".

Both the Old and New Testament were revealed through the Holy Spirit.

God inspired the authors to write.

Everything that is in the Bible should be treated as the Word of God.

Prophecy and Promise

The Bible

What is it?

The source of Christianity's main beliefs

Writings that were inspired by God

Written over thousands of years by several authors

Passed down by word of mouth then written so as not to forget it

Structure of books agreed by Pope Damasus I

It was by the apostolic Tradition that the Church discerned which writings are to be included in the list of the sacred books. This complete list is called the canon of Scripture. It includes 46 books for the Old Testament (45 if we count Jeremiah and Lamentations as one) and 27 for the Newism of the Catholic Church

CCC 42

Prophecy and Promise

How to use the Bible

How to use the Bible

The Bible is split into the Old and New Testaments.

The Testaments are made up of different books from a variety of authors.

Testament means covenant. The Old Testament is about the old covenant with Abraham and Moses, the New Testament is about the new covenant with Jesus.

The books are made up of chapters, like any other book, numbered from 1 onwards.

The chapters are then made up of verses, which are numbered.

Bible references

To make it easier to find a particular passage in the Bible, references can direct a person to the correct place.

The shortest Bible passage is found in the Gospel of John, chapter eleven, and the fifth verse.

References are always written in the same format to help locate text more easily:

Book Chapter: Verse

So, John chapter eleven verse five is written as **John 11:5**

Any passages that include multiple verses looks like: **Exodus 20:2-17**

Prophecy and Promise

Canon

Canon

The Bible is a collection of different text by different authors, written at different times in different languages.

The Bible is full of texts that were collated and the final library of texts was completed by the 5th century
Canon means measuring rod, or rule.

Books that were put into the final version of the Bible all had to meet the standard of the canon.

The canon of scripture is the phrase used to describe the books included in the Old and New Testament.

Prophecy and Promise

Canon – the Order of the Bible

The Old Testament

The Old Testament is similar to the Hebrew Bible, the sacred scriptures of the Jewish faith.

The Old Testament is made up from 39 texts, written at different times between about 1200 and 165 BC.

The Old Testament is the literary archive of the ancient nation of Israel.

The New Testament

The New Testament has 27 books written between 50 and 100 AD.

The New Testament tells of the life, ministry and death of Jesus, the early Church and prophecy.

Prophecy and Promise

The Old Testament Canon

Law	History	Poetry	Major Prophets	Minor Prophets
Genesis	Joshua	Job	Isaiah	Hosea
Exodus	Judges	Psalms	Jeremiah	Joel
Leviticus	Ruth	Proverbs	Lamentations	Amos
Numbers	1 Samuel	Ecclesiastes	Baruch	Obadiah
Deuteronomy	2 Samuel	Song of Songs	Ezekiel	Jonah
	1 Kings	Wisdom	Daniel	Micah
	2 Kings	Ecclesiasticus		Nahum
	1 Chronicles			Habakkuk
	2 Chronicles			Zephaniah
	Ezra			Haggai
	Nehemiah			Zecheriah
	Tobit			Malachi
	Judith			
	Esther			
	1 Maccabees			
	2 Maccabees			

Prophecy and Promise

Literary forms in the Old Testament

The Law

The first five books of the Bible are known as the Law.

The first five books are known as the Torah in Judaism and are believed to have been written down by Moses.

Christians and Jewish people share this religious text.

Genesis is a book of stories that tells of creation and the lives of the early People of God.

Exodus, Leviticus, Numbers and Deuteronomy contain community laws as well as narratives.

The Hebrew word for Law ('Torah') means 'guidance' or 'instruction'.

These books were later called the **'Pentateuch'.**

Poetry

These include Psalms (songs, prayers and liturgies for worship), Proverbs (sayings of wisdom).

Poetry books were written by authors inspired by God.

Wisdom books are also considered poetry.

The Prophets

The Prophets is the largest section of the Hebrew Bible and has two parts .

The books of prophets remind people of the social values that would reflect the character of God.

These were the sound bites of their day, which made it easy for others to remember them and then write them down.

Prophets are spilt into major and minor due to the size of the texts produced.

Prophecy and Promise

The New Testament Canon

The Gospels	Acts of the Apostles	Epistles	Revelation
Matthew	Acts	Romans	Revelation
Mark		1 Corinthians	
Luke		2 Corinthians	
John		Galatians	
		Ephesians	
		Philippians	
		Colossians	
		1 Thessalonians	
		2 Thessalonians	
		1 Timothy	
		2 Timothy	
		Titus	
		Philemon	
		Hebrews	
		James	
		1 Peter	
		2 Peter	
		1 John	
		2 John	
		3 John	
		Jude	

Prophecy and Promise

Literary forms in The New Testament

Gospels

The Gospels were written to present the life and teachings of Jesus.

The authors had different readers, so they are not the same.

They were not intended to be biographies of Jesus, but selective accounts that would demonstrate his significance for different cultures.

The first three are known as the **'synoptic gospels'**.

The writer of Luke also wrote the **Acts of the Apostles**.

Acts tells the story of how Christianity spread from being a small group of Jewish believers in the time of Jesus to becoming a worldwide faith in less than a generation.

Letters (Epistles)

Letters were how leaders of the early church communicated with each other and converts.

The earliest letters were written before the Gospels.

The Letters offered advice to people who were working out how to express their commitment to Jesus in ways that would be relevant within their culture

Paul wrote the most letters, but he was not the only author.

Revelation

The final book of the New Testament is a series of letters that offer a visionary presentation of the meaning of all things, from creation to the end of the world.

Prophecy and Promise

The Tanakh

The Hebrew Bible

The Jewish holy scripture is made up of three texts.

The **Torah** scroll, the Law given to Moses by God.
These five books are the same in the Christian Bible.

The **Nevi'im** are the writings of prophets.
God sends messengers to Israel to warn them of the consequences of breaking God's laws, but the people, for the most part, ignore them.

The **Ketuvim** are works of wisdom, poetry, and narratives.

They helped ancient Jews make decisions, worship God, remember their history.

Torah (Law)	**Nevi'im (Prophets)**	**Ketuvim (Writings)**
Genesis	Joshua	Psalms
Exodus	Judges	Proverbs
Leviticus	Samuel	Job
Numbers	Kings	Song of Songs
Deuteronomy	Isaiah	Ruth
	Jeremiah	Lamentations
	Ezekiel	Ecclesiastes
	The Twelve	Esther
		Daniel
		Ezra-Nehemiah
		Chronicles

Prophecy and Promise

Translations of the Bible

Translations

The Bible was originally written in Hebrew, Aramaic and Greek.

The Torah, Nevi'im and Ketuvim was mostly written in Hebrew. Some books were written in Aramaic.

The Hebrew Bible was then translated into Greek. This book is known as the **Septuagint**.

The New Testament books were written in **Greek.**

The Bible was collated in 382 AD by the C**ouncil of Rome.**

Between 382 and 405 AD, Saint Jerome translated the Bible texts into Latin. This book is known as the **Vulgate**.

Modern translations of the Bible

The Bible is the most translated book in the world.

It is available in 438 languages.

In 1999, Vision 2025 was created to begin translating the Bible into every remaining language by 2025.

Bible translation is currently happening in 2,846 languages in 157 countries.

This translation effort with affect 1.11 billion people across the world.

Prophecy and Promise

Inspiration

Biblical Inspiration

Christianity teaches that the writers of the Bible were led by God.

The Biblical texts are considered the Word of God.

> All scripture is inspired by God and is useful for teaching, for reproof, for correction, and for training in righteousness, so that everyone who belongs to God may be proficient, equipped for every good work.
>
> **2 Timothy 3:16-17**

Scripture is inspired and contains no errors.

God reveals Himself through the Bible.

Prophecy and Promise

Artistic presentations of the Bible

The Bible in Art

The Bible has been the subject of artistic interpretations.

To the left is a decorated version of the Gospels, called the Book of Kells.

This was created in the 9th century.

It is an example of **illuminated manuscript**.

An illustrated manuscript is a formally prepared document where the text is decorated with items such as borders and miniature illustrations.

This art work is considered a form of reverence to God and was created through prayers.

Prophecy and Promise

Bible and prayer

The Bible and worship

Many Catholics will have the majority of their interaction with scripture through worship and ceremonies.

Scripture is used as a basis for the prayers and the entire Mass.

In each Mass there are readings from both the New and Old Testament.

The consecration of bread and wine uses the words that Christ used at the Last Supper.

The Bible plays a key role during rites of passages and ceremonies.

The scripture passages chosen will link the ceremonies to the life and teaching of Christ.

During baptisms, the story of Jesus' baptism will be read.

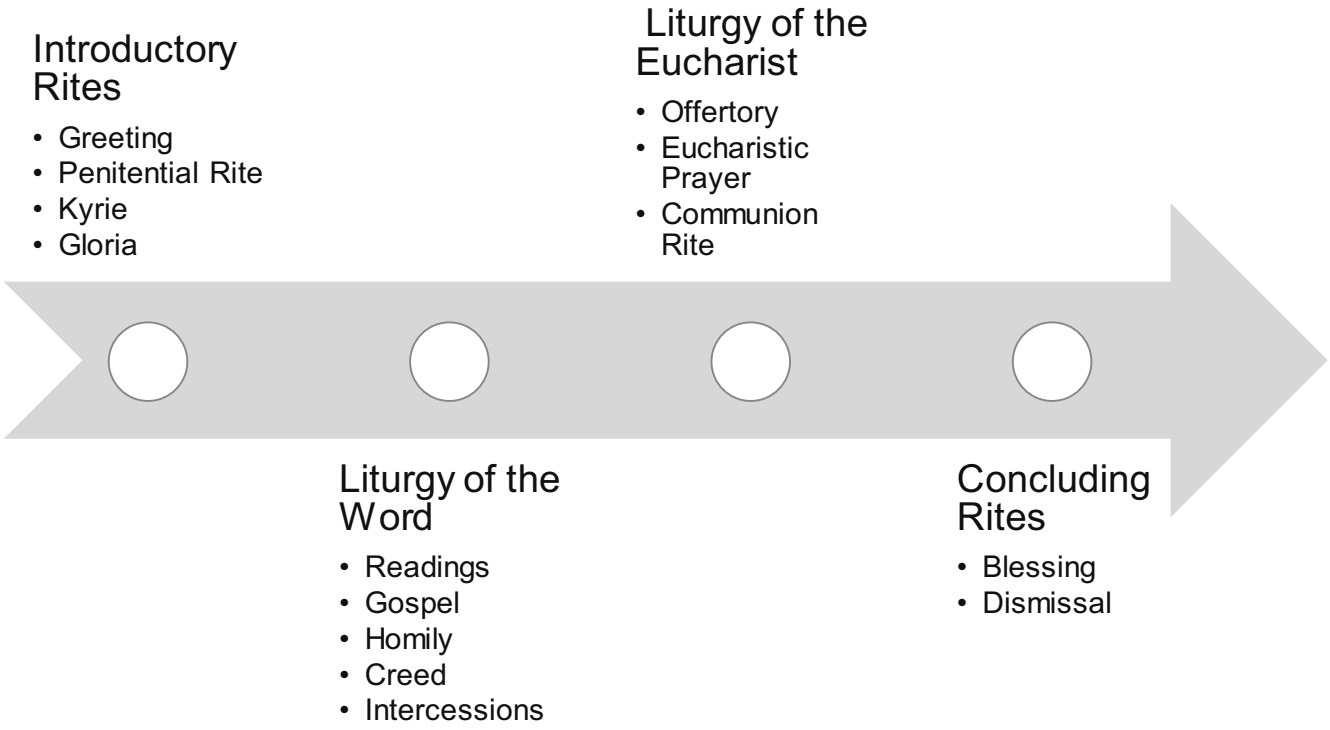
In the sacrament of matrimony, passages about love and honouring your husband or wife are often read,

At funerals, passages from the Bible are read.

These provide comfort to the loved ones of the deceased.

Prophecy and Promise

The Structure of the Mass



Prophecy and Promise

Lectio Divina

Letico Diviina a traditional monastic practice of scriptural reading, meditation and prayer.

The prayer aims to promote communion with God and to **increase knowledge of God's word**.

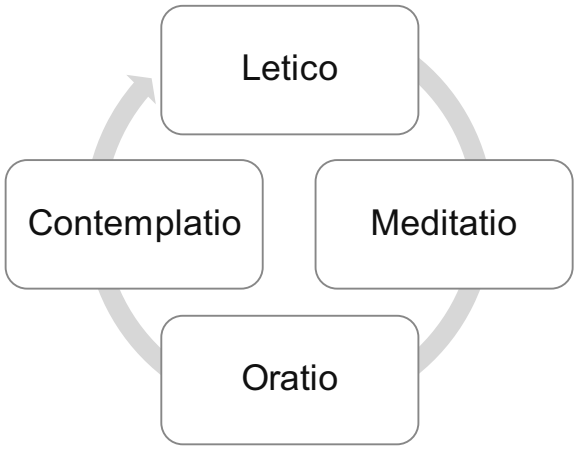
There four movements of Lectio Divina.

Begin with **Lectio** (**read**), scripture reading.

Then **Meditatio** (**meditate)**; reflection on the scripture. Allow Holy Spirit to illuminate mind.

Oratio (**pray**), praying to God about scripture read.

Contemplatio (**contemplate**) is silent prayer that expresses love for God.



Lent 1 – Galilee to Jerusalem

Key Terms

These words will form part of your assessment:
It is important you learn them and their meaning.

Key Term	Definition
Arianism	A heresy that denies Jesus as the Son of God. Arius believed Jesus was not a divine being.
Christ	The title given to Jesus. The word means Messiah.
Heresy	A belief that goes against the official position of the Church. Arianism is an example of an heresy
Incarnation	Meaning 'made flesh', Jesus is God made man.
Kingdom	The spiritual realm which God resides over.
Lex orandi, Lex credendi	A Latin phrase, which translates to 'the law of prayer ("the way we worship") is the law of belief ("what we believe")', linking Catholic action with Catholic faith.
Lord	A title that refers to rulers. In Hebrew, it is the most sacred name for God. Jesus as Lord means that Jesus possesses authority and control.

Lent 1 – Galilee to Jerusalem

Key Terms

Key Term	Definition
Ministry	The work a person does that is based on their religious beliefs.
Miracle	An action or event unexplained by human or scientific means
Parable	A story told by Jesus to teach humans how to live. Parables have deeper meanings that guide human behaviour.
Service	Service is helping those who need assistance. For Christians, service is modelling the attitude of Jesus in service to God's creation without receiving reward or payment.
Son of God	The status of Jesus as the divine son of God the Father. The Son of God is the second person of the Holy Trinity.
Son of Man	A name used by Jesus to describe himself as a human. The name that suggests Jesus was the Messiah.
Trinity	The Christian belief in one God; the unity of the Father, the Son and the Holy Spirit. The three persons in one Godhead.

Galilee to Jerusalem

Word Became Flesh

John's Gospel begins with Jesus dwelling with God before time began.
Jesus was with God at creation.
God and Jesus are separate.
Jesus has always existed and was not created.
Jesus is called the Word, because he reveals God.
He communicates, he speaks, and he spoke and all things were made by him (vs. 3).
The Word made flesh shows that Jesus took on human nature.
This is the **incarnation**.
Incarnation means 'made flesh'.
God comes down to dwell with us in Jesus.

> In the beginning was the Word, and the Word was with God, and the Word was God. He was with God in the beginning. Through him all things were made; without him nothing was made that has been made. In him was life, and that life was the light of all mankind. The light shines in the darkness, and the darkness has not overcome it.
>
> **John 1:1-5**

> The Word became flesh and made his dwelling among us. We have seen his glory, the glory of the one and only Son, who came from the Father, full of grace and truth.
>
> **John 1:14**

Galilee to Jerusalem

The Nicene Creed

The Nicene Creed

Creeds express and make clear the most important Christian beliefs, including about the nature of God.

The Nicene Creed was a creed created in 325 AD.
It expresses detail on the following beliefs:

One God
The Trinity, three persons in one God
The **incarnation** of Jesus Christ
The meaning of the crucifixion, resurrection and ascension of Jesus
The Holy Spirit
The Church as the **Body of Christ**
The **Communion of Saints**
The **forgiveness of sins**
Eternal life

> I believe in one Lord Jesus Christ,
> the Only Begotten Son of God,
> born of the Father before all ages.
> God from God, Light from Light,
> true God from true God,
> begotten, not made, consubstantial with the Father;
> through him all things were made.
> For us men and for our salvation
> he came down from heaven,
> and by the Holy Spirit was incarnate of the Virgin Mary,
> and became man.
>
> **Excerpt from the Nicene Creed**

Galilee to Jerusalem

True God and True Man

Fully Divine and Fully Human

The Church has tried to express the relationship between the divinity and humanity of Jesus.

Jesus is fully God and fully human.

God took on human form through Jesus and the Virgin Mary.

There are not two persons of Christ.

Jesus can only be understood as a mystery.

> The unique and altogether singular event of the Incarnation of the Son of God does not mean that Jesus Christ is part God and part man, nor does it imply that he is the result of a confused mixture of the divine and the human. He became truly man while remaining truly God. Jesus Christ is true God and true man.
>
> **CCC 464**

Galilee to Jerusalem

Titles of Jesus

Son of Man – Suffering and service

> James and John, the sons of Zebedee, came forward to him and said to him, "Teacher, we want you to do for us whatever we ask of you." And he said to them, "What is it you want me to do for you?" And they said to him, "Grant us to sit, one at your right hand and one at your left, in your glory." But Jesus said to them, "You do not know what you are asking. Are you able to drink the cup that I drink, or be baptized with the baptism that I am baptized with?" They replied, "We are able." Then Jesus said to them, "The cup that I drink you will drink; and with the baptism with which I am baptized, you will be baptized; but to sit at my right hand or at my left is not mine to grant, but it is for those for whom it has been prepared."
> When the ten heard this, they began to be angry with James and John. So Jesus called them and said to them, "You know that among the Gentiles those whom they recognize as their rulers lord it over them, and their great ones are tyrants over them.
> When the ten heard this, they began to be angry with James and John. So Jesus called them and said to them, "You know that among the Gentiles those whom they recognize as their rulers lord it over them, and their great ones are tyrants over them. But it is not so among you; but whoever wishes to become great among you must be your servant, and whoever wishes to be first among you must be slave of all. For the Son of Man came not to be served but to serve, and to give his life a ransom for many."
>
> **Mark 10:35-45**

Galilee to Jerusalem

Titles of Jesus

Son of Man - Authority

When he returned to Capernaum after some days, it was reported that he was at home. So many gathered around that there was no longer room for them, not even in front of the door; and he was speaking the word to them. Then some people came, bringing to him a paralyzed man, carried by four of them. And when they could not bring him to Jesus because of the crowd, they removed the roof above him; and after having dug through it, they let down the mat on which the paralytic lay. When Jesus saw their faith, he said to the paralytic, “Son, your sins are forgiven.” Now some of the scribes were sitting there, questioning in their hearts, “Why does this fellow speak in this way? It is blasphemy! Who can forgive sins but God alone?” At once Jesus perceived in his spirit that they were discussing these questions among themselves; and he said to them, “Why do you raise such questions in your hearts? 9 Which is easier, to say to the paralytic, 'Your sins are forgiven,’ or to say, ‘Stand up and take your mat and walk’? 10 But so that you may know that the Son of Man has authority on earth to forgive sins”—he said to the paralytic— 11 “I say to you, stand up, take your mat and go to your home.” 12 And he stood up, and immediately took the mat and went out before all of them; so that they were all amazed and glorified God, saying, “We have never seen anything like this!”

Mark 2:1-12

Galilee to Jerusalem

Titles of Jesus

Son of Man - Eschatology

They took Jesus to the high priest; and all the chief priests, the elders, and the scribes were assembled. Peter had followed him at a distance, right into the courtyard of the high priest; and he was sitting with the guards, warming himself at the fire. Now the chief priests and the whole council were looking for testimony against Jesus to put him to death; but they found none. For many gave false testimony against him, and their testimony did not agree. Some stood up and gave false testimony against him, saying, “We heard him say, ‘I will destroy this temple that is made with hands, and in three days I will build another, not made with hands.’” But even on this point their testimony did not agree. Then the high priest stood up before them and asked Jesus, “Have you no answer? What is it that they testify against you?” But he was silent and did not answer. Again the high priest asked him, “Are you the Messiah, the Son of the Blessed One?” Jesus said, “I am; and

‘you will see the Son of Man
seated at the right hand of the Power,’
and ‘coming with the clouds of heaven.’”
Then the high priest tore his clothes and said, “Why do we still need witnesses? You have heard his blasphemy! What is your decision?” All of them condemned him as deserving death. Some began to spit on him, to blindfold him, and to strike him, saying to him, “Prophesy!” The guards also took him over and beat him.

Mark 14:53-65

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Galilee to Jerusalem

Titles of Jesus

Son of God

In those days Jesus came from Nazareth of Galilee and was baptized by John in the Jordan. And just as he was coming up out of the water, he saw the heavens torn apart and the Spirit descending like a dove on him. And a voice came from heaven, "You are my Son, the Beloved; with you I am well pleased."

Mark 1:9-11

Christ/ Son of David

They came to Jericho. As he and his disciples and a large crowd were leaving Jericho, Bartimaeus son of Timaeus, a blind beggar, was sitting by the roadside. When he heard that it was Jesus of Nazareth, he began to shout out and say, "Jesus, Son of David, have mercy on me!" Many sternly ordered him to be quiet, but he cried out even more loudly, "Son of David, have mercy on me!" Jesus stood still and said, "Call him here." And they called the blind man, saying to him, "Take heart; get up, he is calling you." So throwing off his cloak, he sprang up and came to Jesus. Then Jesus said to him, "What do you want me to do for you?" The blind man said to him, "My teacher,[a] let me see again." Jesus said to him, "Go; your faith has made you well." Immediately he regained his sight and followed him on the way.

Mark 10:46-52

Galilee to Jerusalem

Titles of Jesus

Lord

After these things Jesus showed himself again to the disciples by the Sea of Tiberias; and he showed himself in this way. Gathered there together were Simon Peter, Thomas called the Twin, Nathanael of Cana in Galilee, the sons of Zebedee, and two others of his disciples. Simon Peter said to them, "I am going fishing." They said to him, "We will go with you." They went out and got into the boat, but that night they caught nothing.

Just after daybreak, Jesus stood on the beach; but the disciples did not know that it was Jesus. Jesus said to them, "Children, you have no fish, have you?" They answered him, "No." He said to them, "Cast the net to the right side of the boat, and you will find some." So they cast it, and now they were not able to haul it in because there were so many fish. **7** That disciple whom Jesus loved said to Peter, "It is the Lord!" When Simon Peter heard that it was the Lord, he put on some clothes, for he was naked, and jumped into the sea. But the other disciples came in the boat, dragging the net full of fish, for they were not far from the land, only about a hundred yards off.

When they had gone ashore, they saw a charcoal fire there, with fish on it, and bread. Jesus said to them, "Bring some of the fish that you have just caught." So Simon Peter went aboard and hauled the net ashore, full of large fish, a hundred fifty-three of them; and though there were so many, the net was not torn. Jesus said to them, "Come and have breakfast." Now none of the disciples dared to ask him, "Who are you?" because they knew it was the Lord. Jesus came and took the bread and gave it to them and did the same with the fish.

John 21:1-13

Lent 2 – Desert to Garden

Key Terms

These words will form part of your assessment:
It is important you learn them and their meaning.

Key Term	Definition
Blessed Sacrament	The consecrated elements of the Eucharist, especially the bread or Host
Eucharist	Meaning 'thanksgiving', Eucharist is a sacrament that commemorates the Last Supper. It is sometimes known as Holy Communion.
Holy Communion	The service of Christian worship at which bread and wine are consecrated and shared.
Lord's Supper	The service that commemorates Jesus' Last Supper with his disciples. The Mass of the Lord's Supper is a Holy Week service celebrated on the evening of Maundy Thursday.
Mystery	A mystery is something "hidden" in the sense that we cannot understand it.
Paschal	Relating to Passover or Easter.

Lent 2 – Desert to Garden

Key Terms

Key Term	Definition
Passover	One of the most important festivals in the Jewish year, which commemorates the liberation of the Israelites from Egyptian slavery.
Sacrament	An outward sign of inward grace. A physical action that shows and invisible work of God.
Sacrifice of the Mass	The sacrifice of Christ on the cross is made present and true each time the Eucharist is celebrated.
Transubstantiation	The Roman Catholic belief that the bread and the wine become the actual flesh and blood of Jesus Christ.

Pentecost 1 – To the Ends of the Earth

Key Terms

These words will form part of your assessment:
It is important you learn them and their meaning.

Key Term	Definition
Body of Christ	The Church is called the Body of Christ, as it is a living entity, just as a body is. It is the Body of Christ, as Christ is the head and founder of the Church.
Confirmation	Affirming oneself the promises made for them at baptism. Confirmation is the final sacrament of initiation.
Disciple	A disciple is a follower of a teacher or leader. A personal follower of Christ is called a disciple.
Fruits of the Spirit	Fruit of the Spirit are attributes that surface and mature in the life of people who have the Holy Spirit living in them and transforming them into God's image.
Holy Orders	The sacrament or rite of ordination as a member of the clergy, especially in the grades of bishop, priest, or deacon.
Holy Spirit	The third person of the Trinity; God as spiritually active within the world.
Marriage	The legally or formally recognised union of two people as partners in a personal relationship.
Pentecost	The Christian festival celebrating the descent of the Holy Spirit on the disciples of Jesus after his Ascension, held on the seventh Sunday after Easter.

Pentecost 1 – To the Ends of the Earth

Key Terms

Key Term	Definition
People of God	God's people are those who are associated with God's purposes and promises. God does not belong to any one person or group, because God is the one who calls people to Him. The People of God are those who have been chosen and called by God to Him.
Ruah	Ruah is Hebrew for breath, air, or wind. It is used to indicate the Holy Spirit.
Sacrament of matrimony	A covenant between a baptised man and a baptised woman, who exchange their consent to each other and establish a partnership of the whole of life
Temple of the Holy Spirit	The body should be treated as a place where God resides. Christians should refrain from immoral activity and be the visible presence of God on earth.
Vocation	A Calling from God. God calls each of us to a particular vocation in life.

Pentecost 2 – Dialogue and Encounter

Key Terms

Key Term	Definition
Christian Unity	The unique grace of the Holy Spirit which allows believers from all ethnicities, nationalities, personalities, and backgrounds to be of one heart, mind, and spirit in love for Jesus Christ and in the combined commitment to the gospel.
Dogma	A truth revealed by God that has been declared binding by the Magisterium of the Catholic church
Ecumenical Council	An ecumenical council is a conference of notable and important persons of the worldwide church, along with other theological experts convened to discuss and settle matters of Church doctrine and practice.
Ecumenism	The renewal of the whole life of the church. Ecumenism aims to overcome the divisions among Christians and restore the unity of the church that Jesus founded.
Reform	To make changes in a practice or organisation in order to harmonise it with modern thinking.
Schism	The formal separation of a Church into two Churches. The breakaway of a group owing to doctrinal and other differences.

Year 7 Science

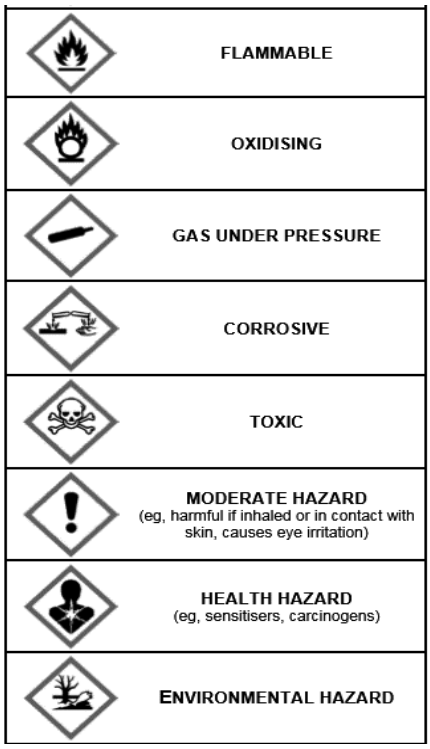
CONTENTS

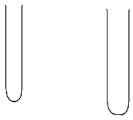
1. Practical Skills Key Terms

Keyword	Definition
Bar chart	Used for categorical (discontinuous) data.
Categoric data	Has values that are words or discrete numbers.
Continuous data	Has values that can be any number.
Line graph	Used when the data is continuous.
Line of best fit	A straight or curved line drawn to show the pattern of data points
Pie chart	Diagram to show the proportions or percentages that make up a whole.

Keyword	Definition
Anomalous result	A piece of data that does not fit the pattern.
Correlation	A relationship between data where one increases or decreases as the other increases.
Experimental error	Variations in measurements due to the scientist, equipment or readings.
Mean	An average of a set of data, calculated by adding all the values and dividing by the number of values.
Random error	Error when the same thing is measured but different numbers are taken.
Range	The maximum and minimum values of your data.
Repeatable	When repeat readings, carried out by the same person and using the same method are close together.
Systematic error	Error due to a fault with the equipment or experimental set-up used.

2. Hazard Symbols and Equipment



Item	Diagram	Purpose
Beaker		Used for holding solids or liquids.
Conical flask		Used for holding liquids.
Test tube and boiling tube		Test tube – holding liquids and solids. Boiling tube – heating them.
Measuring cylinder		Used to measure volumes of liquids.
Bunsen burner, tripod and gauze		Used to heat up items.

3. Presenting Data

Variables

Independent variable	The variable being changed
Dependent variable	The variable that is measured
Control variable	A variable that must be kept the same.

Presenting data in a table

Mass (g)	Extension 1 (mm)	Extension 2 (mm)	Average Extension (mm)
0	0	1	0.5
100	5	6	5.5
200	9	9	9
300	15	15	15
400	20	21	20.5
500	24	25	24.5
600	30	31	30.5

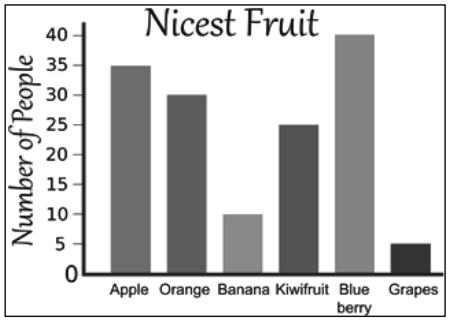
The independent variable is always in column 1.

Units should only be in the column heading.

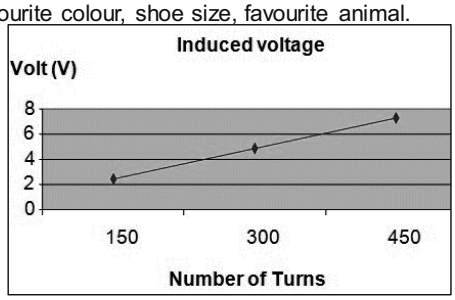
Presenting data as a graph

The independent variable is always plotted on the X axis.

The dependent variable is always plotted on the Y axis.



We use **bar graphs/charts** if our experiment has categories e.g. favourite colour, shoe size, favourite animal.



We use **line graphs/charts** if the data from our experiment could be any value, height, weight etc.

4. Diet

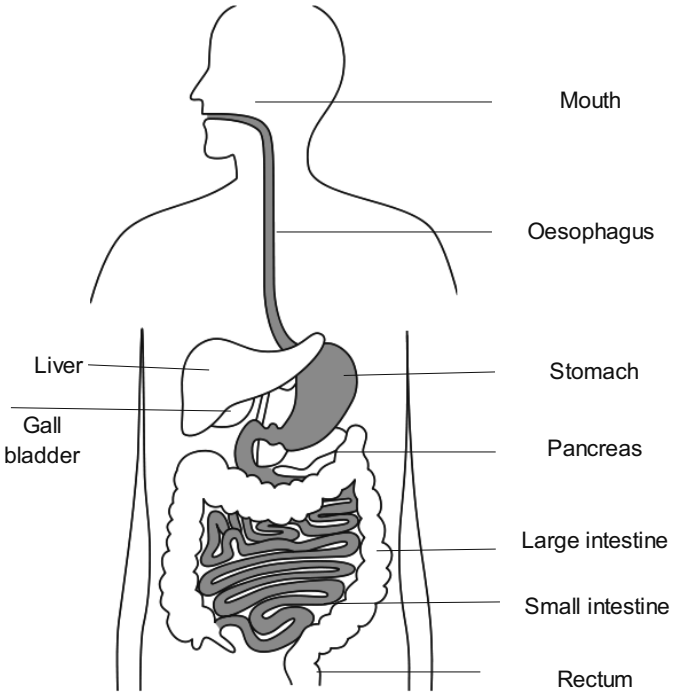
Keyword	Definition
Balanced diet	A diet which contains the right amounts of carbohydrates, lipids, proteins, vitamins, minerals, dietary fibre and water.
Malnutrition	Eating too much or too little of any nutrient.
Obesity	Taking in too many calories, increasing the risk of health problems such as heart disease, stroke and diabetes.

Food group	Why our body needs this food group	Source of this food group
Dietary fibre	Helps to keep food moving along the digestive system at the right speed. Helps to prevent constipation	Vegetables and bran
Carbohydrates	The body's main source of energy. Two types: simple (sugars) and complex (starch).	Bread, fruit, vegetables, pasta
Lipids (fats and oils)	A source of energy.	in butter, milk, eggs, and nuts.
Protein	Used to build new tissue for growth and repair	Found in meat, fish, eggs, dairy products, beans, nuts and seeds.
Minerals	Minerals help to keep us healthy. iron is needed to make new blood cells; calcium is needed to keep our bones and teeth strong	Salt, milk (for calcium) and liver (for iron)
Vitamins	Vitamins help to protect us against disease Example: vitamin C prevents a disease called scurvy	Fruit, vegetables, dairy foods

5. Food tests

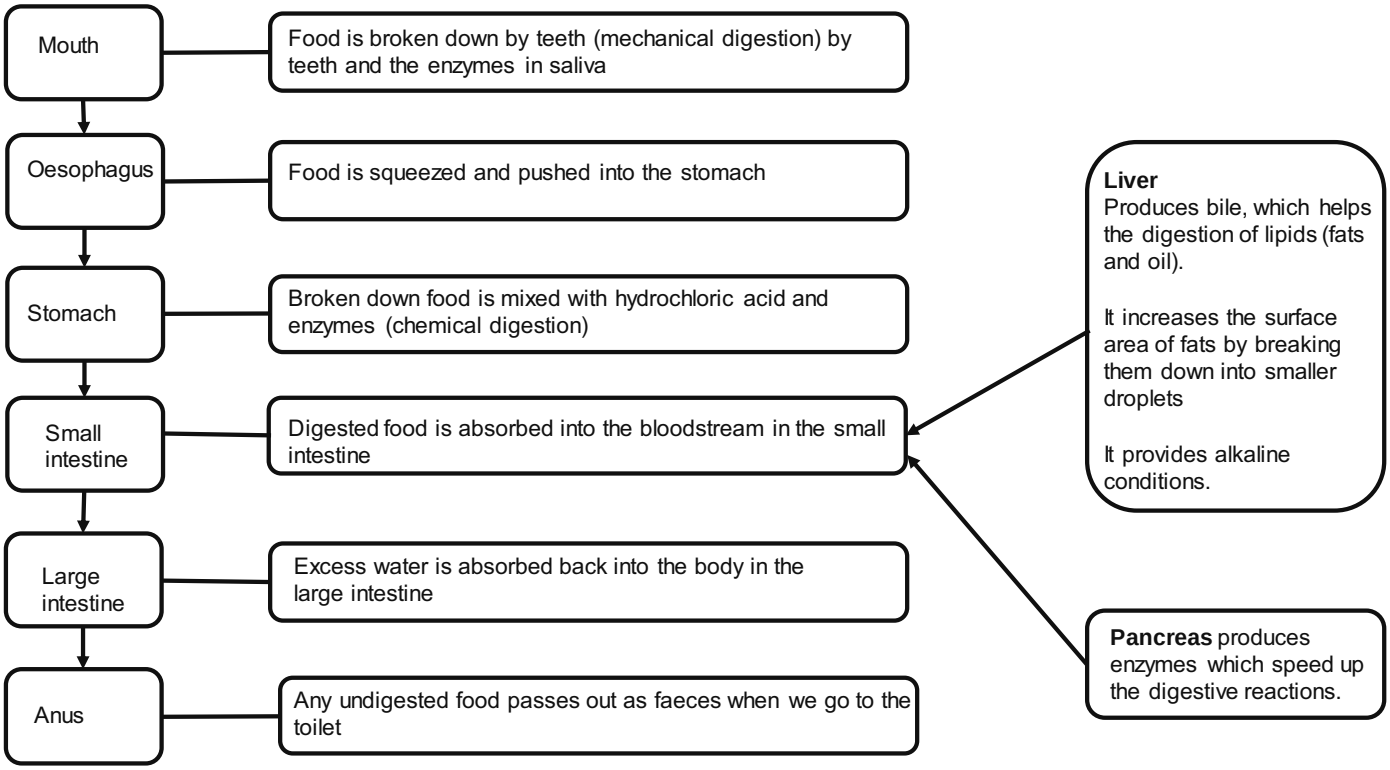
Food sample	Reagent	Method	Initial colour	Colour of positive result
Glucose	Benedict's	Add Benedict's solution to the food and heat in a water bath.	Blue	Brick red precipitate
Starch	Iodine	Add iodine solution to the food.	Yellow-brown	Blue-black
Protein	Biuret (a mixture of sodium hydroxide and copper sulfate).	Add Biuret solution to the food.	Blue	Lilac/purple
Fat	Ethanol	Add ethanol to the food to dissolve the fat then add water.	Colourless	White emulsion

6. Digestive System



Digestion	The breakdown of large insoluble food molecules (e.g. carbohydrates) into small soluble food molecules (e.g. sugars). These small molecules can move into the blood and be taken to cells around the body.
Stomach	A sac containing acid which kills microorganisms and where digestion take place.
Small intestine	Upper part of the intestine where nutrients are absorbed by the blood.
Large intestine	Lower part of the intestine from which water is absorbed and where faeces are formed.
Gut bacteria	Microorganisms that naturally live in the intestine and help food break down.

7. How food is digested



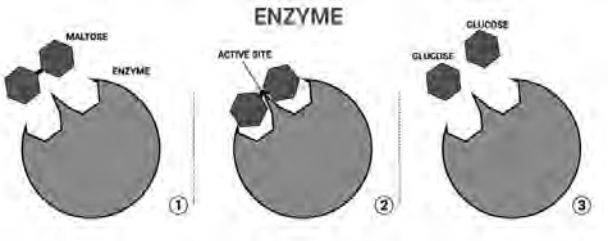
8. Digestive Enzymes

Enzymes are substances that speed up the rate of chemical reactions in the body.

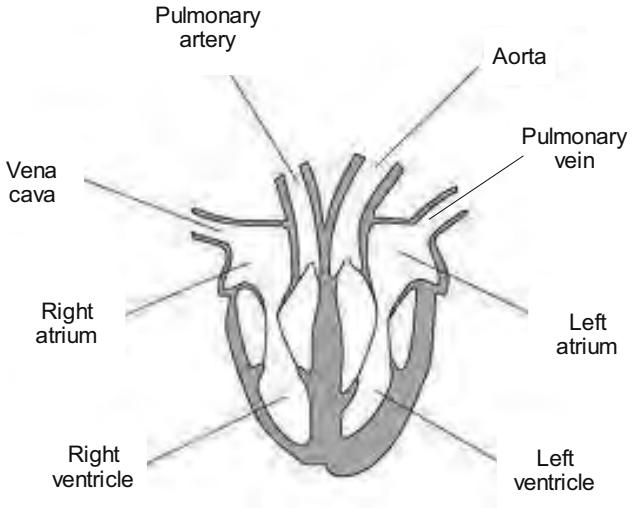
Enzymes are specific.
They only work on one type of molecule.

Different enzymes work in different parts of the body.

Enzyme	Produced by	Converts…	Into…
Amylase	Mouth, small intestine, pancreas	Starch	Sugars: glucose.
Lipase	Small intestine, pancreas	Lipid (fat)	Glycerol and fatty acids.
Protease	Stomach, small intestine, pancreas	Protein	Amino acids.



9. The Circulatory System



The heart is an organ

The heart is made of muscle.

It pumps the blood around the body.

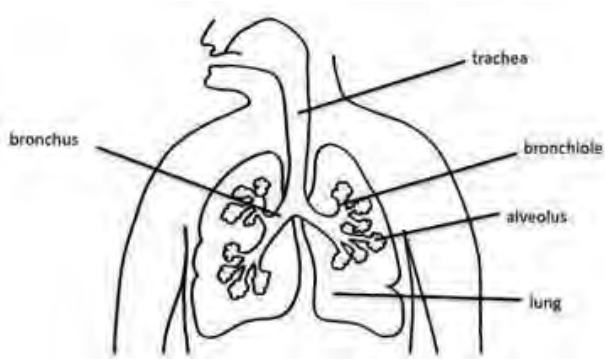
It is connected to arteries and veins.

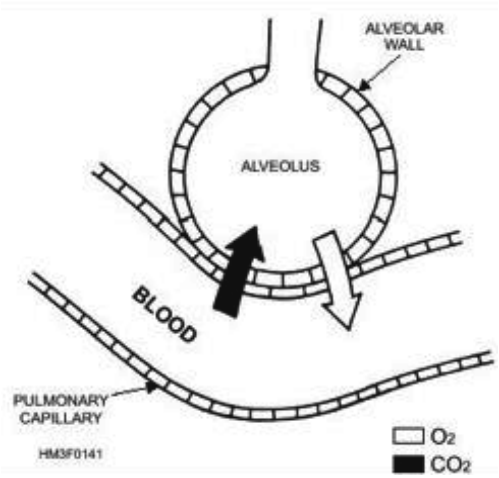
Part	Role
Artery	Carry blood away from the heart
Atrium	Smaller chambers at the top of the heart. Entrance to the heart
Capillary	Connects arteries to veins Allows materials to move in and out of their thin walls
Valve	Prevents the backflow of blood
Vein	Carry blood towards the heart
Ventricle	Larger chambers at the bottom of the heart. Push blood out of the heart.

10. Different Blood Vessels

Type	Arteries	Veins	Capillaries
Function	Carry blood away from the heart (always oxygenated apart from the pulmonary artery which goes from the heart to the lungs).	Carry blood to the heart (always deoxygenated apart from the pulmonary vein which goes from the lungs to the heart).	Found in the muscles and lungs. Where gas exchange takes place - oxygen passes through the capillary wall and into the tissues, while carbon dioxide passes from the tissues into the blood.
Structure	Have thick muscular walls. Have small passageways for blood	Have thin walls. Have larger passageways for blood. Have valves to prevent blood flowing backwards.	Microscopic – one cell thick
Blood pressure	Contain blood under high pressure	Contain blood under low pressure.	Very low blood pressure.

11. Breathing System





Keyword	Definition
Alveoli (singular: alveolus)	Small air sacs found at the end of each bronchiole that are the site of gas exchange.
Breathing	The movement of air in and out of the lungs.
Bronchi (singular: bronchus)	Tubes which carry air from the trachea to the lungs.
Bronchiole	Small tubes in the lung connecting the bronchi to the alveoli.
Diaphragm	A sheet of muscle found underneath the lungs
Lung volume	Measure of the volume of air breathed in or out.
Trachea (windpipe)	Tube which carries air from the mouth and nose to the lungs.

Features of alveoli

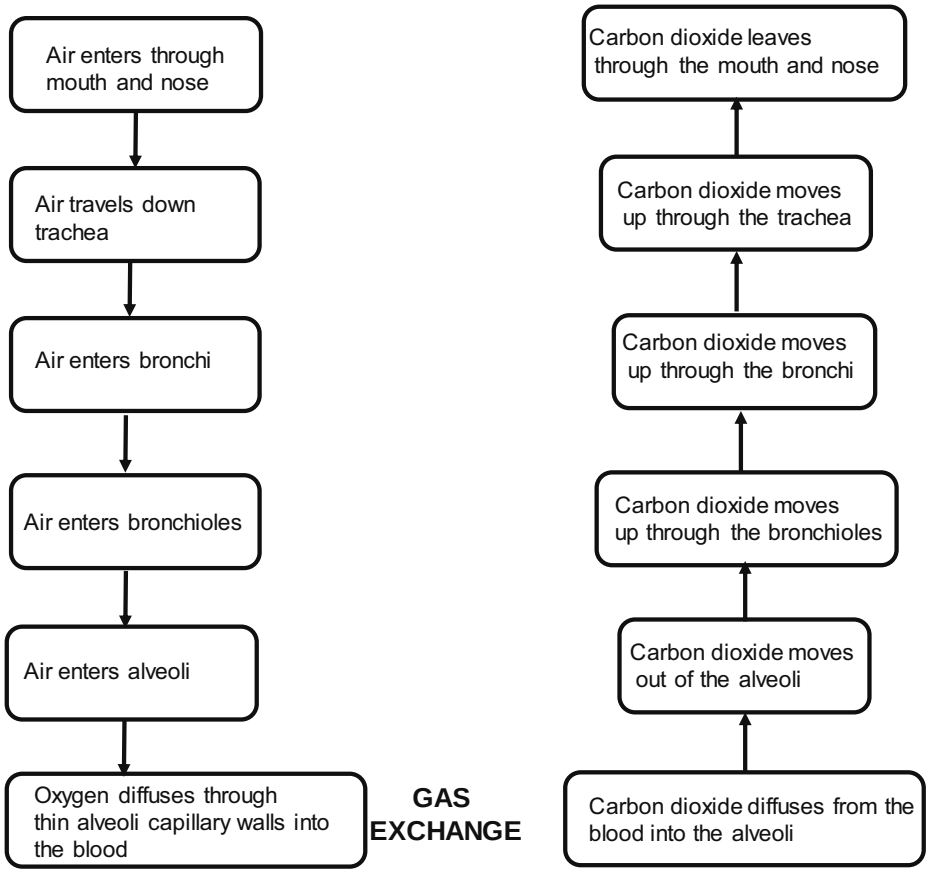
-thin walls
-a large surface area to increase diffusion speed
-a good blood supply

Oxygen is used in cells for aerobic respiration

glucose + oxygen → carbon dioxide + water.

GO → COW

12. Gas exchange processes in our lungs



To breathe in:

1) Intercostal muscles contract to pull rib cage upwards and outwards
2) Diaphragm contracts and flattens to increase the space inside the chest
3) Pressure in the chest decreases and air rushes in from outside.

The reverse is true for breathing out.

The effect of exercise on breathing

Respiration provides energy to move the muscles.

During exercise our breathing increases because our cells need more oxygen and glucose to respire faster.

More carbon dioxide is produced in respiration and we need to get rid of this by breathing it out.

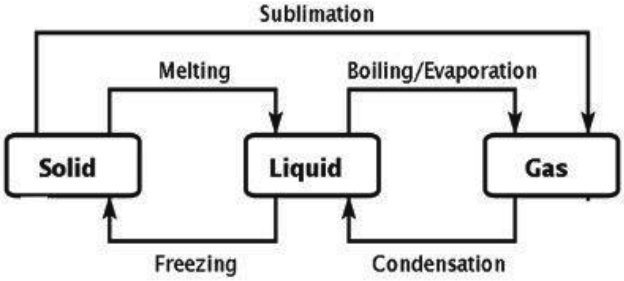
13. Particles and State

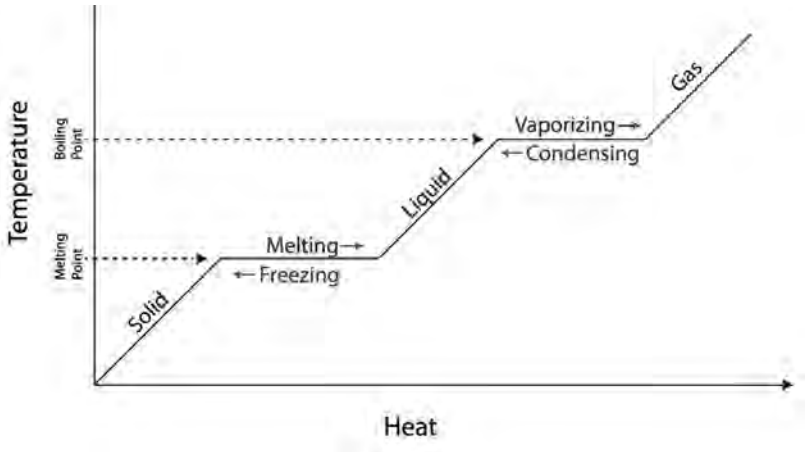
Keyword	Definition
Particle	A tiny object such as an atom or molecule, too small to be seen with a microscope.
Particle model	A way to think about how substances behave in terms of small, moving particles.
Pure substance	Single type of material with nothing mixed in.

States of matter	Solid, liquid and gases
Changes of state	Melting, evaporation, condensing, freezing and sublimation

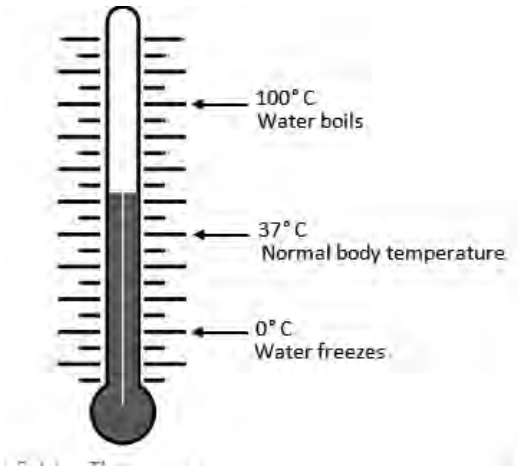
	Solid	**Liquid**	**Gas**
Arrangement of particles	Close together Regular pattern	Close together Random arrangement	Far apart Random arrangement
Movement of particles	Vibrate on the spot	Move around each other	Move quickly in all directions
Diagram			

14. Changing State





15. Predicting the state



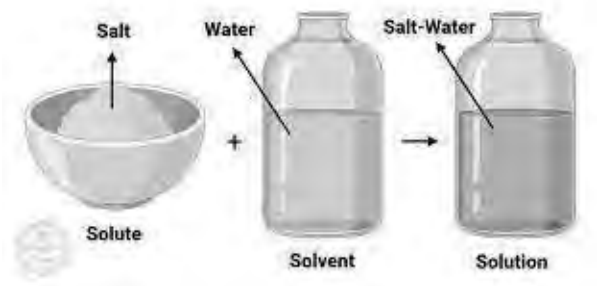
Melting point	The temperature at which a solid turns into a liquid
Boiling point	The temperature at which a liquid turns into a gas

Temperature	Predicted state
Given temperature < melting point	Solid
Given temperature is between melting and boiling points	Liquid
Given temperature > boiling point	Gas

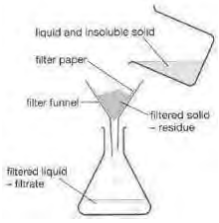
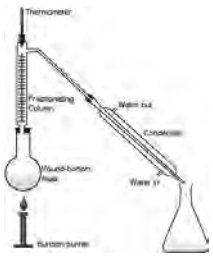
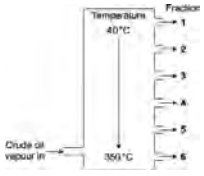
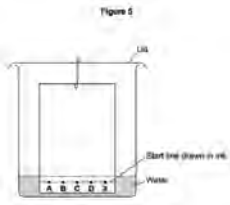
16. Solutions

Keyword	Definition
Mixture	The parts can be separated due to differences in the physical properties of each element.
Dissolve	When a solute mixes completely with a solvent e.g. salt dissolves in water
Solvent	A substance, normally a liquid, which dissolves another substance e.g. water
Solute	A substance that can dissolve in a liquid e.g. salt

Keyword	Definition
Solution	Mixture formed when a solvent dissolves a solute e.g. salty water
Soluble	A substance that will dissolve in a liquid e.g. salt is soluble in water
Insoluble	A substance that will not dissolve in a liquid e.g. sand is insoluble in water
Solubility	Maximum amount of solute that dissolves in a certain volume of solvent.



17. Separating Techniques

Process	Filtration	Distillation	Fractional distillation	Chromatography	Crystallisation
Diagram					
Physical property	Difference in solubility. An insoluble solid from a liquid.	Difference in boiling points	Difference in boiling points	Difference in solubility	Solubility
Example	Sand and salt	Ink and water	Ink, water and oil	Different colours in inks	A solid from a saturated solution: salt from water

18. Diffusion, Pressure and Density

Keyword	Definition
Compound	Made up of two or more elements chemically combined e.g. H_2O
Density	Density is the mass per unit volume of any object Density = mass ÷ volume
Diffusion	The movement of a substance from an area of high concentration to an area of low concentration
Element	Made up of only one type of atom e.g. C
Mixture	More than one element, atom, compound or molecule that is not chemically joined together e.g. air, sea water, milk
Pressure	The force acting on the container due to the collisions between gas particles

Density calculations. Use the EVERY model to layout the calculation:

Example: What is the density of a metal if 4 cubic metres (m^3) of it has a mass of 2,200 kg?

E=equation	density = mass ÷ volume
V = values	mass = 2 200 kg and v= 4 m^3
E = enter results	2 200 ÷ 4
R = result	550
Y = units	kg/m^3

19. Skills: Using a Bunsen burner

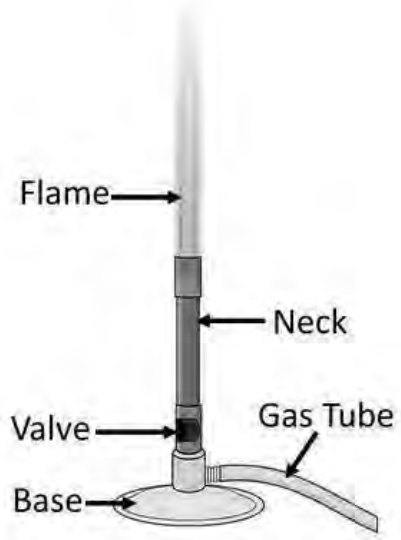
Safety Rules

1. Long hair should be tied back
2. Wear eye protection.
3. Do not leave the gas on for prolonged periods of time.
4. Use a heatproof mat
5. The Bunsen flame should be on the safety flame when not in use.

Turning the collar around the air hole changes the flame from roaring to safety flame.

Safety flame – orange

Roaring flame - blue

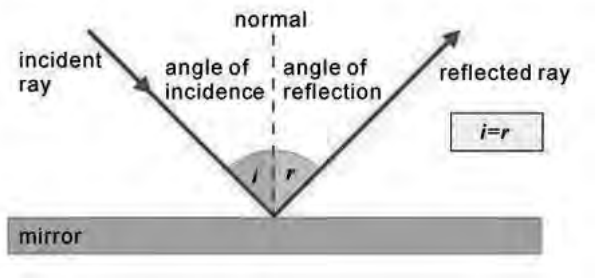


20. Reflection of Light

Keyword	Definition
Absorption	When energy is transferred from being light into a material.
Angle of incidence	Between the normal and incident ray.
Angle of reflection	The angle between the normal and reflected ray.
Incident ray	The ray of light coming from the source (e.g. ray box).
Normal line	Always at right angles to the surface of the object the light ray is hitting.
Opaque	A material that allows no light to pass through it.
Translucent	A material that allows some light to pass through it
Transparent	A material that allows all light to pass through it.
Scattering	When light bounces off an object in all directions.

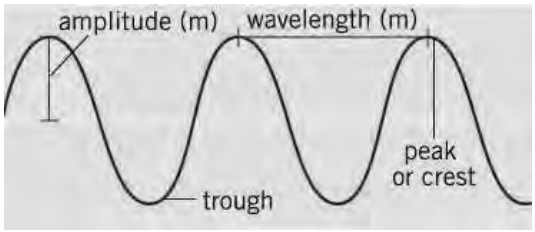
Law of Reflection

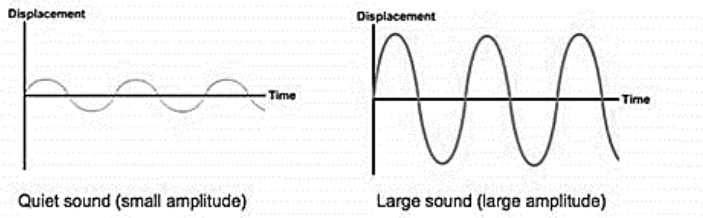
Angle of incidence = Angle of reflection

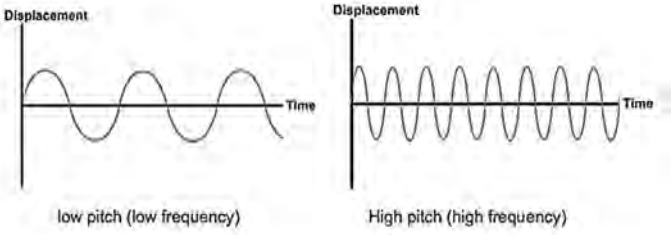


21. Sound Waves

Keyword	Definition
Amplitude	The maximum amount of vibration, measured from the middle position of the wave, in metres.
Frequency	The number of waves produced in one second, in hertz.
Medium	A material for waves to travel through e.g. water, light
Pitch	How low or high a sound is. A high pitch sound has a high frequency.
Retina	The back of the eye where an image is formed. It contains light detecting cells.
Speed of light	300 million m/s
Speed of sound	330 m/s
Vacuum	A space with no particles of matter in it
Vibration	A back and forth motion that repeats.
Volume	How loud or quiet a sound is, in decibels (dB).
Waves	Vibrations that transport energy from place to place through particles.
Wavelength	Distance between two corresponding points on a wave, in metres.





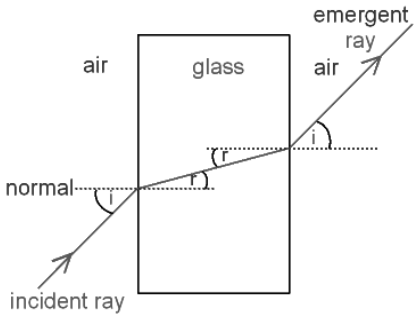


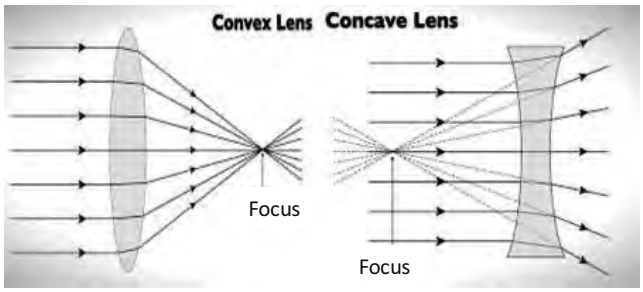
22. Refraction and Lenses

Refraction: Light waves change speed when they pass across the boundary between two substances with a different density, such as air and glass.

Light **slows** down going into a denser substance, and the ray bends **towards** the normal.

Light **speeds up** going into a less dense substance, and the ray bends **away** from the normal.



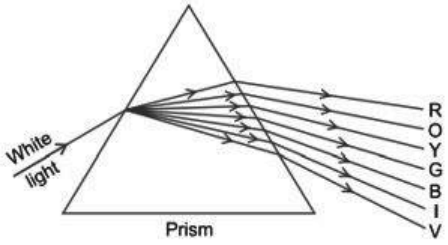


Convex lens

A lens that is thicker in the middle which bends light rays towards each other.

Concave lens

A lens that is thinner in the middle which spreads out light rays.



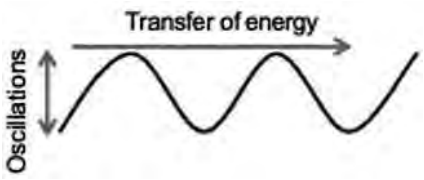
Different colours of light have different frequencies,

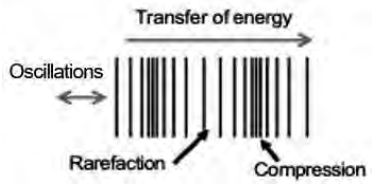
A prism can be used to separate light into the 7 colours of the rainbow: red, orange, yellow, green, blue, indigo, violet

23. Transverse and Longitudinal Waves

Wave properties

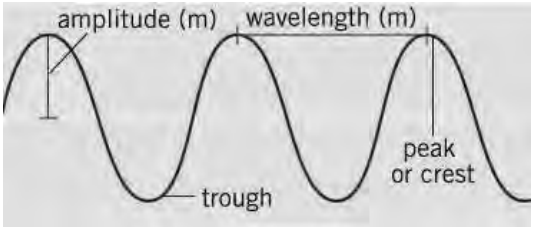
	Transverse	Longitudinal
MOVEMENT	**Definition:** Oscillations are perpendicular (90˚) to the direction of energy transfer.	**Definition:** Oscillations are parallel to the direction of energy transfer.
MEDIUM	Some do not require a medium to travel through (e.g. electromagnetic waves can travel through a vacuum – space).	They require a medium to travel through (e.g. solid, liquid or gas). Longitudinal waves contain areas of compression and rarefaction.
EXAMPLES	All electromagnetic waves, water waves, and a wave on a string.	Sound waves travel as a longitudinal wave in air.

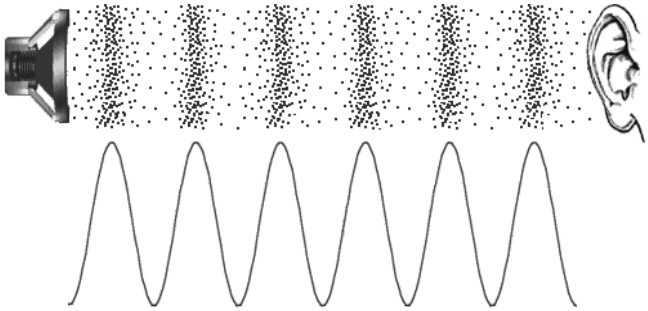




24. Wave Effects

Keyword	Definition
Absorption	When energy is transferred from sound to a material.
Auditory range	The lowest and highest frequencies that a type of animal can hear
Echo	Reflection of sound waves from a surface back to the listener.
Loudspeaker	Turns an electrical signal into a pressure wave of sound.
Microphone	Turns the pressure wave of sound hitting it into an electrical signal.
Oscilloscope	Device able to view patterns of sound waves that have been turned into electrical signals.
Pressure wave	An example is sound, which has repeating patterns of high-pressure and low-pressure regions.
Ultrasound	Sound waves with frequencies higher than the human auditory range.
Ultraviolet (UV)	Waves with frequencies higher than light, which human eyes cannot detect.





25. Skeleton

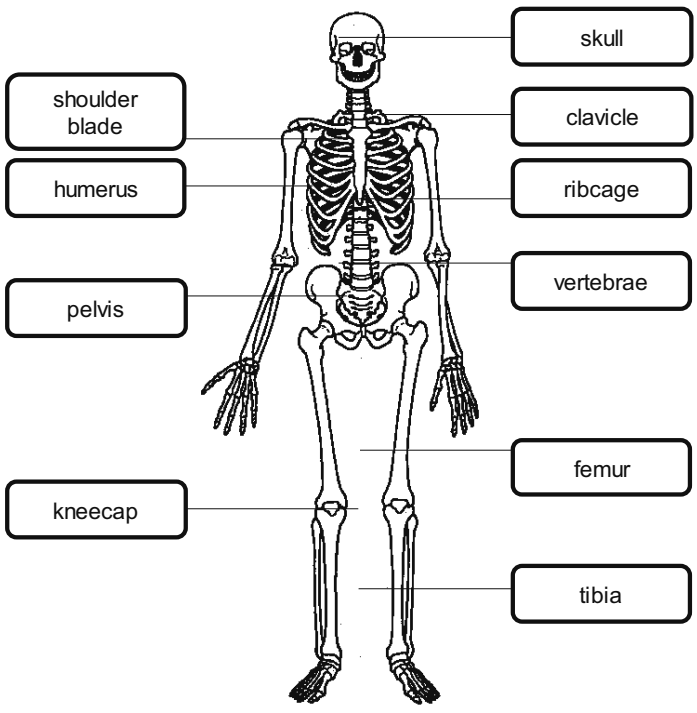
Bones are hollow which makes them light and strong.

Bones need calcium to grow and stay strong.

The human skeleton has 4 roles:

1. Support
2. Protection
3. Movement
4. Making new blood cells.

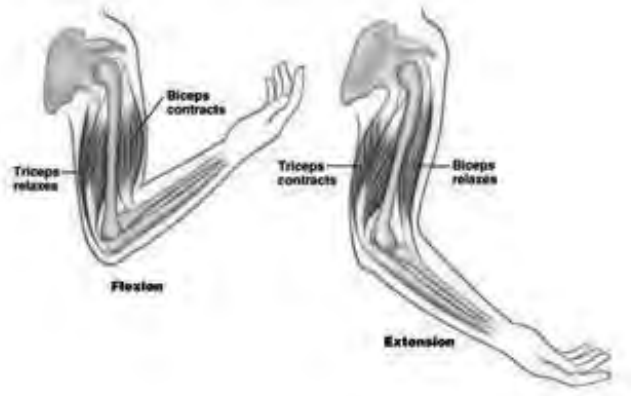
Keyword	Definition
Bone marrow	Tissue found inside some bones where new blood cells are made.
Cartilage	Tissue at the end of bones, which reduces wear.
Joints	Places where bones meet.
Ligaments	Connect bones to bones in joints and provides structural support.



26. Movement

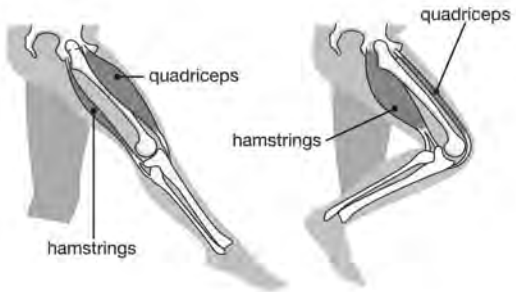
Antagonistic pairs of muscles cause movement.
When one contracts and the other relaxes.

The biceps and triceps work antagonistically to move the arm.
The quadriceps and hamstrings work antagonistically to move the leg.

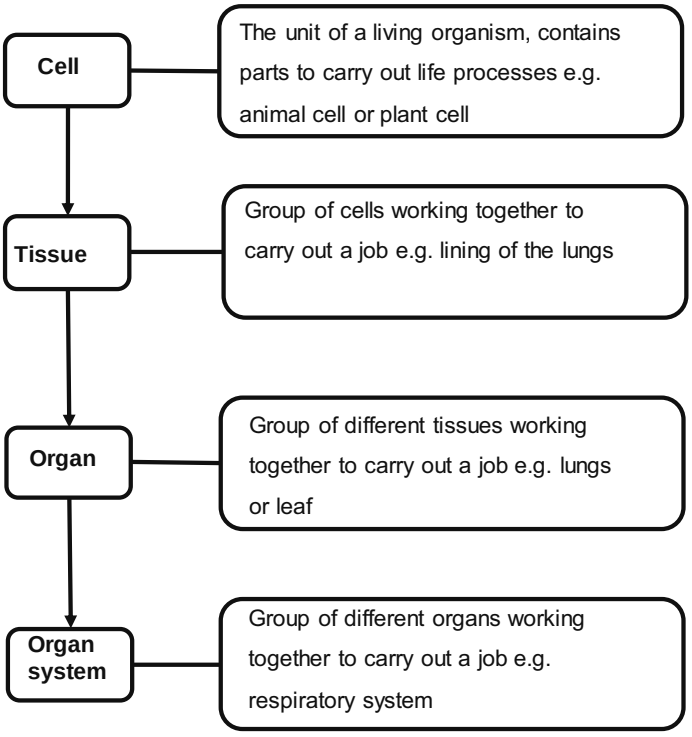


Tendons are fibres that connect muscles to bones to allow the movement to happen.

Ligaments are tough, fibrous and slightly elastic connective tissue that connect bone to bone and help keep the joint together.



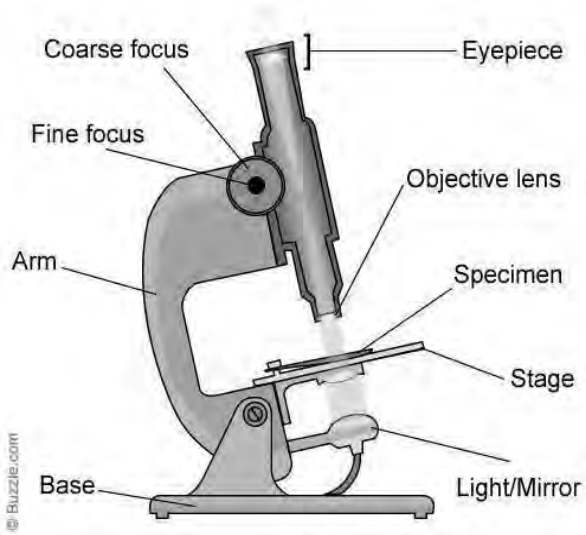
27. How is our body organised?



Organ system	Role
Digestive	Breaks down and then absorbs food molecules.
Muscular skeletal	Muscles and bones working together to cause movement and support the body
Circulatory	Transports substances around the body.
Reproductive	Produces sperm and eggs and is where the foetus develops.
Immune	Protects the body against infections.
Respiratory	Replaces oxygen and removes carbon dioxide from blood.

Unicellular	Living things made up of one cell e.g. a euglena.
Multicellular	Living things made up of many types of cell e.g. human, rabbit, tree
Diffusion	One way for substances to move into and out of cells. Substances move from high concentration to low concentration.

28. Using a Microscope

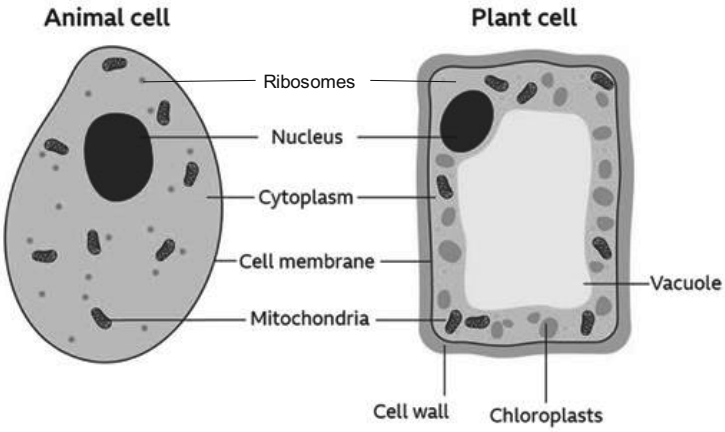


Microscopes are used to see objects in detail or to see objects we can't see with our eyes alone.

How to observe the best image:

1. Use the lowest magnification first (select the smallest objective lens)
2. Place the slide in the centre of the stage
3. Use the larger focusing wheel to move the stage upwards, as far as it will go (but don't force it beyond the brake mechanism)
4. Look down the eyepiece lens
5. Use the larger focusing wheel to focus on the slide
6. Use the smaller focusing wheel to finely focus the slide.
7. Increase the magnification by turning the objective lenses, then repeat stages 2 and 3.

29. Plant and animal cells

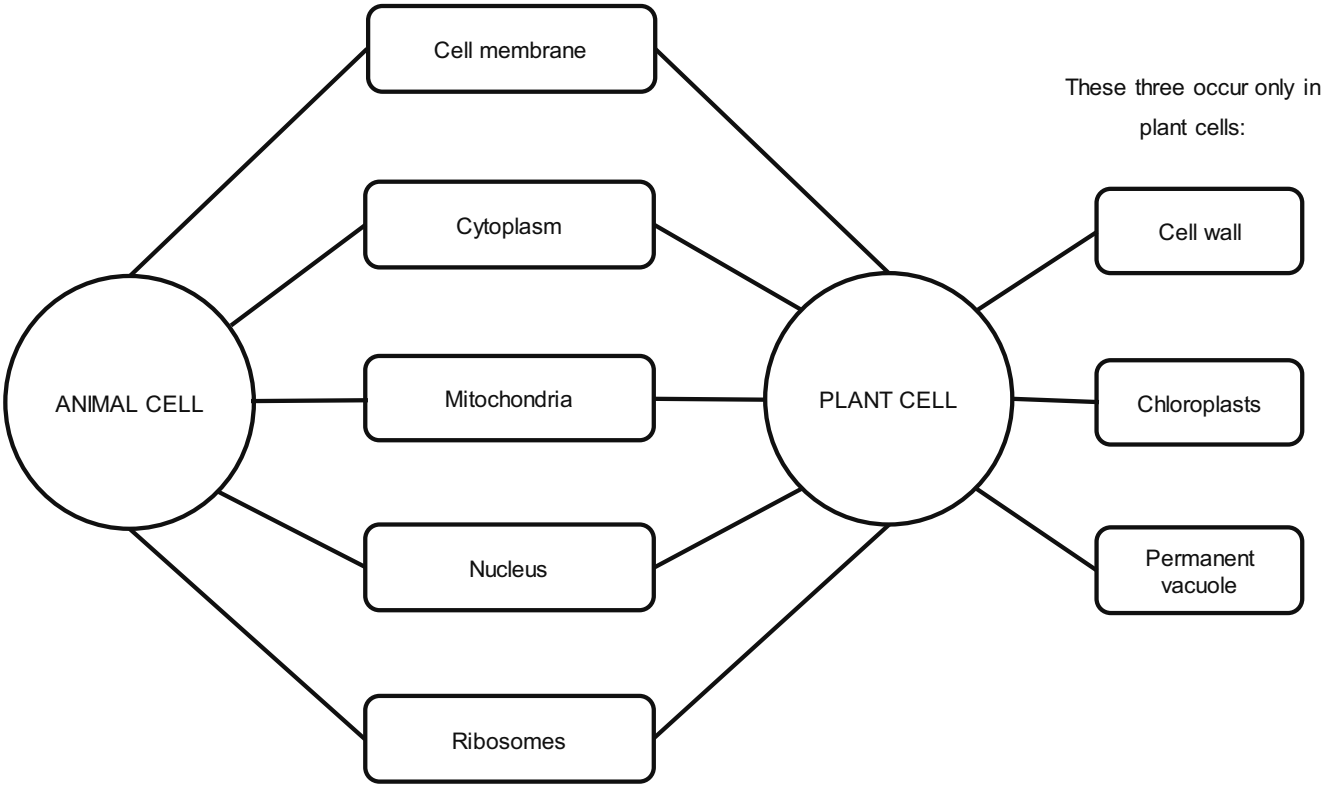


There are many types of cell e.g. egg cell, sperm cell, red blood cell, muscle cell.

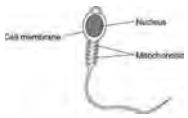
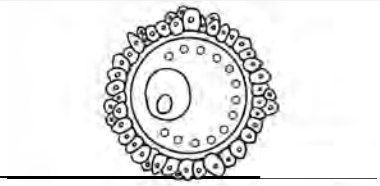
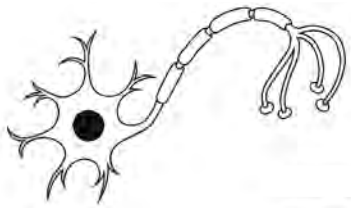
Each has a different structure or feature so it can do a specific job.

Cell organelle	Description
Cell membrane	Controls the movement of substances in and out of the cell.
Cell wall	Made of cellulose, to strengthen the cell.
Chloroplast	The site of photosynthesis. Contains chlorophyll to absorb light
Cytoplasm	The site of chemical reactions.
Mitochondria	To release energy during respiration.
Nucleus	Contains genetic material (DNA) which controls the cell's activities.
Permanent vacuole	Contains cell sap to make the cell rigid and store substances
Ribosomes	The site of protein synthesis (where proteins are made).

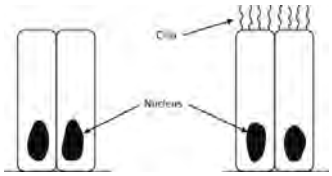
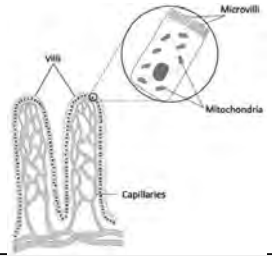
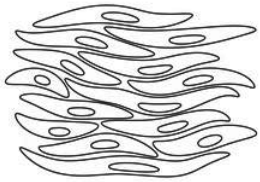
30. Comparing plant and animal cells



31. Specialised cells 1

Specialised cell	Function	Adaptation
	Red blood cells carry oxygen around the body, which is needed for respiration.	• They don't have a nucleus, allowing more space to carry oxygen. • They are a flat disc shape with dips on both sides (biconcave). This gives them a large surface area, and the best chance of absorbing as much oxygen as they can in the lungs.
	Sperm are the male sex cell.	• A tail moves them towards an egg cell. • Many mitochondria release energy for movement.
	Eggs are the female sex cell	• The egg cell's cytoplasm contains nutrients for the growth of the early embryo. • The cell membrane changes after fertilisation by a single sperm so that no more sperm can enter.
	Nerve cells transmit electrical signals in the nervous system.	• They are thin,and can be more than one metre long in your spinal cord. This means they can carry messages up and down the body over large distances very quickly. • Nerve cells have branched connections at each end. These join to other nerve cells, allowing them to pass messages around the body.

32. Specialised cells 2

Specialised cell	Function	Adaptation
	Ciliated cells are found in the airways and in the oviduct	• They have tiny hairs on their tops called cilia which beat in a rhythm. • These hairs move mucus containing dust and other particles upwards and out of the airways.
	Villi are structures about one millimetre long in the small and large intestines. Millions of them poke out to absorb digested food and water into the blood.	•They have a large surface area. •They have thin walls which are only one cell thick. •The cells of the lining have tiny hairs to absorb more food and water.
	Muscles cells are found in bundles which make up our muscles. These cells are able to contract (get shorter) and relax (return to original length).	• Cardiac (heart) muscle cells contract and relax to pump blood around our bodies for our entire lives. They never get tired. • Smooth muscle cells make up thin sheets of muscle, such as the stomach lining. They can also be arranged in bundles, or rings, like that in the anus. • Skeletal muscle is joined to bones. Its cells contract to make bones move and joints bend.

33. Metals and Non-metals

Keyword	Definition
Displacement reaction	Reaction where a more reactive metal takes the place of a less reactive metal in a compound.
Metals	shiny good conductors of electricity and heat malleable and ductile usually solid at room temperature
Non-metals	dull poor conductors of electricity and heat brittle usually solid or gases at room temperature.
Oxidation	Reaction in which a substance combines with oxygen
Reactivity	The tendency of a substance to undergo a chemical reaction.
Thermal decomposition	The breakdown of a compound using heat

Oxidation

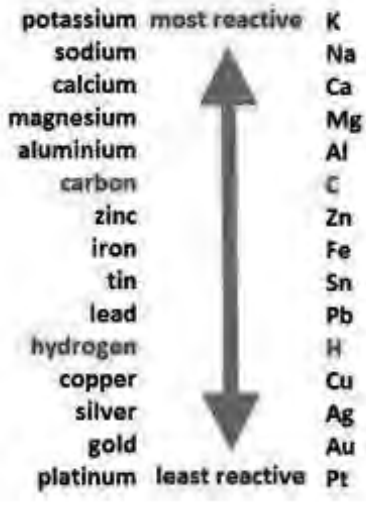
Metals and non-metals react with oxygen to form oxides.

Metal oxides (e.g. magnesium oxide) are alkali.

Non-metal oxides (e.g. carbon dioxide) are acids.

Reactivity

Metals can be arranged in order of how readily they react with other substances. Those metals at the top will **displace** those at the bottom.



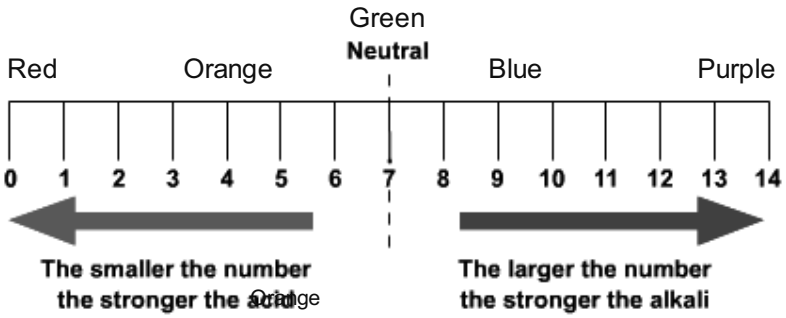
Iron, nickel and cobalt are magnetic.

Mercury is a metal that is liquid at room temperature.

34. Acids and Alkalis

Keyword	Definition
Alkali	A base that has dissolved in water
Base	A substance that neutralises an acid
Concentration	A measure of the number of particles in a given volume.
Indicators	Substances used to identify whether unknown solutions are acidic or alkaline.
pH scale	Scale of acidity and alkalinity from 0 to 14.

Acid	Alkali
Hydrochloric acid	Sodium hydroxide
Nitric acid	Potassium hydroxide
Sulfuric acid	
Citric acid	
Ethanoic acid	



35. Reactions with Acids

Metal oxides	Compounds of metal that contain oxygen atoms. They are usually alkali e.g. magnesium oxide
Neutralisation	The reaction between an acid and a base. It forms a salt and water. Acid + alkali → salt + water
Salt	A substance produced from a neutralisation reaction between an acid and a base. The salt is named after the acid.

Reactions with acids

Metal + Acid → Salt + Hydrogen

Test for hydrogen: Lit splint

Observation: squeaky pop

Test for carbon dioxide: Bubble through limewater

Observation: Limewater turns milky/cloudy

Acid used to make the salt	Ending of salt name	Example
Hydrochloric acid	- Chloride	Zinc + hydrochloric acid → zinc chloride + hydrogen
Sulfuric acid	- Sulfate	Zinc + sulfuric acid → zinc sulfate + hydrogen
Nitric acid	- Nitrate	Zinc + nitric acid → zinc nitrate + hydrogen

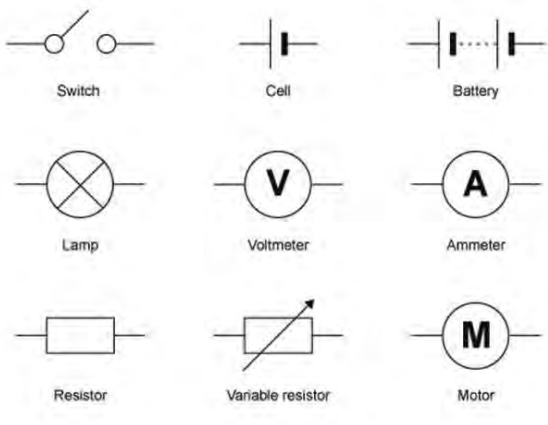
36. Electrical Circuits

Keyword	Definition
Ammeter	Device used to measure current in Amps. It is connected in series.
Electrical conductor	A material that allows current to flow through it easily.
Electrical insulator	A material that does not allow current to flow easily.
Electrons	Tiny particles which are part of atoms and have a negative charge.
Series circuit	Components in a circuit are on the same loop.
Parallel circuit	Some components are on separate loops.
Voltmeter	Device used to measure potential difference (voltage) in Volts. It is connected in parallel.

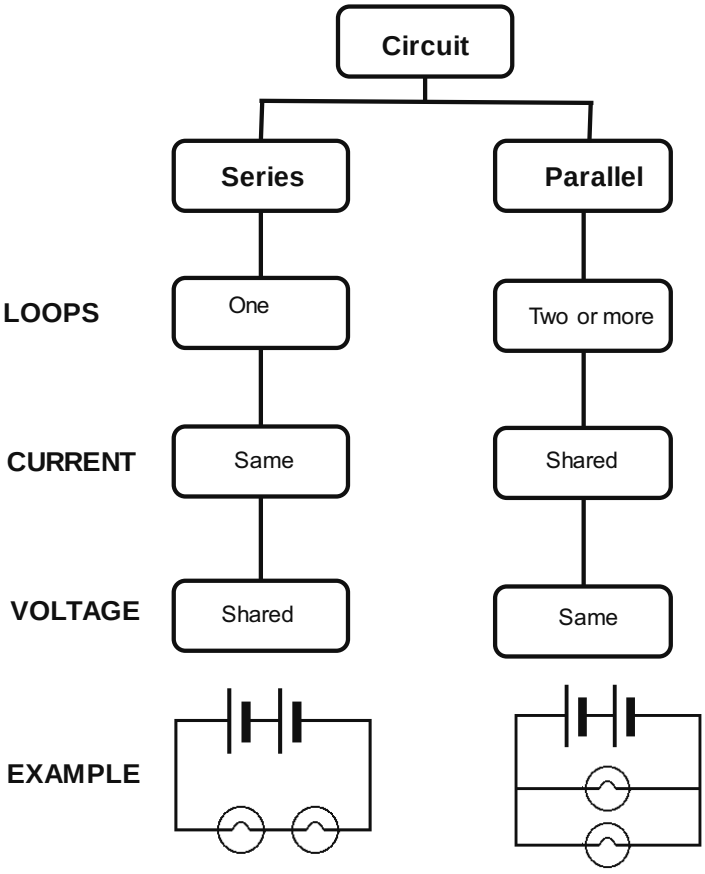
Drawing electrical circuits

We use special symbols to represent different components, so that all circuit diagram symbols will look the same.

Always use a ruler and pencil to draw the wire in an electrical circuit.



37. Series and Parallel circuits



	Potential difference	Current
What is it?	The amount of energy passed from the energy source to the moving electrical charge; or transferred from the charge to other parts of the circuit. Like an electrical push from the cell. It provides energy to the electrons.	Flow of electric charge.
Component	Voltmeter	Ammeter
Measured in	Volts (V)	Amps (A)
Component within a circuit	In parallel (in an extra loop)	In series (within the loop)

38. Resistance and Electrostatics

Resistance operates against the flow of electrical charge and makes it hard for charge to pass through.

Measured in ohms (Ω).

Components with resistance reduce the current flowing and shift energy to the surroundings.

resistance (Ω) = potential difference (V) ÷ current (A).

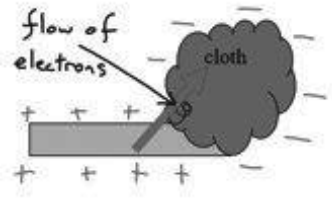
Electrostatics

Keyword	Definition
Electrostatic force	A non-contact force between two charged objects.
Negatively charged (-)	An object that has gained electrons.
Positively charged (+)	An object that has lost electrons.

Around a charged object, the electric field affects other charged objects, causing them to be attracted or repelled.

Like charges repel.
Opposite charges attract.

The field strength decreases with distance.



Static electricity is caused when electrons are rubbed from a material (an insulator) and moved onto another material.
One surface gains electrons and becomes negatively charged.
One loses electrons and becomes positively charged.

39. Human Reproduction

Keyword	Definition
Fertilisation	Joining of a nucleus from a male and female sex cell..
Gamete	A sex cell. In human males it is a sperm. In females it is an egg.
Menstruation	Loss of the lining of the uterus during the menstrual cycle.
Ovary	Female organ which contains eggs.
Oviduct, or fallopian tube	Carries an egg from the ovary to the uterus Where fertilisation occurs.
Ovulation	Release of an egg cell during the menstrual cycle
Penis	Male organ which transports sperm out of the male's body.
Sperm duct	Transport sperm from testes to penis
Testis (plural testes)	Male organ where sperm are produced.
Uterus or womb	Where an embryo develops in a pregnant woman.
Vagina	Where the penis enters the female's body and sperm is received.

A **sperm** cell is specialised for its job.
It has a pointed head and a tail for swimming.

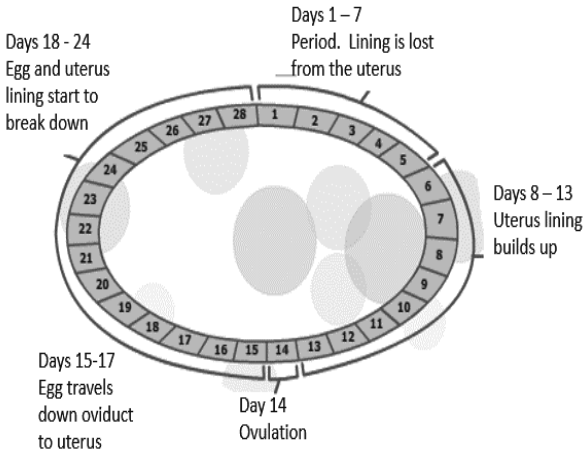
An **egg** cell is specialised.
It is large and has a protective layer that only allows 1 sperm to get through.

Puberty is the process when by the body undergoes changes to start the process of becoming an adult.

Changes include:

- Growth of underarm and pubic hair
- Growth of facial hair in males
- Development of sperm in testes of males
- Voice gets deeper in males
- Periods (the menstrual cycle) start in females
- Breast development in females

40. The Menstrual Cycle and Pregnancy



Keyword	Definition
Amniotic fluid	Liquid that surrounds and protects the foetus.
Embryo	A developing baby before organs develop (up to week 8 of pregnancy)
Foetus	A developing baby after 8 weeks of pregnancy
Placenta	Organ that gives the foetus oxygen and nutrients and takes away waste.
Zygote	A fertilised egg cell

Pregnancy

A normal human pregnancy lasts for 9 months/40 weeks and the baby develops inside the uterus.

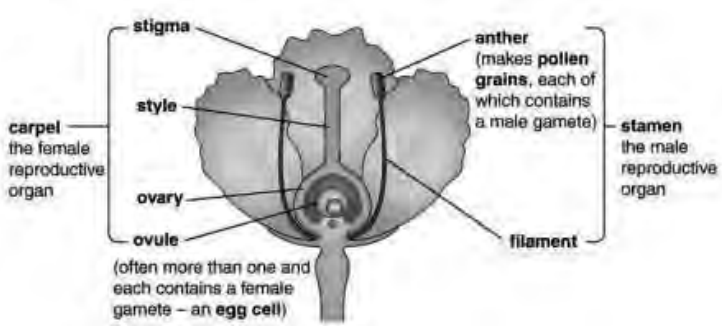
The developing foetus relies on the mother to provide it with oxygen and nutrients, to remove waste and protect it against harmful substances.

Smoking and drinking alcohol can damage the health of the baby.

Birth

At the end of pregnancy the baby is born and leaves the female's body through the vagina, or through a cut in the abdomen called a caesarean.

41. Plant Reproduction



Male parts of the flower	Female parts of the flower
Stamen Each consists of an anther held up on a filament	**Stigma** The top of the female part of the flower which collects pollen grains
Anthers Produce male sex cells (pollen grains)	**Ovary** Produces the female sex cells (ovules)
Pollen grain Contains male sex cell	

Structure	Function
Sepal	Protect the unopened flower
Petal	May be brightly coloured to attract insects
Nectary	Produce a sugary solution called nectar, which attracts insects

42. Plant Fertilisation and Pollination

Pollen grain lands on the stigma of a flower of the same species.

↓

Pollen tube grows down from the pollen grain, through the style and into the ovary

↓

The nucleus of the pollen grain passes along the pollen tube and joins with the nucleus of the ovule

↓

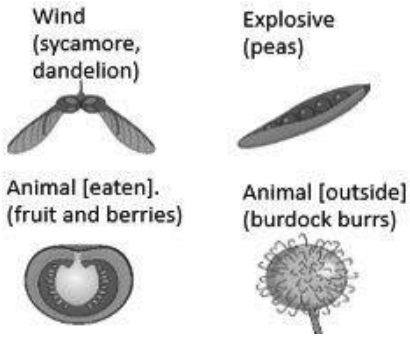
A seed forms

↓

The seed is dispersed so that the new plant has space and can absorb enough water and light to grow well.

Pollination

Pollen can be carried by the wind, or by pollinating insects such as bees or other animals.



43. Maths in Science

Anomalous result	A number that does not fit the pattern.
Mean	Adding up a list of numbers and dividing by how many numbers are in the list. Exclude any anomalous results.
Median	The middle value when a list of numbers is put in order from smallest to largest.
Mode	The most common value in a list of numbers. If two values are tied then there are two modes. If more than two values are tied then there is no mode.

Person	**Heart rate after 10 star jumps (bpm)**	**Heart rate after running 200 metres (bpm)**	**Heart rate after 10 squats (bpm)**
1	98	104	87
2	102	107	91
3	96	105	94

Calculating a mean:

Adding up a list of numbers and dividing by how many numbers are in the list.

Example from above: Calculate the mean heart rate in bpm for person 1 over the 3 exercises.

98+104+87 = 289.

289 ÷ 3 (as we have 3 results) = 96.33 bpm.

Rounded to 96.3 (1d.p.)

44. Maths in Science

Calculating percentage:

(Part ÷ whole) x 100

e.g. Out of 90 insects, 40 of them were ladybirds.

What is the % of ladybirds?

(40 ÷ 90) x 100 = 44 %

x - axis = left hand column in results table = independent variable

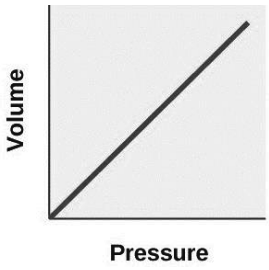
y - axis = right hand column in results table = dependent variable

Linear relationship:

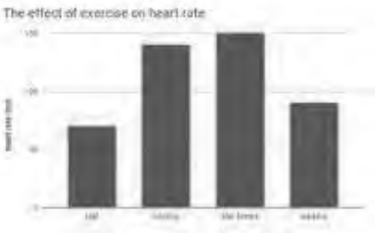
In science we use graphs to show relationships between two factors.

When a graph shows a straight line which goes through the origin (0,0).

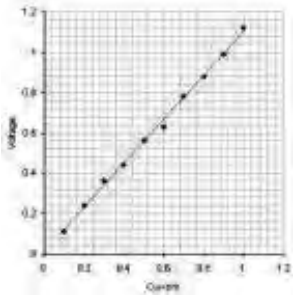
We say the two variables are directly proportional.



Categoric data: data put into groups e.g. colour of eyes
Draw a bar chart



Continuous data: data that can take any value e.g. current
Draw a line graph.
Line can be straight OR curved



1	2											3	4	5	6	7	0
							1 H hydrogen 1										4 He helium 2
7 Li lithium 3	9 Be beryllium 4		Key: relative atomic mass / atomic symbol / name / atomic (proton) number									11 B boron 5	12 C carbon 6	14 N nitrogen 7	16 O oxygen 8	19 F fluorine 9	20 Ne neon 10
23 Na sodium 11	24 Mg magnesium 12											27 Al aluminium 13	28 Si silicon 14	31 P phosphorus 15	32 S sulfur 16	35.5 Cl chlorine 17	40 Ar argon 18
39 K potassium 19	40 Ca calcium 20	45 Sc scandium 21	48 Ti titanium 22	51 V vanadium 23	52 Cr chromium 24	55 Mn manganese 25	56 Fe iron 26	59 Co cobalt 27	59 Ni nickel 28	63.5 Cu copper 29	65 Zn zinc 30	70 Ga gallium 31	73 Ge germanium 32	75 As arsenic 33	79 Se selenium 34	80 Br bromine 35	84 Kr krypton 36
85 Rb rubidium 37	88 Sr strontium 38	89 Y yttrium 39	91 Zr zirconium 40	93 Nb niobium 41	96 Mo molybdenum 42	[98] Tc technetium 43	101 Ru ruthenium 44	103 Rh rhodium 45	106 Pd palladium 46	108 Ag silver 47	112 Cd cadmium 48	115 In indium 49	119 Sn tin 50	122 Sb antimony 51	128 Te tellurium 52	127 I iodine 53	131 Xe xenon 54
133 Cs caesium 55	137 Ba barium 56	139 La* lanthanum 57	178 Hf hafnium 72	181 Ta tantalum 73	184 W tungsten 74	186 Re rhenium 75	190 Os osmium 76	192 Ir iridium 77	195 Pt platinum 78	197 Au gold 79	201 Hg mercury 80	204 Tl thallium 81	207 Pb lead 82	209 Bi bismuth 83	[209] Po polonium 84	[210] At astatine 85	[222] Rn radon 86
[223] Fr francium 87	[226] Ra radium 88	[227] Ac* actinium 89	[261] Rf rutherfordium 104	[262] Db dubnium 105	[266] Sg seaborgium 106	[264] Bh bohrium 107	[277] Hs hassium 108	[268] Mt meitnerium 109	[271] Ds darmstadtium 110	[272] Rg roentgenium 111	[285] Cn copernicium 112	[286] Uut ununtrium 113	[289] Fl flerovium 114	[289] Uup ununpentium 115	[293] Lv livermorium 116	[294] Uus ununseptium 117	[294] Uuo ununoctium 118

YEAR 7
ART & DESIGN
KNOWLEDGE ORGANISER

FORMAL ELEMENTS

CONTENTS

THE FORMAL ELEMENTS

TONE

Tone describes the lightness or darkness of a surface.

A gradient is a series of tonal values from light to dark.

Tone can help to provide a form with value to give a sense of volume to a flat surface.

ADJECTIVES TO DESCRIBE TONE	
Dark	Highlights
Light	Shadows
Mid tone	Shading
Grey	Blending
Blend	Graduated

SHAPE

Shape is an area enclosed by a line. It can be 2-dimensional and can be geometric or organic.

Geometric

Organic

ADJECTIVES TO DESCRIBE SHAPE	
Circular	Irregular
Square	Stylized
Rectangular	Organic
Triangular	Geometric
Misshaped	Contour

FORM

Forms are 3-dimensional shapes. They occupy space (like sculptures) or give the illusion that they occupy space (drawing).

WORDS TO DESCRIBE FORM	
Angular	Curvaceous
Twisted	Solid
Bulbous	Malformed
Tapered	Rounded
Contours	Negative space

THE FORMAL ELEMENTS

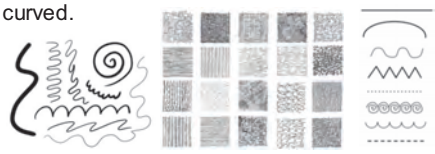
PATTERN

Pattern is a design that is created by repeating a formal element. It can be natural, like the stripes of a zebra, or man made, like a design on fabric. The image repeated is called a **motif**. These can be simple shapes or more complicated arrangements.

ADJECTIVES TO DESCRIBE PATTERN	
Regular	Motif
Irregular	Repetition
Symmetrical	Radial
Tessellating	Tiered
Organic	Even

LINE

Line is a mark left by a moving point e.g. a pencil, or paint on a paintbrush. It can take many forms e.g. horizontal, diagonal, or curved.

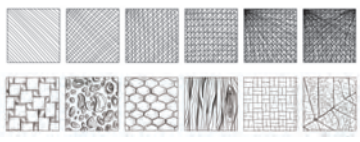


Marks can be repeated and used to create patterns in order to give tone and texture to your drawing.

ADJECTIVES TO DESCRIBE LINE		
Broken	Graphical	Hesitant
Flowing	Angular	Scribbled
Moving	Geometric	Wavy
Woolly	Confident	Organic
Tight	Faint	Heavy

TEXTURE

Texture is the surface quality of an object. Texture can be real or implied. **Real texture** can be felt e.g. tree bark, whereas **implied texture** creates the look of texture on a flat surface e.g. a drawing or a painting.



WORDS TO DESCRIBE TEXTURE		
Texture	Impasto	Hatching
Smooth	Fine	Rough
Tactile	Uneven	Shiny
Jagged	Frosted	Soft
Coarse	Silky	Stippled

COLOUR

To see colour, you have to have light. When light shines on an object some colours bounce off the object and others are absorbed by it. Our eyes only see the colours that are bounced off or reflected.

Primary Colours

All colours can be obtained by mixing primary colours together. Primary colours cannot be created by mixing other colours.

Secondary Colours

A colour mixed from two primary colours

Tertiary Colours

A colour mixed from a primary colour and a secondary colour

Harmonious Colours are 3 colours next to each other on the colour wheel

Complimentary Colours are colours opposite each other on the colour wheel

The colour wheel can be split up into **warm** and **cool** colours, and each individual colour has it's own warm and cool variant

ADJECTIVES TO DESCRIBE COLOUR

Opaque	Luminous	Pale
Translucent	Bright	Pastel
Transparent	Saturated	Soft
Contrasting	Vibrant	Muted
Harmonious	Vivid	Deep
Complementary	Brilliance	Dull
Cool	Harsh	Hue
Warm	Neutral	Tint

DESIGN PRINCIPLES

CONTENTS

THE DESIGN PRINCIPLES

UNITY & VARIETY

Unity is how well the elements of a design work together. Each element should have a clear visual relationship with each other element to help communicate a clear, concise message.

Unity = Same colour
Variety = Different sizes

Unity = Same size
Variety = Different colours

BALANCE

Balance can be symmetrical (with items of equal weight on either side of the centre line) or asymmetrical (with items of different weights laid out in relation to a line that may or may not be centred)

Balance = Symmetrical

Balance = Asymmetrical

CONTRAST

Contrast is the difference between various elements within a design, that makes them stad out from each other.

Contrast in shape

Contrast in colour

Contrast in scale

Contrast in layout

THE DESIGN PRINCIPLES

SCALE/PROPORTION

Proportion is the size of the elements in relation to one another. Larger elements tend to be seen as more important while smaller ones are seen as less so.

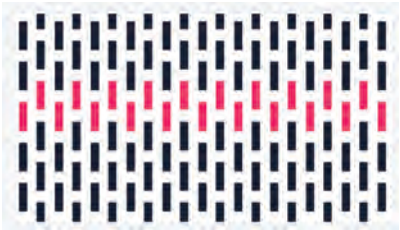
Size

Ratio

Divisions

REPETITION

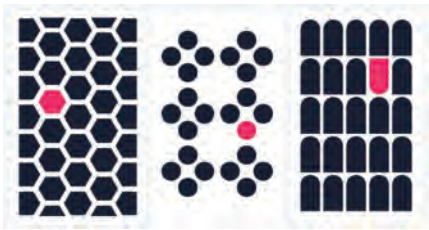
Repetition reinforces an idea or perception. It can be achieved by repeating the same colours, shapes, images, objects, mark making techniques, and so forth.



Repetition changes perspective

EMPHASIS

Emphasis causes a certain part of a design to stand out compared to other elements. Conversely, it can also be used to minimise how much an element stands out.



Creating a focal point

WRITING ABOUT ART

CONTENTS

ART & DESIGN – WRITING ABOUT ART – KNOWLEDGE

KNOWLEDGE

What is the artist's name?

Where/when were they born? (this is important to put the work in context)

What do you know about the artist's background? (Life events/education/career)

When was the work created?

What is their style of work?

What does the artwork show?

Is the artwork part of a series?

Is there a theme? What is the theme about? (this could be researched or your own opinion)

EXAMPLE

Dutch Impressionist painter, Vincent Van Gogh was born on March 30th, 1893, in Zundert, a predominantly Catholic province of North Brabant in the Netherlands. Van Gogh created about 2,100 artworks, most of which date from the last two years of his life. They include landscapes, stilllifes, portraits and self-portraits, and are characterised by bold colours and dramatic, impulsive and expressive brushwork that contributed to the foundations of modern art. He was not commercially successful, and his suicide at 37 came after years of mental illness, depression and poverty.

The painting 'Starry Night' is one of the most recognized pieces of art in the world. Vincent van Gogh painted Starry Night in 1889 during his stay at the asylum of Saint-Paul-de-Mausole near Saint-Rémy-de-Provence. When in a state of depression Van Gogh incorporated darker colours and Starry Night is a wonderful example of this. Blue dominates the painting, blending hills into the sky. The small village lays at the base in the painting in browns, greys, and blues. Even though each building is clearly outlined in black, the yellow and white of the stars and the moon stand out against the sky, drawing the eyes to the sky.

ART & DESIGN – WRITING ABOUT ART – UNDERSTANDING

UNDERSTANDING

What is the main focus/where is your eye drawn to?
What formal elements have they used and how? Line, Colour, Shape, Form, Texture, Pattern, Tone...
How would you describe the composition?
If they have used people in their artwork, can you read any body or facial language?
How has the artist achieved the meaning, concept or message in the image?
What techniques has the artist used to create the meaning/concept or message?
What are your opinions of the work and why?
How does the piece of work make you feel?

EXAMPLE

The stars in the sky are the big attention grabber of the painting; the brightness of them, the swirling brushstrokes and the contrast between them and the blue-sky help make them stand out. It could be that Van Gogh simply wanted to breathe in the higher power into his art, as he grew up in a religious household, they could also represent hope. The village is painted with dark colours, but the brightly lit windows create a sense of comfort. The village is peaceful in comparison to the dramatic night sky and the silence of the night can almost be felt in Starry Night. Vince Van Gogh´s unique, thick brush strokes are very much obvious and it´s possible that his severe attacks further dramatized his brush work, this technique that adds even more depth as well as a rich texture to this work of art. The steeple dominates the village and symbolizes unity in the town. In terms of composition, the church steeple gives an impression of size and isolation. You cannot ignore the huge, curvy Cyprus tree positioned to the left in the foreground of the painting, Cyprus tress are typically associated with mourning. Personally, I believe that Van Gogh was showing that even with a dark night such as this it is still possible to see light in the windows of the houses. Furthermore, with shining stars filling the sky, there is always light to guide you. This is one of my favourite paintings by Van Gogh, I find the blues calming and the sky transfixes me.

ART & DESIGN – WRITING ABOUT ART – BEYOND & THE BIG QUESTION

BEYOND

What viewpoint has the artist used?
Are there any back stories as to how the work was made?
Does the artwork have depth or is it shallow?
What materials do you think they have used?
Can you think of any other materials they could have used?
What skills will you develop looking at this artist?
Could you approach the work using different techniques?
How could you experiment with the artists ideas further?

THE BIG QUESTION

How will you be influenced by this artists work when planning your own artwork?

EXAMPLE

Van Gogh painted The Starry Night during his stay at the Saint-Paul-de-Mausole asylum near Saint-Rémy-de-Provence in France, several months after suffering a breakdown. This painting is based on the view from his window, it appears that his room could have been high up or that the asylum was on a hill. Van Gogh was not allowed to paint in his room, so he created sketches of the view and used these alongside his memory. There is a great deal of depth to this painting, Van Gogh has achieved this by including the foreground, middle ground and the background. There is also depth and texture within the paint that Van Gogh has used, to achieve this he loaded his brush with oil paints to build up a thick, impasto texture. This impasto texture is a key feature in many of van Gogh's works. By creating work in response to Van Gogh I will develop my understanding of mark making, and colour, I will also develop my painting and drawing skills, and I think it will also provide me with the opportunity to be more expressive within my work. When planning my own work I will consider exaggerating certain elements like colour and perspective, if I paint light within my work I could use a strong colour contrast, like yellow and orange against blue. I could also use directional brushwork to create a sense of movement and turbulence in my painting and finally, I will consider repeating similar techniques and processes within my work, so that I can achieve a strong style.

ART & DESIGN – WRITING ABOUT ART – SENTENCE STARTERS

KNOWLEDGE

The artist… was born in…
Their parents were…
They studied at…
Events that may have influenced…
They are/were influenced by…
The painting is called…
It was completed in the year…
The work portrays…
This style of… is called…
Looking at this piece of work…
This painting is/isn't part of a series called…
When first looking at the painting I thought…
In the painting I can see the following: …
The subject of the painting is…
To me the artwork looks like…

UNDERSTANDING

My eye is initially drawn to….. Because…
In the piece the artist has created a… texture… by…
The colours used can be described as…
I can see the following shapes and forms…
There is limited use of… this suggests…
The artist uses space to create a feeling of…
The composition of the image suggests…
The composition style conveys…
The objects/people/scene looks… because the artist has…
The artist's use of… suggests…
I think he/she has done this to convey…
In my opinion…
It is in my view that…
This piece of artwork makes me feel…

BEYOND

I think the artist worked from… because…
The artist prepared for this work by…
I think the artist is trying to communicate…
There are/aren't any clear messages…
The reason I think this is because…
They have used…
It appears that…
They may have also used…
If they had used… It might have…
I could potentially use…
By looking at… I will develop my skills in…
It could also influence…
When creating my own work I will…

BIGGER PICTURE

This piece of art will influence how I…
Moving forward I think I will…
As a result of studying… I will…
This piece of art has made me consider…

These sentence starters can be used to help you form your artist research and analysis. You might not always be able to find the answer to all of the questions through research, some of the question require your thoughts and opinions. Always write in full sentences and evidence your thoughts and opinions.

ART & DESIGN – VOCABULARY

WORDS TO DESCRIBE ART

Realistic	Unrealistic
Abstract	Colourful
Abstraction	Linear
Expressive	Rounded
Impressionistic	Motion
Surreal	Messy
Still life	Organised
Portraiture	Geometric
Figurative	Structured
Non-Western	Fluid
Sculpture	Neat
Textile	Loud
Batik	Accurate
Appliqué	Disorganised
Glass	Graphic
Painting	Traditional
Mixed media	Modern
Ceramics	Contemporary

COMPOSITION

Balanced
Unbalanced
Skewed
Perspective
Plane
Proportion
Symmetry
Space
Scale
Foreground
Middle ground
Background
Decorative
Eye-line
Focus
Blurred
Form
Birds eye view

DRAWING

Line
Tone
Shading
Contour
Two-Dimensional
Three-Dimensional
Observational
Composition
Proportion
Perspective
Scale
Accuracy
Realistic
Outline
Mark-making
Sketch
Composition
Tracing
Impression

PAINTING

Wash
Watercolour
Acrylic
Oil
Brush strokes
Impasto
Drybrush

PRINTING

Monoprint
Etching
Intaglio
Lithograph
Woodcut
Block Printing
Lino Print
Linocut
Relief Print
Ink
Brayer

LIGHT

Natural
Artificial
Dark
Bright
Shadow
Low light
Dim

FEELING

Atmospheric
Expressive
Humorous
Disturbing
Refreshing
Nostalgic
Emotive
Depressing
Delicate
Sinister
Joyous

FOOD

CONTENTS

YEAR 7 - FOOD

BRIEF OVERVIEW OF TOPIC

In this project you will explore the theme food.

You will begin by learning observational drawing techniques and how to use each of the formal elements to create your own artwork. You will focus on developing skills in representing line, tone, shape, form, colour, texture and pattern.

You will also develop skills using pencil, colouring pencil, oil pastels, paint, cardboard construction and textiles

You will explore and analyse the work of a range of artists who use food as inspiration for their art work, you will also look at packaging, then you will compose and create your own 3D response showing an influence of their styles and techniques.

You will also explore the environmental impact of various foods, food marketing and also healthy eating.

ARTISTS WHO EXPLORE THE THEME FOOD

Angela Lyons

Wayne Thiebaud

Danling Xiao

Paul Cezanne

Claus Oldenburg

Lucy Sparrow

PLACES TO VISIT

Guildhall Market	Delicatessens
Eagle Centre Market	Fridge
Pak Foods	Cupboards
Supermarkets	Restaurants
Convenience Stores	Cafes
Bakeries	Fast Food Outlets

WEBSITES TO VISIT

www.npg.org.uk/
www.saatchigallery.com/
www.tate.org.uk
www.artsandculture.google.com
www.nationalgallery.org.uk
www.moma.org

YEAR 7 - FOOD

KEYWORDS	DEFINITIONS
Carbon Footprint	A **carbon footprint** is the total amount of greenhouse gases (including **carbon** dioxide and methane) that are generated by our actions
Carbon Dioxide	Carbon dioxide is a chemical compound composed of one carbon and two oxygen atoms. It is often referred to by its formula CO_2.
Global warming	The gradual heating of Earth's surface, oceans and atmosphere, is caused by human activity, primarily the burning of fossil fuels that pump carbon dioxide, methane and other greenhouse gases into the atmosphere.
Consumption	The act of using, eating, or drinking something
Emissions	an amount of a substance that is produced and sent out into the air that is harmful to the environment, especially carbon dioxide
Carbon Offset	an action or activity (such as the planting of trees or carbon sequestration) that compensates for the emission of carbon dioxide or other greenhouse gases to the atmosphere

KEYWORDS	DEFINITIONS
Climate Change	Climate change is a long-term change in the average weather patterns that have come to define Earth's local, regional and global climates.
Marketing	the action or business of promoting and selling products or services, including market research and advertising.
Enticing	attractive or tempting; alluring.
Tactile	If something is tactile, it has a surface that is pleasant or attractive to touch:
Contemporary	Contemporary art is the art of today, produced in the second half of the 20th century or in the 21st century. Contemporary artists work in a globally influenced, culturally diverse, and technologically advancing world.
Installation	Installation art is an artistic genre of three-dimensional works that are often site-specific and designed to transform the perception of a space.
Soft Sculpture	Soft sculpture is a type of sculpture made using cloth, foam rubber, plastic, paper, fibres and similar material that are supple and nonrigid

YEAR 7 – FOOD – ANGELA LYONS

ANGELA LYONS

Angela grew up in the North East of England, and now lives on the Sussex coast. She works exclusively with oil paints on canvas and her style is representative with a contemporary approach.

As painting is her absolute passion, there is rarely a day goes by when she isn't in her studio. She likes to capture aspects of everyday life, from deckchairs on the beach, to a tempting, tasty treat.

Her sweets and cakes in particular evoke childhood memories, and make people smile. There is a realistic quality to them, but with much more heart and a sense of warmth which connects with all ages.

Sometimes it's the simple things in life that make for the most pleasure, and Angela believes that beauty can be found in everything.

Her work can be found in galleries across the South-East, and has attracted a number of collectors. She has recently been described as "one of the hottest properties in the art market today" and as a "formidable force in the contemporary art scene". Her work itself has been described as "beautifully colourful works depicting vibrant sweets through to local beauty".

KEYWORDS

Painting	Detail	Cakes
Colourful	Still-life	Form
Vibrant	Contemporary	Tone
Realistic	Repetition	Temptation
Accurate	Composition	Balanced
	Sweets	Space

YEAR 7 – FOOD – WAYNE THIEBAUD

WAYNE THIEBAUD

Wayne Thiebaud (pronounced tee-bow) was born Mesa, Arizona in 1920, and his family soon moved to Los Angeles in 1921. In high school he became interested in stage design and lighting, and worked part-time at a movie theatre where he made posters for lobby displays, 1935-1938. During this time he also worked as a summer apprentice program in the animation department of Walt Disney Studios, 1936. From 1942 to 1945, Thiebaud served in the Air Force, assigned to the Special Services Department as an artist and cartoonist, and eventually transferred to the First Air Force Motion Picture Unit, commanded by Ronald Reagan.

Thiebaud's characteristic work displays consumer objects such as pies and cakes as they are seen in shop windows. He uses heavy pigment and exaggerated colours to depict his subjects, and the well-defined shadows characteristic of advertisements are almost always included. Objects are simplified into basic units but appear varied using seemingly minimal means. From 1949 to 1950, Thiebaud studied at the San Jose State University and from 1950 to 1953 at the California State University in Sacramento. Thiebaud's work executed during the fifties and sixties, slightly predate the works of the classic pop artists, suggesting that Thiebaud may have had an influence on the movement. Thiebaud lectured at the Art Department of the Sacramento City College until 1959, when he became a professor at the University of California in Davis. Today, Wayne Thiebaud lives and works in California.

KEYWORDS		
Uniformed	Pastel	Illusionistic
Composition	Pigment	Mass Produced
Still-life	Exaggerated	Common Objects
Minimal	Simplified	Depth
Paint	Shadows	Idealised
	Defined	Variation

YEAR 7 – FOOD – LUCY SPARROW

LUCY SPARROW

Lucy Sparrow in Contemporary artist who was born in Bath, England in 1986. Her incredible felt sculptures draw a line between the world of Contemporary Art and Craft. She works under the name 'Sew Your Soul' and has so far created 7 major Installations in London, New York and LA.

She took the art world by storm in Summer 2014 with the opening of her fully stocked felt corner shop installation soft sculpture recreation of a British newsagents in a derelict shop in London's East End. The Installation was funded by a Kickstarter campaign. According to news sources, it took Sparrow and her assistant seven months and 300 sq. metres of felt to create the 4,000 items on display. With queues around the block and wall to wall media coverage, the installation was both a commercial and critical success. In 2016, the BBC commissioned Lucy to recreates the Crown Jewels in felt, to celebrate HRH The Queen's official 90th birthday.

In April 2021 Sparrow opened an entirely felt stocked pharmacy in London's Mayfair area called 'Bourdon Street Chemist' where viewers will find 15,000 individual Pharmacy products that can be purchased over the counter from the artist herself making this a piece of performance art as well as an installation.

KEYWORDS		
Installation	Craft	Still-life
Soft Sculpture	Flat Lay	Replicate
Performance Art	Commercial	Mass Produced
Felt	Sew	Common Objects
Textiles	Uniformed	Likeness
	Composition	Playful

MARINE LIFE

CONTENTS

YEAR 7 – MARINE LIFE

BRIEF OVERVIEW OF TOPIC

In this project you will begin by exploring the theme marine life. You will look at various types of marine life, environmental issues, and look at how artists have responded.

You will conduct research and create a mind map on environmental issues that affect our waters, before beginning to study a variety of marine life images. We will explore a current environmental issues and consider ways in which we can respond to it as artists, we will look at how we can convey messages within our work by applying various artists techniques.

You will work in a range of media to present your own ideas and responses that conveys a meaningful message. You will learn a variety of drawing techniques, as well as print making, clay and painting techniques.

ARTISTS WHO RESPOND TO MARINE LIFE

Ernst Haeckel

Andreas Franke

Aurora Robson

Yellena James

Tamara Phillips

Stephanie Kilgast

PLACES TO VISIT

Sea Life Centre
Carsington Water
Mercia Marina
Elvaston Castle Country Park
Kedleston Hall
Darley Park
Markeaton Park
Foremarke Resevoir
Staunton Harold Resevoir
Mapperly Resevoir
River Derwent

WEBSITES TO VISIT

www.bbc.co.uk/programmes/b008044n (Blue Planet)
https://www.msc.org/uk/ (Marine Stewardship Council)
www.wwf.org.uk/updates/6-ways-help-save-our-seas

YEAR 7 - MARINE LIFE

KEYWORDS	DEFINITIONS
Fish	A limbless cold-blooded vertebrate animal with gills and fins living wholly in water
Scales	Scales protect fish from injury, much like skin on the human body.
Gills	A fish "breathes" by closing the gills and opening its mouth to take in water
Nostrils	They lead into organs of smell which are as a rule, very sensitive, so that a fish can detect the presence of food in the water at considerable distances.
Eyes	The eyes of a fish have large round pupils which do not vary in size.
Mouth	The mouth serves for taking in food; also for the breathing current of water.
Lateral Line	Used to feel low vibrations in the water
Fin	Fins located in different places on the fish serve different purposes such as moving forward, turning, keeping an upright position or stopping.

KEYWORDS	DEFINITIONS
Coral	A hard stony substance secreted by certain marine coelenterates as an external skeleton, typically forming large reefs in warm seas.
Coral Bleaching	When corals are stressed by changes in conditions such as temperature, light, or nutrients, they expel the symbiotic algae living in their tissues, causing them to turn completely white.
Microbeads	Microbeads are manufactured solid plastic particles of less than one millimetre in their largest dimension.
Pollution	**Pollution** is the introduction of harmful materials into the environment. These harmful materials are called pollutants. Pollutants damage the quality of air, water, and land.
Oil Spill	An escape of oil into the sea or other body of water.
The Great Pacific Garbage Patch	A gyre of plastic debris in the north-central Pacific Ocean. It's the largest accumulation of plastic in the world.

YEAR 7 – MARINE LIFE – YELLENA JAMES

YELLENA JAMES

Yellena James grew up and attended art school in Sarajevo, Bosnia and Herzegovina. At the age of 18 she moved to the U.S. After gaining her BA in painting and graphic design at University of Central Florida, she eventually made her way to Portland, Orlando. Preferring pens, inks, markers and acrylics, she combines complex abstract forms into dazzling images which take on lives of their own. Her colourful arrangements of organic shapes and tangled lines are at once floral and alien, organic and sci-fi.

James has participated in shows around the U.S. and overseas, including: solo exhibitions at Giant Robot (San Francisco and Los Angeles), the Here Gallery (Bristol UK), the Hijinks Gallery (San Francisco) and more. She also has done illustration work for Anthropologie, Crabtree and Evelyn, Crate and Barrel, Relativity Media and many others.

"My latest works further explore the intricate and delicate forms of an imaginary ecosystem, twisting and floating together in an alluring environment. I attempt to create an ethereal place which is hypnotically familiar and yet hauntingly exotic, adding tiny little details in a sort of compulsive meditation, until a perfect balance is created. The intricacy and high detail, along with hints of existing organic shapes lend to the intimacy and believability of each new world. "





KEYWORDS

Pens	Abstract	Detail
Markers	Complex	Hypnotic
Ink	Floral	Exotic
Acrylic	Coral	Balance
Organic	Shapes	Intricate
	Tangled Lines	Ethereal

YEAR 7 – MARINE LIFE – STEPHANIE KILGAST

STEPHANIE KILGAST

Inspired by natural forms, French artist Stéphanie Kilgast's creations are an ode to nature and its current biodiversity. Plants, mushrooms, insects and other animals encounter in a vibrant swirl of colours under her brush or sculpting tools.

Since 2017, in her series "Discarded Objects", she grows colourful organic sculptures on human-made objects, celebrating the beauty of nature in a dialogue with humanity, questioning the lost balance between human activities and nature.
Her work has a cheerful post apocalyptic feel to it, a reassuring reminder that nature has the capacity to grow back, if we only let it.

Kilgast uses rubbish, old objects and books onto which she creates a vibrant, abounding representation of plants, animals and fungi. This wild encounter of natural forms and bright colours onto human-made objects come to life in her sculptural and pictorial work. With her choice of bold and vibrant colours, She offers a cheerful post-apocalyptic world. While she talks about a heavy subject, the disastrous impact of human activities, she also wishes that people leave her work with a feeling of happiness and hope, and keep fighting. Through her work, she would like to provoke wonder of the living while questioning the status quo of our current societies.

Her work has been exhibited in North America, Asia, Australia and Europe.






KEYWORDS		
Sculpture	Vibrant	Sculpt
Three-Dimensional	Representation	Plants
Upcycled	Natural	Fungi
Rubbish	Form	Impact
Repurposed	Coral	Happiness
	Biodiversity	Hope

YEAR 7 – MARINE LIFE – AURORA ROBSON

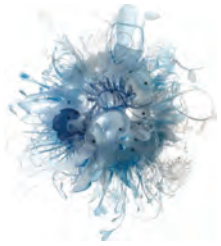
AURORA ROBSON

Aurora Robson was born in Toronto, Canada in 1972, but grew up in Hawaii. She received a BA in Visual Art & Art History from Columbia University, New York in 2000. She is a certified structural welder and for many years ran her own welding studio in New York.

Robson's primary focus is creating works made with plastic collected by intercepting the waste stream, repurposing plastic into art before it is sent to recycling. While her initial work was with common household plastics like water bottles and caps, she is currently focused on large scale sculptures made with industrial plastic. She also paints and creates 3-dimensional collages made with junk mail and excess packaging.

In 2008, Robson founded Project Vortex, a not-for-profit organization consisting of artists, designers and architects from around the world that also work with plastic. The organization strives to bring awareness to plastic pollution and encourage cleanups of waterways. In 2013, she gave a Ted talk at TedxPeachtree entitled "Trash+Love" introducing "Sculpture+Intercepting the Waste Stream," an open source course she designed to foster creative stewardship at academic institutions. The course was first taught by Robson at Mary Baldwin University in 2012. Her goal for the course is to inspire others to look at junk differently and rather than discard it, to create art.




KEYWORDS		
Sculpture	Installation	Nightmares
Three-Dimensional	Vibrant	3-Dimensional Collages
Upcycled	Intricate	Sculpt
Rubbish	Debris	Innovative
Repurposed	Form	Impact
	Abstract	Suspended

ART HISTORY

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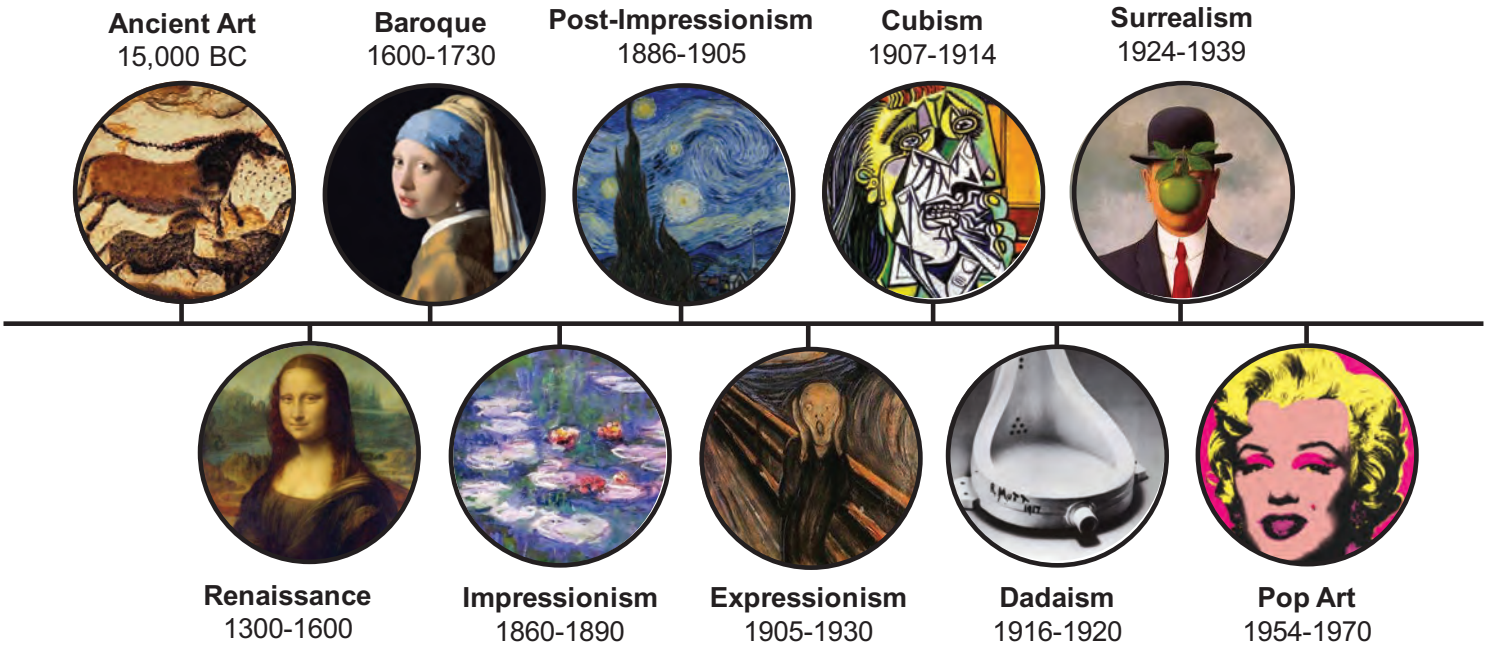
ART HISTORY – WESTERN ART TIMELINE



ART HISTORY – IMPRESSIONISM

Impressionism developed in France in the nineteenth century and is based on the practice of painting out of doors and spontaneously 'on the spot' rather than in a studio from sketches. Main impressionist subjects were landscapes and scenes of everyday life.

FAMOUS IMPRESSIONIST ARTISTS

Claude Monet
Impression, Sunrise
1872

Auguste Remoir
Bal du moulin de la Galette1876

Edgar Degas
La Clase de Danza
1873

Camille Pissarro
Late afternoon in our Meadow 1887

Mary Cassatt
Breakfast in bed
1897

Edouard Manet
A Bar at the Folies-Bergere
1882

IMPRESSIONISM IN DETAIL

Impressionism was developed by Claude Monet and other Paris-based artists from the early 1860s. Instead of painting in a studio, the impressionists found that they could capture the momentary and transient effects of sunlight by working quickly, in front of their subjects, in the open air (en plein air) rather than in a studio. This resulted in a greater awareness of light and colour and the shifting pattern of the natural scene. Brushwork became rapid and broken into separate dabs in order to render the fleeting quality of light.

The first group exhibition was in Paris in 1874 and included work by Monet, Auguste Renoir, Edgar Degas and Paul Cezanne. The work shown was greeted with derision with Monet's Impression, Sunrise particularly singled out for ridicule and giving its name (used by critics as an insult) to the movement. Seven further exhibitions were then held at intervals until 1886.

Other core artists of impressionism were Camille Pissarro and Berthe Morisot with Edgar Degas and Edouard Manet also often associated with the movement.

Although originating in France, impressionism had great influence overseas. Core British impressionists included Walter Richard Sickert and Wilson Steer..

ART HISTORY – IMPRESSIONISM

WHAT INSPIRED THE IMPRESSIONIST STYLE?

The rise of Impressionism can be seen in part as a response by artists to the newly established medium of photography. In the same way that Japonisme focused on everyday life, photography also influenced the Impressionists' interest in capturing a 'snapshot' of ordinary people doing everyday things.

The taking of fixed or still images provided a new medium with which to capture reality, and changed the way people in general, and artists in particular, saw the world, and created new artistic opportunities.

Learning from the science of photography, artists developed a range of new painting techniques. And, rather than compete with the ability of the photograph to record ' a moment of truth' the Impressionists, such as Monet, felt free to represent what they saw in an entirely different way – focusing more on light, colour and movement in a way that was not possible with photography. Over time, these subjective observations became much more widely accepted as works of art, although initially they were thought to be 'sketchy' or 'unfinished'.

Adding to this, there was the invention of the box easel and the introduction of paints in tubes, making artists more free and mobile.

KEYWORDS	DEFINITIONS
Impression	A pictorial representation of someone or something
Accurate	Providing a faithful representation of someone or something.
Composition	The arrangement of elements within a work of art
Depiction	To show or represent someone or something in a work of art such as a drawing or painting.
Accentuate	To make something or someone more noticeable or prominent.
Plein Air Painting	The act of painting outdoors, as opposed to in an artists studio.
Viewpoint	The position from where you view your scene
Japonisme	A French term that refers to the popularity and influence of Japanese art and design among a number of Western European artists in the nineteenth century following the forced reopening of trade of Japan in 1858
Pointillism	the practice of applying small strokes or dots of colour to a surface so that from a distance they visually blend together.

ART HISTORY – IMPRESSIONISM – CLAUDE MONET

CLAUDE MONET 14 November 1840 – 5 December 1926

Claude Monet was born on 14 November 1840 in Paris, France, to a green grocer and a singer, and moved to Normandy when he was 5. Studying at an art school in the area, Monet knew from a young age that he wanted to be an artist. He was known locally, selling charcoal portraits along the beachfront and experimenting with new styles of painting.

After school, he moved to Paris, before joining the army to fight in Algeria for seven years. After serving for only two years, he contracted typhoid and left to attend art school in Paris instead. Here he became close friends with a group of painters who would develop a new, controversial approach to art in Paris.

Perhaps Monet's most famous work is his 'Bridge Over a Pond of Waterlillies'. It was part of a collection titled Waterlillies, containing over 250 works that he painted in his flower garden at Giverny. They are currently on display at some of the most prestigious art museums in the world, including The Met in New York.

Other works of note include 'Impression, Sunrise' which is the piece that gave the movement it's name. Monet's works were ridiculed by critics when he first exhibited them, yet now sell for upwards of £40million, inspiring some of the most influential artists of the 20th century.





ART HISTORY – IMPRESSIONISM – PIERRE-AUGUSTE RENOIR

PIERRE-AUGUSTE RENOIR
25 February 1841 – 3 December 1919

Renoir was one of the leading painters of the Impressionist group. He evolved a technique of broken brushstrokes and used bold combinations of pure complementary colours, to capture the light and movement of his landscapes and figure subjects. Following a visit to Italy in 1881 his style changed, becoming more linear and classical.

Renoir was born in Limoges in south-west France, where he began work as a painter on porcelain. He moved to Paris, joining the studio of the fashionable painter Charles Gleyre in around 1861-2. Courbet influenced the young Renoir. In Paris he encountered other painters, notably Monet and Sisley, who were later to become Impressionists. In 1869 he and Monet worked together sketching on the Seine, and Renoir began to use lighter colours. Around the 1880s Renoir travelled abroad, visiting Italy, Holland, Spain, England, Germany and North Africa. He deeply admired works by Raphael, Velázquez, and Rubens, and the latter's influence may be seen in his works. Renoir's work seems always to be about pleasurable occasions, and reveals no great seriousness in his subjects.

Before his death in 1919, Renoir travelled to the Louvre to see his paintings hanging in the museum alongside the masterpieces of the great masters. He was a prolific artist, created several thousands artworks in his lifetime, and include some of the most well-known paintings in the art world.






ART HISTORY – IMPRESSIONISM – MARY CASSATT

MARY CASSATT 22 May 1844 - 14 June 1926

Mary Cassatt was born in Allegheny City, was an American painter and printmaker who was part of the group of Impressionists working in and around Paris. She took as her subjects almost exclusively the intimate lives of contemporary women, especially in their roles as the carers of children. Cassatt was the daughter of a banker and lived in Europe for five years as a young girl. She was tutored privately in art and attended the Pennsylvania Academy of the Fine Arts in 1861–65, but she preferred a less academic approach and in 1866 travelled to Europe to study with European painters. Her first major showing was at the Paris Salon of 1872; four more annual Salon exhibitions followed. In 1874 Cassatt chose Paris as her permanent residence and established her studio there. She shared with the Impressionists an interest in experiment and in using bright colours. Edgar Degas became her friend; his style and that of Gustave Courbet inspired her own. Degas was known to admire her drawing especially, and at his request she exhibited with the Impressionists in 1879 and joined them in shows in 1880, 1881, and 1886. Like Degas, Cassatt showed great mastery of drawing, and both artists preferred unposed asymmetrical compositions. Cassatt also was innovative and inventive in exploiting the medium of pastels. After the great exhibition of Japanese prints held in Paris in 1890, she brought out her series of 10 coloured prints. Her emphasis shifted from form to line and pattern. In 1894 she purchased a château in Le Mesnil-Théribus and thereafter split her time between her country home and Paris. Soon after 1900 her eyesight began to fail, and by 1914 she had ceased working.





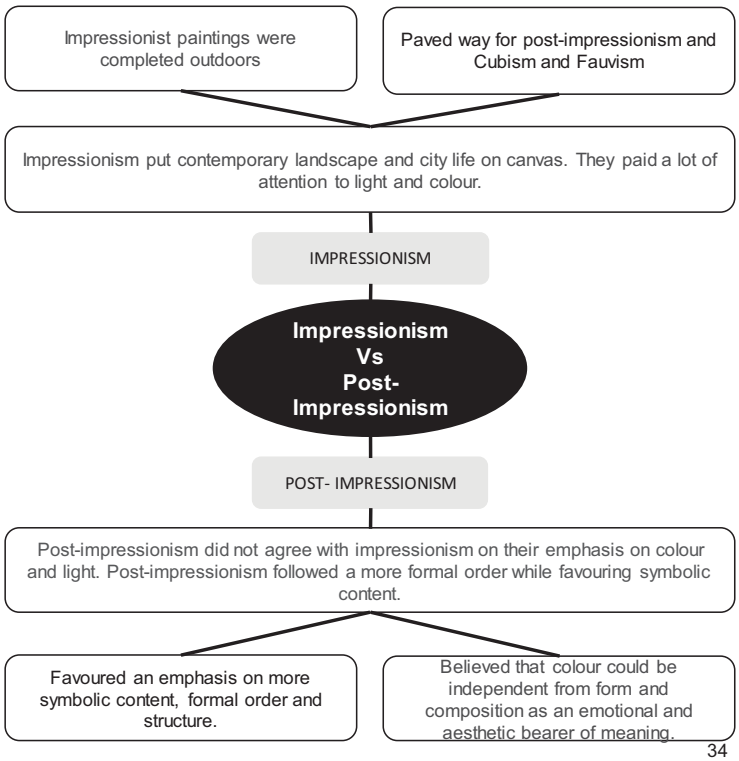
ART HISTORY – POST-IMPRESSIONISM

Post-impressionism is a term which describes the changes in impressionism from about 1886, the date of last Impressionist group show in Paris

POST-IMPRESSIONISM IN DETAIL

The term is usually confined to the four major figures who developed and extended impressionism in distinctly different directions – Paul Cezanne, Paul Gauguin, Georges Seurat and Vincent van Gogh. Cézanne retained the fundamental principles of painting from nature but with added rigour. Seurat put impressionist painting of light and colour on a scientific basis (neo-Impressionism, divisionism). Gauguin retained intense light and colour but rejected painting from nature and reintroduced imaginative subject matter. Van Gogh painted from nature but developed highly personal use of colour and brushwork directly expressing emotional response to subject and his inner world.

The Post-Impressionists rejected Impressionism's concern with the spontaneous and naturalistic rendering of light and colour. Instead they favoured an emphasis on more symbolic content, formal order and structure. Similar to the Impressionists, however, they stressed the artificiality of the picture. The Post-Impressionists also believed that colour could be independent from form and composition as an emotional and aesthetic bearer of meaning.



ART HISTORY – POST-IMPRESSIONISM – VINCENT VAN GOGH

VINCENT VAN GOGH 30 March 1853–29 July 1890

Vincent van Gogh was a Dutch post-impressionist painter. His work had a great influence on modern art because of its striking colours and emotional power. He suffered from anxiety and fits of mental illness. When he was 37, he died from shooting himself in the chest.

He was born Vincent Willem van Gogh on March 30, 1853 in Groot-Zundert, Netherlands. His father, Theodorus van Gogh, was a pastor. His mother, Anna Cornelia Carbentus, was an artist. Van Gogh was brought up in a religious and cultured family. He was very emotional and he did not have a great deal of self-confidence. He was also a replacement child. He was born a year after the death of his brother, also named Vincent. He even had the same birthday. Living at the church rectory Vincent walked past the grave of his dead brother every day. There has been speculation that van Gogh suffered later psychological trauma as a result. But this cannot be proved.

When he was a young man, Van Gogh worked for a company of art dealers. He travelled between The Hague, London and Paris. After that, he taught in England. He then wanted to become a pastor and spread the Gospel, and from 1879 he worked as a missionary in a mining place in Belgium. He began drawing the people there, and in 1885, he painted his first important work, The Potato Eaters. He usually painted in dark colours at this time.






ART HISTORY – POST-IMPRESSIONISM – VINCENT VAN GOGH (continued)

VINCENT VAN GOGH 30 March 1853–29 July 1890

In March 1886, he moved to Paris and found out about the French impressionists. Later, he moved to the south of France, and the colours in his art became brighter. His special style of art was developed and later fully grown during the time he stayed in Arles in 1888. In 1886 he went to Paris, van Gogh studied with Cormon, he also met Pissarro, Monet, and Gauguin. This helped the colours of his paintings lighten and be painted in short strokes from the paintbrush. His nervous temper made him a difficult companion and night-long discussions combined with painting all day made him very unhealthy. He decided to go south to Arles where he hoped his friends would join him and help found a school of art. Gauguin did join him, but it did not help. Near the end of 1888, Gauguin left Arles. Van Gogh followed him with an open razor, but was stopped by Gauguin. Instead, he cut his own ear lobe off. After that, van Gogh began to get fits of madness and was sent to the asylum in Saint-Remy for medical treatment.

During his brief career he had only sold one painting. After his death, Van Gogh's finest works were all sold in less than three years. His mother threw away a lot of his paintings during his life and even after his death. But she lived long enough to see him become a world famous painter. He was not well known when he was alive, and most people did not appreciate his art. After he died, though, he became very famous. Today, many people think he is one of the greatest painters in the world and an important influence on modern art.




ART HISTORY – EXPRESSIONISM

Expressionist art tried to convey emotion and meaning rather than reality. Each artist had their own unique way of "expressing" their emotions in their art. In order to express emotion, the subjects are often distorted or exaggerated.

FAMOUS EXPRESSIONIST ARTISTS

Edvard Munch
The Scream
1893

Wassily Kandinsky
Composition IV
1911

Ernst Ludwig Kirchner
Fränzi in front of
Carved Chair 1910

Henri Matisse
Olive Trees at Collioure
1906

Franz Marc
The Tower of
Blue Horses
1913

Erich Heckel
Landscape Near Dresden
1910

EXPRESSIONISM IN DETAIL

In expressionist art, colour can be highly intense and non-naturalistic, brushwork is typically free and paint application tends to be generous and highly textured.

Expressionist art tends to be emotional and sometimes mystical. It can be seen as an extension of Romanticism.

Although the term expressionist can be applied to artworks from any era, it is generally applied to art of the twentieth century. It may be said to start with Vincent Van Gogh and then form a major stream of modern art embracing, among many others, Edvard Munch, fauvism and Henri Matisse, Georges Rouault, the Brücke and Blaue Reiter groups, Egon Schiele, Oskar Kokoschka, Paul Klee, Max Beckmann, most of Pablo Picasso, Henry Moore, Graham Sutherland, Francis Bacon, Alberto Giacometti, Jean Dubuffet, Georg Baselitz, Anselm Kiefer and the neo-expressionism of the 1980s.

The term is often specifically associated with modern German art (also referred to as German expressionism), particularly the Brücke and Blaue Reiter groups.

After World War II an abstract form of expressionism developed in America, known as abstract expressionism.

ART HISTORY – EXPRESSIONISM

WHAT INSPIRED THE EXPRESSIONIST STYLE?

The Expressionists were influenced by their predecessors of the 1890s and were also interested in African wood carvings and the works of such Northern European medieval and Renaissance artists as Albrecht Dürer, Matthias Grünewald, and Albrecht Altdorfer. They were also aware of Neo-Impressionism, Fauvism, and other recent movements. The roots of Expressionism can be traced to certain Post-Impressionist artists like Edvard Munch in Norway, as well as Gustav Klimt of the Vienna Secession.

EXPRESSIONISM KEY FEATURES

An artistic style in which the artist seeks to depict not objective reality but rather the subjective emotions and responses that objects and events arouse within a person. The artist accomplishes this aim through distortion, exaggeration, primitivism, and fantasy and through the vivid, jarring, violent, or dynamic application of formal elements. In a broader sense Expressionism is one of the main currents of art in the late 19th and early 20th centuries, and its qualities of highly subjective, personal, spontaneous self-expression are typical of a wide range of modern artists and art movements.

KEYWORDS	DEFINITIONS
Dynamic	Constant change, development or progress
Harsh	Unpleasantly rough or jarring to the senses.
Bold	Having a strong, vivid, or clear appearance.
Intense	Existing or occurring in a high or extreme degree.
Primitivism	Primitivism is a mode of aesthetic idealization that either emulates or aspires to recreate "primitive" experience.
Distortion	Involves stretching, lengthening, shortening, squeezing, melting and twisting an object from its original appearance to a new, strange, surreal appearance.
Exaggeration	Exaggeration is the representation of something as more extreme or dramatic than it really is.
Subjective	Based on or influenced by personal feelings, tastes, or opinions. Can change from one person to the next.
Spontaneous	Instinctive and unplanned happenings

ART HISTORY – EXPRESSIONISM – EDVARD MUNCH

EDVARD MUNCH 12 December 1863 – 23 January 1944

Edvard Munch was a Norwegian painter and print-maker. He was born in Adalsbruk. He was an expressionist who painted 1789 known paintings. He is well known for his treatment of emotion such as fear. His way of seeing things had a large influence on the expressionism of the 20th century. People saw this treatment as being intense.

During his life, he had success as a painter: He became famous outside Norway, and his paintings sold for high prices. The National Gallery (Norway) spent lots of money to buy paintings by Munch. He painted large murals in the aAula (main room) of Norway's (then) only university.

The Scream,1893 (originally called Despair) is Munch's best-known painting, and is one of the best known images in the world. It is one of the pieces in a series titled The Frieze of Life. In the series Munch explored the themes of life, love, fear, death and melancholy. As with many of his works, he made several versions of the painting. Many people think that The Scream represents the universal anxiety of modern man.

Due to the fact that all of this work which Edvard Munch had created, was donated to the Norwegian government, the country decided to build the Munch Museum of Art. This was done to commemorate his work, his life, and the generosity which he showed, so that it could be enjoyed by the general public.




ART HISTORY – EXPRESSIONISM – FRANZ MARC

FRANZ MARC 8 February 1880 – 4 March 1916

Franz Moritz Wilhelm Marc was a German painter and printmaker, one of the key figures of German Expressionism. He was a founding member of Der Blaue Reiter (The Blue Rider), a journal whose name later became synonymous with the circle of artists collaborating in it. His mature works mostly depict animals and are known for bright colouration. He was drafted to serve in the German Army at the beginning of World War I and died two years later at the Battle of Verdun.

In 1911, Marc founded the Der Blaue Reiter journal, which became the centre of an artist circle, along with Macke, Wassily Kandinsky, and others who had decided to split off from the Neue Künstlervereinigung movement. In 1912, Marc met Robert Delaunay, whose use of colour and the futurist method was a major influence on Marc's work. With the outbreak of World War I in 1914, Marc was drafted into the Imperial German Army as a cavalryman. By February 1916, as shown in a letter to his wife, he had gravitated to military camouflage. His technique for hiding artillery from aerial observation was to paint canvas covers in broadly pointillist style.
In the 1930s, the Nazis named him a degenerate artist as part of their suppression of modern art. However, most of his work survived World War II, securing his legacy. His work is now exhibited in many eminent galleries and museums. When up for auction, his major paintings attract large sums, with a record of £12,340,500 for Weidende Pferde III (Grazing Horses III).




ART HISTORY – EXPRESSIONISM – HENRI MATISSE

HENRI MATISSE 31 December 1869 – 3 November 1954

Henri Matisse was a French artist known for his use of colour and his original ideas.

He is mainly known as a painter, but he was also a draughtsman, printmaker and sculptor.

Matisse created vibrantly coloured paintings using variety of energetic brushwork techniques, ranging from thick impasto (thick paint) to flat areas of pure pigment, sometimes accompanied by a winding and flowing lines.

Although he was initially called a Fauve (wild beast), he painted many traditional themes. He painted from life, and his work includes many portraits and other figurative subjects. His mastery of the expressive language of form and colour, in work spanning over a half-century, won him recognition as a leading figure in modern art.

Matisse and Renoir were friends with a common bond; they loved color, beauty, and painting. He also had the influence of Edouard Manet, Paul Gauguin, Paul Cezanne and Vincent Van Gogh.

Around April 1906, he met Pablo Picasso, who was 11 years younger than Matisse. The two became lifelong friends as well as rivals and are often compared.

Matisse was an influential figure of the 20th century, he had a great impact on future movements of the time, and on artists like Jackson Pollock and Georgia O'Keeffe.

Matisse made copies of many paintings in the Louvre to learn painting. He also experimented with other techniques like Cubism and Pointillism. In his old age, he worked with painted paper and scissors, making collages.

Matisse died of a heart attack in Nice, Alpes-Maritimes.

Year 7 Computer Science

Knowledge Organiser

Contents

1.1 - Using Canva to make a poster

1	Open Canva and click on “Custom size” or this 
2	Choose “poster” for portrait or enter your own measurements for landscape.
3	Set the poster background colour to the main colour using its code.
4	Copy the image you found earlier and paste it on to your page. The copy and paste options appear when you click the right mouse button.
5	Use the text tool to add your title and message text. You can set the font, size, and colour using the options at the top of the screen.

1.2 - Creating a brand/logo

1	In an image editor, open a logo. Use the fill tool to recolour it. Save your recoloured logo with a new name.
2	Using PowerPoint, use the default template and add your logo to it.
3	Set the background colour to compliment your logo colours and to match your poster design.
4	Add your title and key message. Set the font, font size, and font colour. Fonts and styles should be consistent between your poster and slide.
5	Creating your slide. Remember the slide should include: ● Colours that match your poster design ● The logo you have just edited ● The name of your chosen charity or organisation ● The same key message used in your poster

1.3 - Creating and delivering a presentation

Creating the presentation	Delivering the presentation
Keep fonts basic	Good pace and volume of voice
Don't overcrowd the slide with too much writing	Use of visual aid
Choose images that are appropriate	Eye contact and positive body language
Keep the same format throughout	Professional language and tone
	Well-rehearsed and prepared

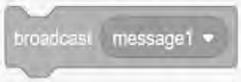
2.1 - Scratch Programming - Terminology

Scratch 3 Component	What it means
Sprite	The character within your program that is being controlled by commands.
Script	Each script is a group of commands. Each sprite can execute one or more scripts.
Costume	Each sprite can have many costumes. These are found in the purple Looks commands and control the appearance of the sprite.
Stage	Includes backgrounds for the Scratch project and scripts but no motion commands as the stage cannot move.
Clone	A copy of a sprite. Each sprite can spawn many clones.

Terminology	What it means
Iteration	A command that repeats or loops For example: **Repeat 10**, **Repeat until**, **Forever**
Selection	**IF ELSE** command that selects which programming path to follow
Condition	A condition is either true or false, for example touching colour red. In Scratch these commands have a long hexagon shape – either green or light blue
Broadcasts	A broadcast is a message that is sent by one sprite to other sprites. Upon receiving a broadcast a script can begin execution.
Variable	A value stored by the program that can **change**. For example, **Set Score to 0**

2.2 - Scratch – Control/Event Blocks and Looks Blocks

Control/Event Blocks

	
Used to identify the starting point of the program. When you click the green flag, the program will start by running the block after this one	Forces the program to wait a certain amount of time before moving onto the next instruction
	
Used to run sprite code when a certain message is received from another sprite	Used to send a message to other sprites

Looks Blocks

		
Causes the sprite to say a message for a certain amount of time	Used to change the appearance of a sprite	Changes the costume (appearance) of the sprite to the costume after the current costume
		
Another way to output to the screen. Causes the message to appear in a 'thought bubble' next to the sprite	Removes any graphical effects that have been applied to the sprite	Used to apply a graphical effect to a sprite

2.3 - Scratch – Sound Blocks & Sensing Blocks

Sound Blocks

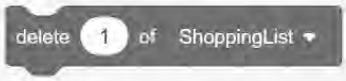

Plays a sound until the sound is finished

Sensing Blocks

	
Used when you want the user to enter some information.	Checks if the sprite is touching an object

2.4 - Scratch – Variables Blocks

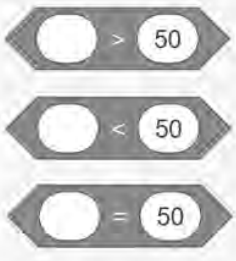
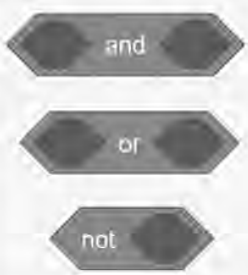
Variables Blocks

	
Used to set the value of a variable.	Used to change the value of a variable.
	
Adds an item to a list variable	Deletes all the items in a list variable
	
Deletes a certain item in a list variable	Checks if an item is in a list variable

	
Swaps an item in the list out with another item	Used to display or hide a list on the screen

2.5 - Scratch – Operator Blocks & Subroutine Blocks

Operator Blocks

	
Comparison operators. Used to make a comparison between two values or variables.	Logical operators. Used to create boolean expressions.
	
Joins together (concatenates) two strings into a single string.	Finds the length of a string.

Subroutine Blocks

	
Used at the start of a subroutine to identify where the subroutine begins.	Used to tell Scratch to run code in a subroutine.

Year 7 Dance & Drama Knowledge Organiser

Drama

Dance

Year 7 Drama – Unit 1 : An introduction to Drama and Devising.

Drama Conventions

Tableaux

A freeze frame or still image capturing an important moment in the story

Thought Tracking

A drama rehearsal technique in which the actor speak the thoughts or feelings of the character aloud.

Stimulus

A starting point that can be inspiration for a play for example a picture, a poem, a word, person or a song

Devising

Making up an original play as a pair or group

Plot

The main story or the 'narrative' – what happens in the play.

Structure

How to organise the plot into sections in order to develop the characters and build tension or excitement in the story.

Keywords	VOICE
Tone	The emotion in your voice
Pitch	How high/low your voice is
Pace	How fast/ slow your voice is
Pause	When you stop moving/ speaking
Volume	How loud/ quiet your voice is
Projection	When you speak clearly and can be heard by an audience

Keywords	MOVEMENT
Gestures	How you move any part of your body to show a mood, feeling or idea
Facial expressions	Using your face to show emotions, mood, feelings and responses
Eye contact	When you establish eye contact with another actor or the audience
Posture	How you hold your body/your stance

Year 7 Drama – Unit 2 Exploring genre and characterisation through script work on 'Matilda'

Keywords for this unit

Character
A role – fictional or real person that an actor plays

Genre
A style or category of Drama.

Musical Theatre
A style of drama which tells a story through combining songs, spoken dialogue, music and dance

Hot-seating
Used by actors as a way to help develop their understanding of a character by answering questions as though they were that character.

Exaggerated stereotype
An over exaggerated image or idea of a typical type of person e.g. an intelligent person might be seen as a 'geek' with glasses and always carrying books and studying.

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Posture	How you hold your body/your stance

Year 7 Drama – Unit 3 Understanding style and developing character.

Key words for this unit

Anthropomorphism When animals behave like humans in stories – speaking, moving, having relationships and feeling different emotions.

Genre
A style or category of Drama.

Physical Theatre
A style of drama which tells a story through mainly focusing on the use of physical movement.

Satire
The use of humour, irony, or exaggeration to make fun of ridicule and criticize people's stupidity especially in politics or other topical issues.

Evaluation
To recognise what was/ wasn't successful onstage. To recognise all the elements that contribute to a production.

Keywords	VOICE
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Year 7 Dance – Dance Skills

Constructive Feedback

Positivity

State something that you enjoyed.

Improvement

Identify something that needs making better.

Target

State specifically what can be done to make the work better.

Technical Skills-
Required to perform a dance movement.

Keywords	
Accuracy	A being correct and precise.
Timing	The use of counts when moving to sound or music.
Dynamics	How a movement is performed.

Physical Skills-
Required to perform physical activity.

Keywords	
Strength	The power exerted by a muscle.
Stamina	Being able to maintain physical energy for a period of time.
Posture	The way the body is held.
Balance	A steady or held position through even distribution of weight.
Coordination	Efficient combination of body parts.
Extension	Lengthening a muscle or limb.
Flexibility	The range of movement at a joint.

Year 7 Dance – Dance Skills

Choreography Skills-
Required to create a dance.

Key Words	
Unison	2 or more dancers performing movement at exactly the same time
Canon	When the same movements overlap in time
Formation	Shapes or patterns created in space by dancers
Pathway	Designs traced on the floor or in the air
Level	Distance from the ground – low, medium or high
Direction	The way a movement faces
Solo	One performer
Duet	Two Performers

Key Words	
Trio	Three Performers
Group	Three or more Performers.
Still Image	A held position or image.
Climax	The most significant moment of a dance.

Expressive Skills-
Required to connect with an audier

Key Words	
Focus	The use of eyes to enhance performance.
Facial Expression	The use of face to communicate mood, theme and atmosphere.
Projection	The energy a dancer uses to connect with an audience.

Year 7 Dance – Unit 1 : Warmups

The Importance of a Warmup-

Temperature

To improve the body temperature in preparation for exercise.

Heart Rate

To increase the speed of which the heart beats, in order to pump blood to the muscles. The blood carries oxygen to the muscles, which the muscles require in order to function.

Prevent Injury

Easing and stretching the muscles through stretching to prevent them from tearing or ripping and causing injuries.

Flexibility

Loosening the joints to improve range of motion and increase flexibility.

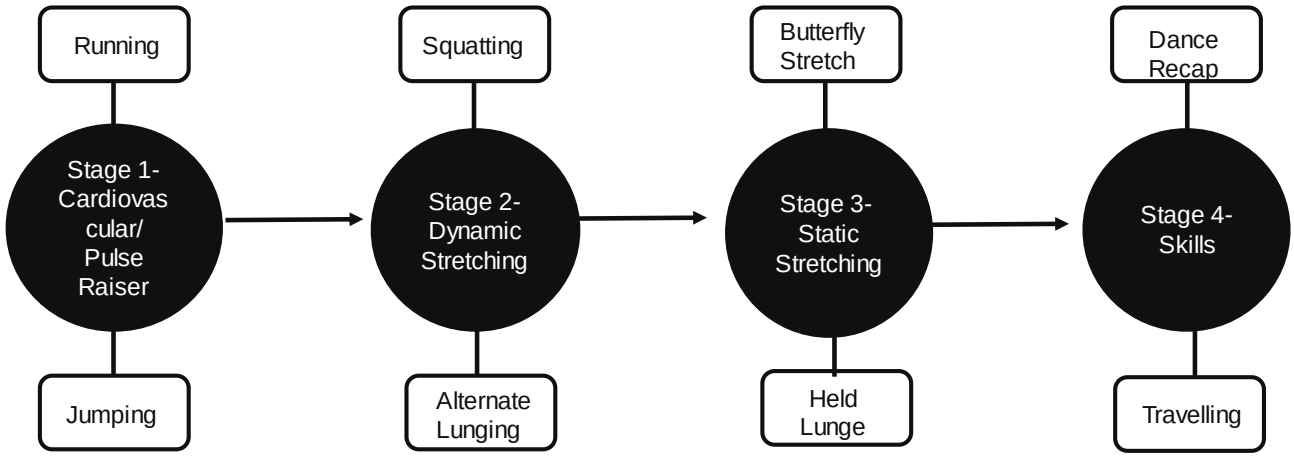
Focus

A warmup focuses the mind mentally on the activity ahead. Specific skill-based activities can also be included in a warmup for sport, such as dribbling or passing in football based warm up.

Keywords	Definition
Cardiovascular Movement	Also known as a pulse raiser. A movement which increases the heart rate significantly. For example, Running or jumping.
Dynamic Stretch	A stretch which is performed whilst moving. For example, squatting or alternate leg lunges.
Static Stretch	A stretch which is performed whilst still. For example, a butterfly stretch or a held lunge.
Heart Rate	The speed of which the heart beats.
Warm Up	A series of movements and exercises which prepare the body for physical exercise.

Year 7 Dance – Unit 1 : Warmups

Process of a Warmup



Year 7 Dance – Unit 2 : Matilda The Musical

Key Characters

Matilda: the main character.

Bruce Bogtrotter: Matilda's friend.

Lavender: Matilda's friend.

Miss Trunchbull: headteacher of the school.

Miss Honey: Matilda's class teacher.

Mr & Mrs Wormwood: Matilda's parents.

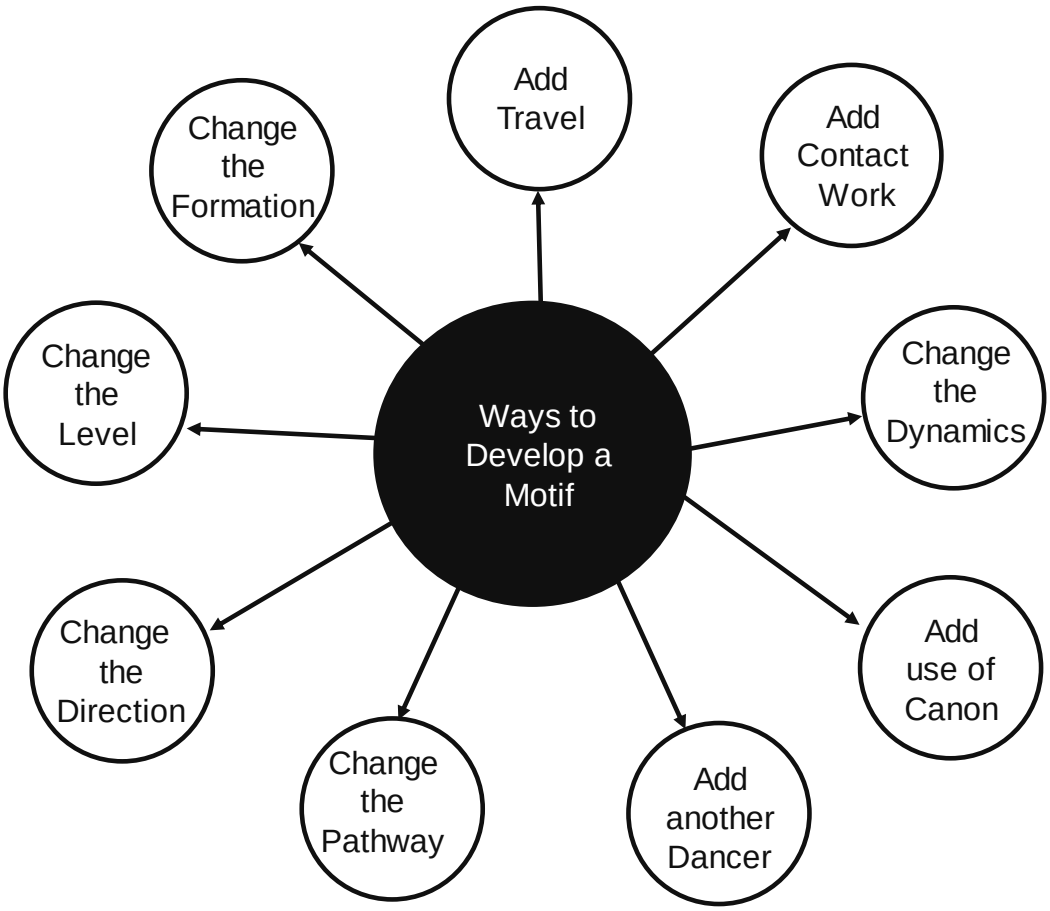
Keywords	
Gesture	A movement which represents an everyday action or word.
Mood	The feeling or tone of a character in a performance.
Atmosphere	The overall feeling of a performance.
Character	A person in a novel, play or film.

Choreography Key Words	
Choreographing	Creating a sequence of movements for a dance routine.
Choreography	The sequence of movements forming a dance routine.
Transition	A link from one section to another.

Year 7 Dance – Unit 3 : The Lion King

Breakdown of a Movement	
Action	The movement itself.
Space	Where the movement is performed including direction, level and pathway.
Dynamics	How the movement is performed.
Relationships	How many dancers are part of a choreography and how they interact.

Keywords	
Dynamics	How a specific movement is performed.
Posture	How you stand and present yourself.
Characterisation	The features of a specific character, such as facial expression, gesture, posture.
Motif	A sequence of movement used and repeated throughout a piece of choreography.
Motif Development	Adapting an original motif to include other choreographic devices.
Formation	The shape which you stand in to perform.
Still Image	A frozen or held position.

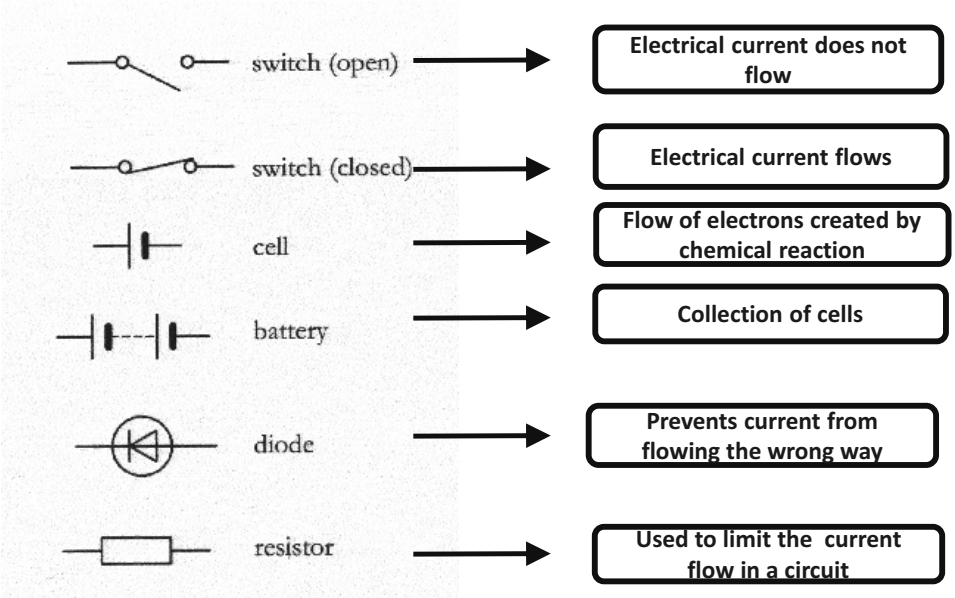

Ways to Develop a Motif
Add Travel
Add Contact Work
Change the Dynamics
Add use of Canon
Add another Dancer
Change the Pathway
Change the Direction
Change the Level
Change the Formation

Year 7 Technology Knowledge Organiser

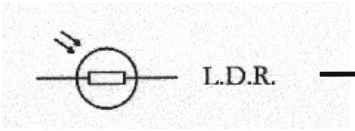
Contents

Year 7 Technology – Night light project (1)

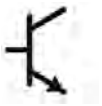
Circuit Symbols



Year 7 Technology – Night light project (2)

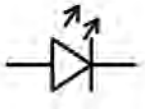


Resistance depends upon level of light detected



transistor

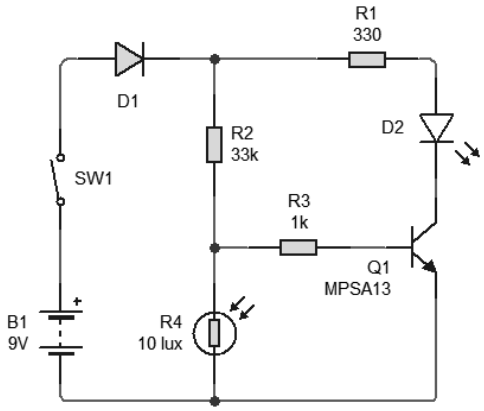
A semi-conductor device to switch signals



L.E.D.

Provides the light for the circuit

Circuit diagram of a night light Circuit

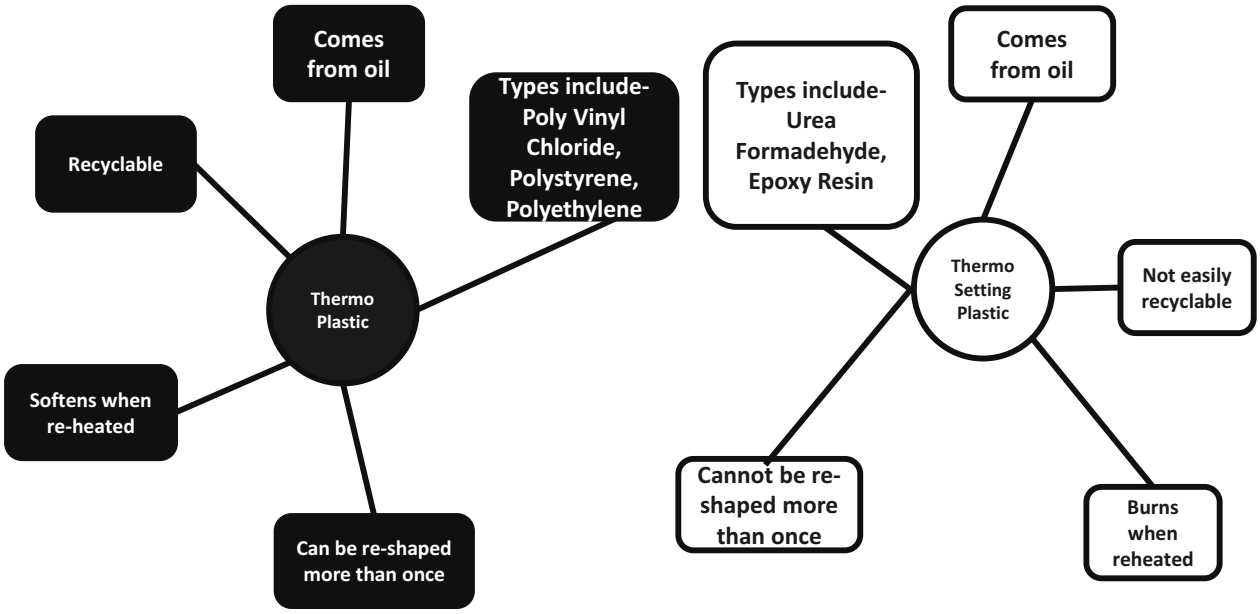


Year 7 Technology – Night light project (3)

Keywords	
Soldering Iron	A tool that heats up and allows the user to melt solder wire to join components together
Printed circuit board	A board that has the tracks of the circuit printed onto it so that components can then be joined to it
Solder	A mixture of tin and lead that can be melted to join components together
Vacuum Forming	A process where plastic sheet is heated and then sucked down over a mould and left to cool in that shape
High Impact Polystyrene	A type of plastic that can be easily vacuum formed
Wire strippers	Tool that allows you to strip the plastic coating off of a piece of wire
Wire cutters	Tool that allows you to cut wire
Component	A part or element of a product, machine, vehicle or system

Year Technology –Night Light Project (4)

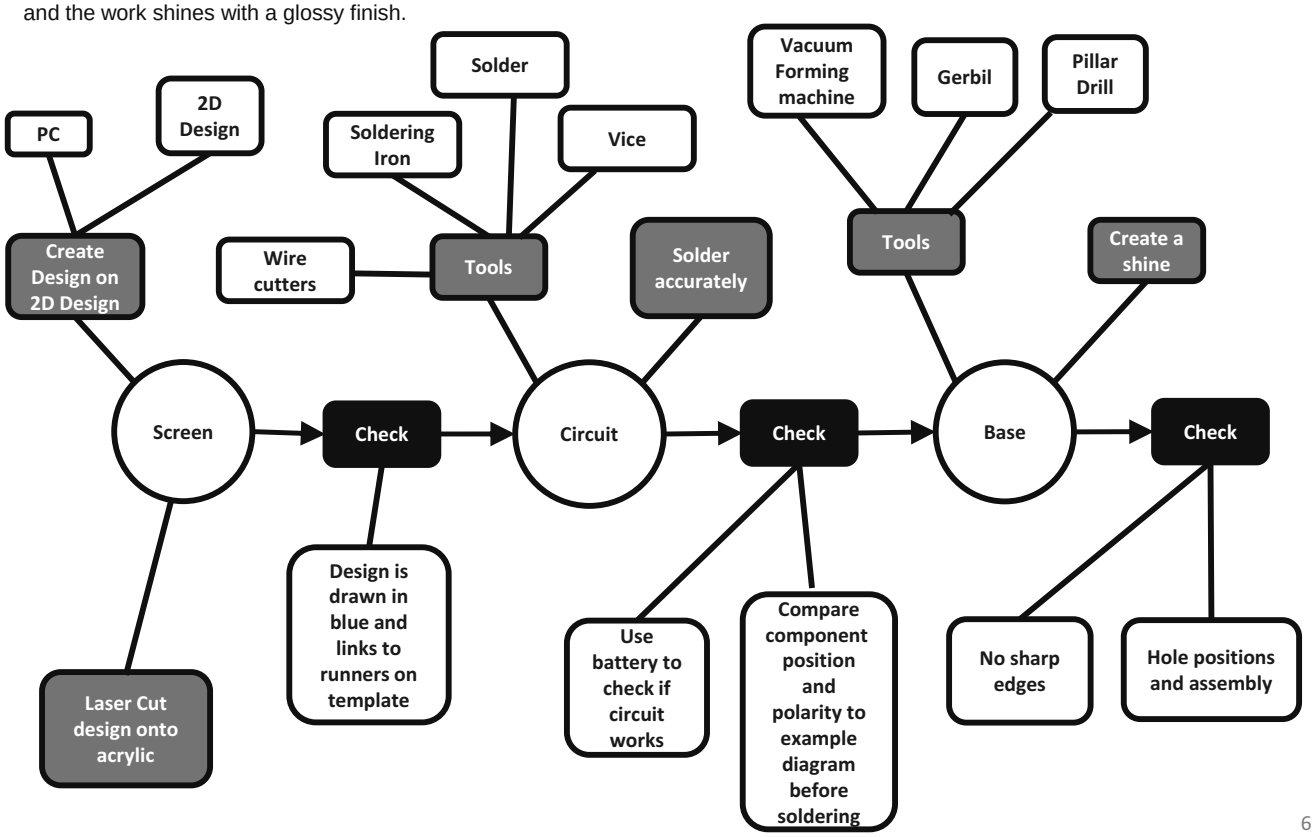
Types of Plastic



Year 7 Technology – Night Light (5)

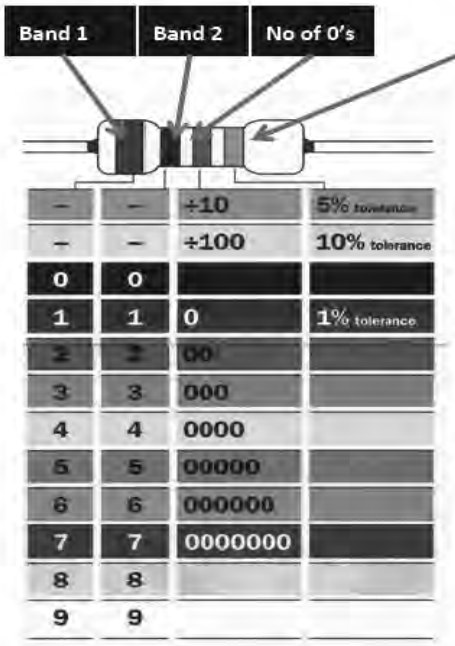
Steps in creating a Night Light

Polishing is achieved by progressively removing scratches starting with the deepest scratches until none remail and the work shines with a glossy finish.



Year 7 Technology – Night light project (6)

Resistor Colour code



–	–	÷10	5% tolerance
–	–	÷100	10% tolerance
0	0		
1	1	0	1% tolerance
2	2	00	
3	3	000	
4	4	0000	
5	5	00000	
6	6	000000	
7	7	0000000	
8	8		
9	9		

Resistors restrict or limit the flow of current in a circuit and are measured in **ohms Ω**.

The night light uses fixed resistors they have three important uses:

protecting components
dividing voltage between different parts of a circuit
controlling a time delay

Resistors have different values and are calculated using colour codes. An example would be.

Band 1 : Brown 1

Band 2 : Black 0

Band 3 : Red 2 zero's

Therefore the value is 1000Ω

Year 7 Technology – Desk Tidy project (1)

Hardwood comes from trees that lose their leaves in winter such as Oak, Beech & Ash

Softwood comes from trees that are evergreen like Fir and Spruce

You can tell how old a tree is by the rings in the stump if felled.

Manufactured boards come from woods that are processed into large sheets.

Types of manufactured board

MDF – sawdust and glue

Plywood the tree trunk is skimmed a bit like sharpening a pencil and then the shavings are glued together

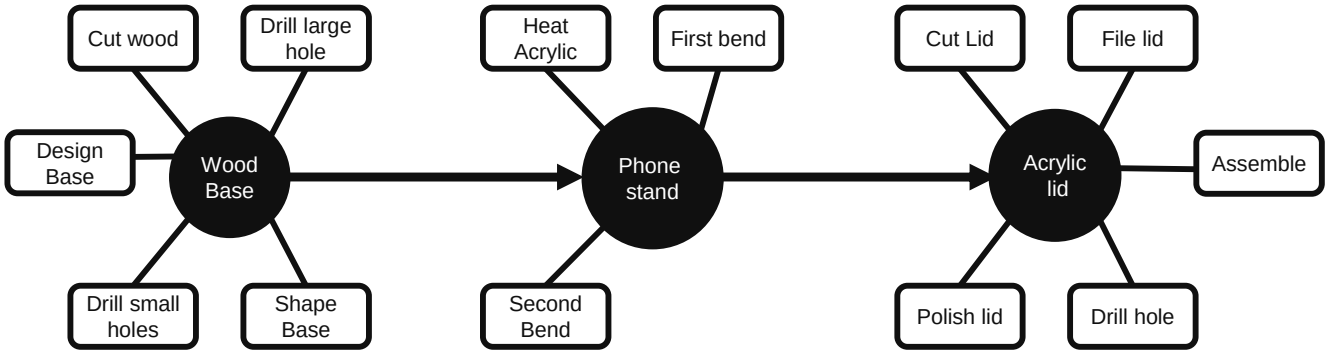
Manufactured wood and have a thin layer of real wood stuck to it (called veneers) to make the look like it is expensive real wood.

Year 7 Technology – Desk Tidy project (2)

Keywords	
Hardwood	Wood that comes from deciduous trees
Softwood	Wood that comes from evergreen trees
Deciduous	Trees that lose their leaves in Autumn
Acrylic	A type of plastic that can be bent into shapes
Abrade	The process of wearing the surface of something away
Polishing	The process of making the surface of your work shiny
Pillar Drill	Machine that allows you to drill holes in wood, metal or plastic
Pilot Hole	A hole that is drilled into a piece of wood that will enable it to be screwed into
Forstner bit	A drill bit with a large circular cutter at the bottom
Try Square	A tool that allows you to mark on holes at 90 degrees to the piece of wood
Steel Rule	A ruler used to mark measurements on wood
Varnish	A clear substance that is painted onto wood to protect it from liquid

Year 7 Technology – Desk Tidy project (3)

FLOW SPRAY



Year 7 Technology – Desk Tidy project (4)

6 R's of sustainability

Recycle
To reprocess a material or product to be made into something else

Repair
When a product breaks down or doesn't work properly, try to fix it

Rethink
Rethinking whether you actually need to use a product or not

Reduce
Cut down the amount of material and energy that you use as much as you can

Reuse
To use a product for a different purpose than what was intended e.g. a jam jar for a plant pot

Refuse
Don't buy a product if you don't need it or if it is bad for the environment

Yr 7 Food - Keywords

Keyword	Meaning
Mise en place	Preparation before stating to cook
Food safety	Ensuring the food that we produce is safe to eat
Healthy diet	A diet that is low in fat, salt and sugar, and high in fibre
Carbohydrates	An essential nutrient that you body requires for energy
Protein	An essential nutrient that your body requires for growth, repair and energy
Dietary fibre	A complex carbohydrate found in the cell walls of fruit, vegetables and cereal. Important for keeping the digestive system healthy.
Free sugars	Sugars added to foods that your foods, they do not provide any nutritional benefit
Saturated fat	Fat usually from animal sources, can be harmful to health
Unsaturated fats	Fat usually from plant sources, can be good for health

Yr 7 Food - Keywords

Keyword	Meaning
Sensory evaluation	Judging food based on appearance, taste, texture and aroma
Aroma	Smell
Appearance	How something looks
Mouthfeel	How the product feels in the mouth
Food assurance	Associations that monitor food provenance to ensure the quality of the products that we eat.
Food provenance	Knowing where food is grown, reared and caught. How it is produced and transported.

Preparing for practical work

'HATTIE'

H Tie your **hair** back. Wash your **hands**.

A Put an **apron** on.

T Clean your **table** with antibacterial spray.

T Collect a **tray** to keep all your ingredients together.

I Collect all the **Ingredients** you need.

E Collect the **equipment** you need, prepare any tins/baking sheets (e.g. grease or line).

Before you begin to cook you need to be prepared.

Preparation before you start to cook to called **'mise en place'**

The 4C’s for Food Safety

CLEAN

Personal Hygiene

Wash hands

Cover cuts with a blue plaster

Nails clean and short

Tie hair back

No jewellery

Wear a clean apron

Do not handle food if you have an upset stomach

Do not cough or sneeze near food

Kitchen Hygiene

Clean and sanitise surfaces

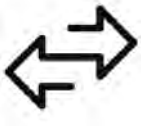
Equipment must be cleaned thoroughly

Cupboards, fridges and freezers must to cleaned regularly

Always use a clean spoon each time you taste food

Lids on

Ensure pest infestations are delt with immediately



CROSS CONTAMINATION

Equipment used on raw foods MUST be cleaned thoroughly before being used on other food.

Clean and sanitise surface between uses.

Wash fruit and vegetables to remove dirt or soil.

Wash hands after touching raw meat and fish.

Use colour coded chopping boards:

Green - Salad and veg

Red - Raw Meat

Yellow - Cooked Meat

Blue - Fish

White - Dairy and bakery

The 4C’s for Food Safety

CHILL

Temperature of the **fridge** should be between **below 5 °C.**

Never put hot food in the fridge, as it will raise the temperature of the fridge.

Do not overload the fridge, air needs to circulate

Throw away food that is past its use by date.

Always store **raw** meat and fish on the **bottom** shelf

Cooked meat should be on the **top** shelf.

Keep food covered or wrapped to prevent cross- contamination.

Temperature of a freezer should be **-18 °C.**

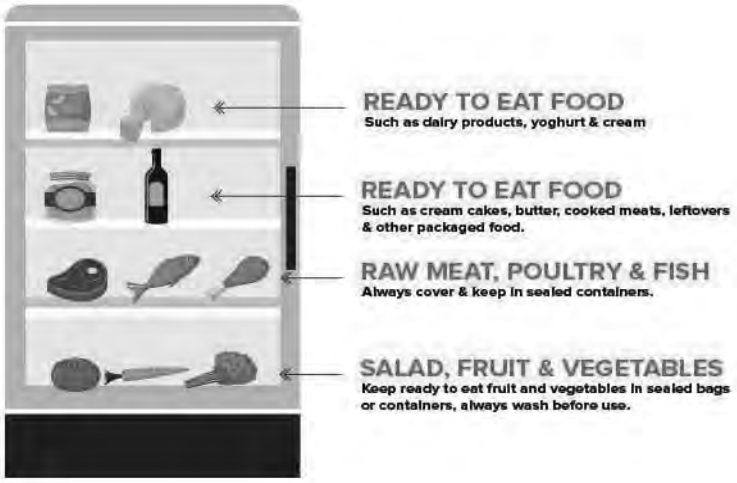
COOK

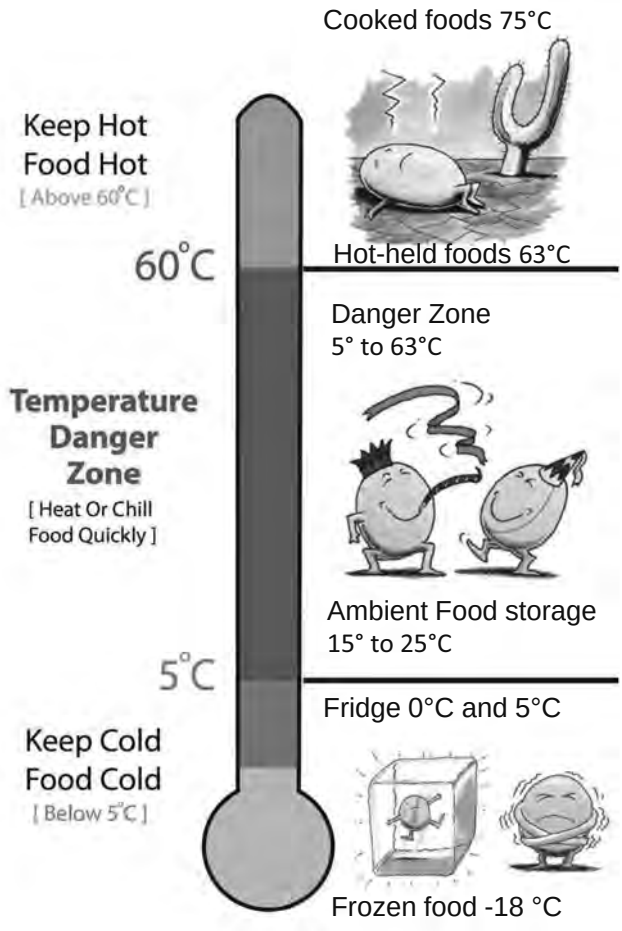
Use a temperature probe to ensure food is cooked.

To kill bacteria food must reach at least 75°C.

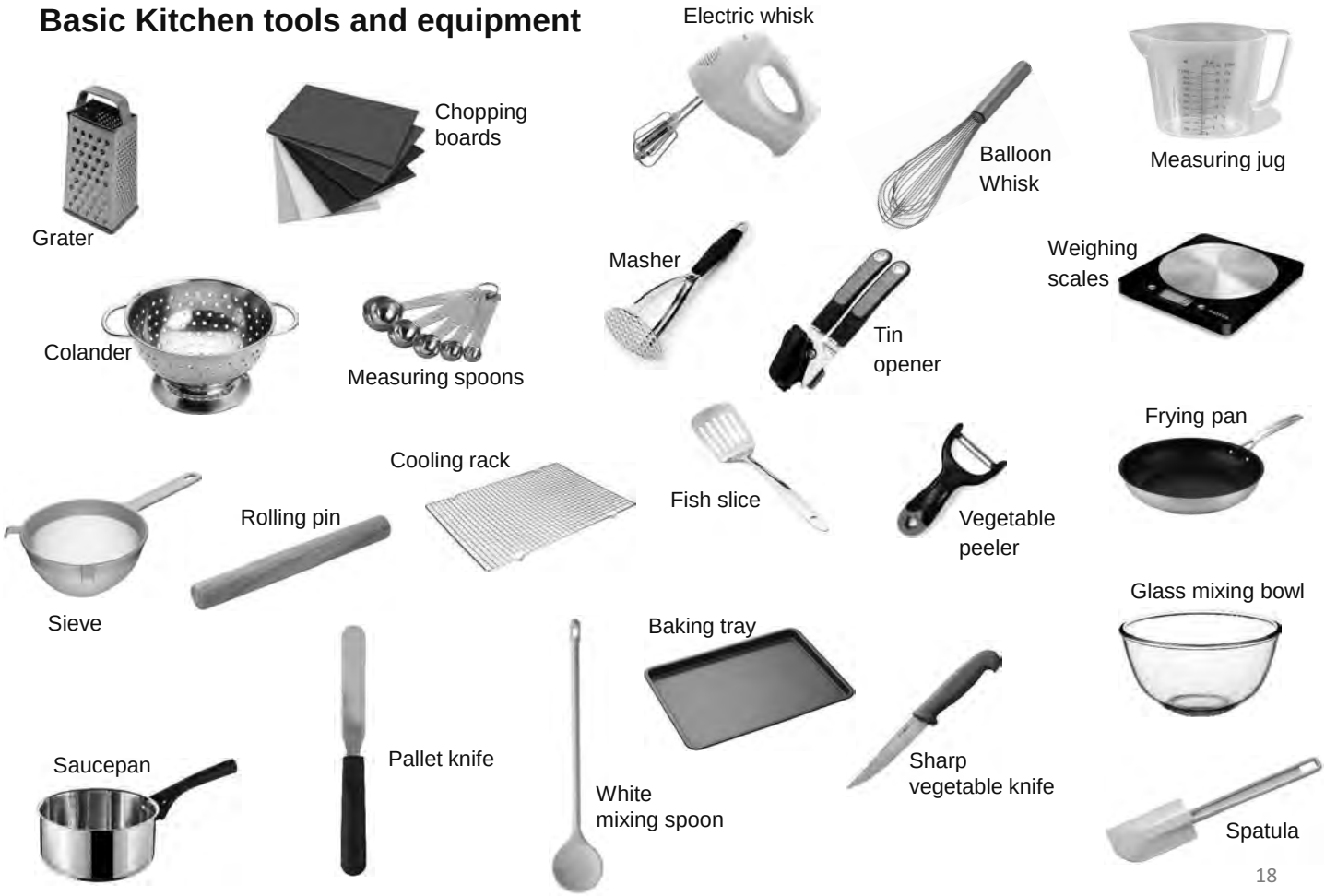
Storing Food Safely

- It is important to store food properly.
- Food should be wrapped, covered or kept in a suitable clean container.
- The refrigerator should be cleaned regularly.
- Dry and canned foods, e.g. dried pasta, tinned tomatoes, herbs and spices should be stored in cupboards that are clean and dry.





Basic Kitchen tools and equipment



Knife Skills

Hold

Bridge Hold	Claw Grip
To use the bridge hold, first place the flat surface of the item on a chopping board. Now form a bridge with the thumb and index finger of one hand and hold the item on the chopping board.	Shape your hand into a claw shape, tucking the thumb inside the fingers - the knuckle to fingertips part of the hand acts as a barrier against the knife blade when being held in the claw grip shape.

Knife Safety Rules

The correct knife should be used for the appropriate job.

Knives must be kept sharp and clean; a blunt knife is more likely to cause a cut because more pressure needs to be applied to use it to cut.

Knife handles must be grease-free.
The point must always be downwards when carrying a knife.

Knives should not be put in the washing-up bowl.

A knife must not be left on the edge of a table or chopping board.

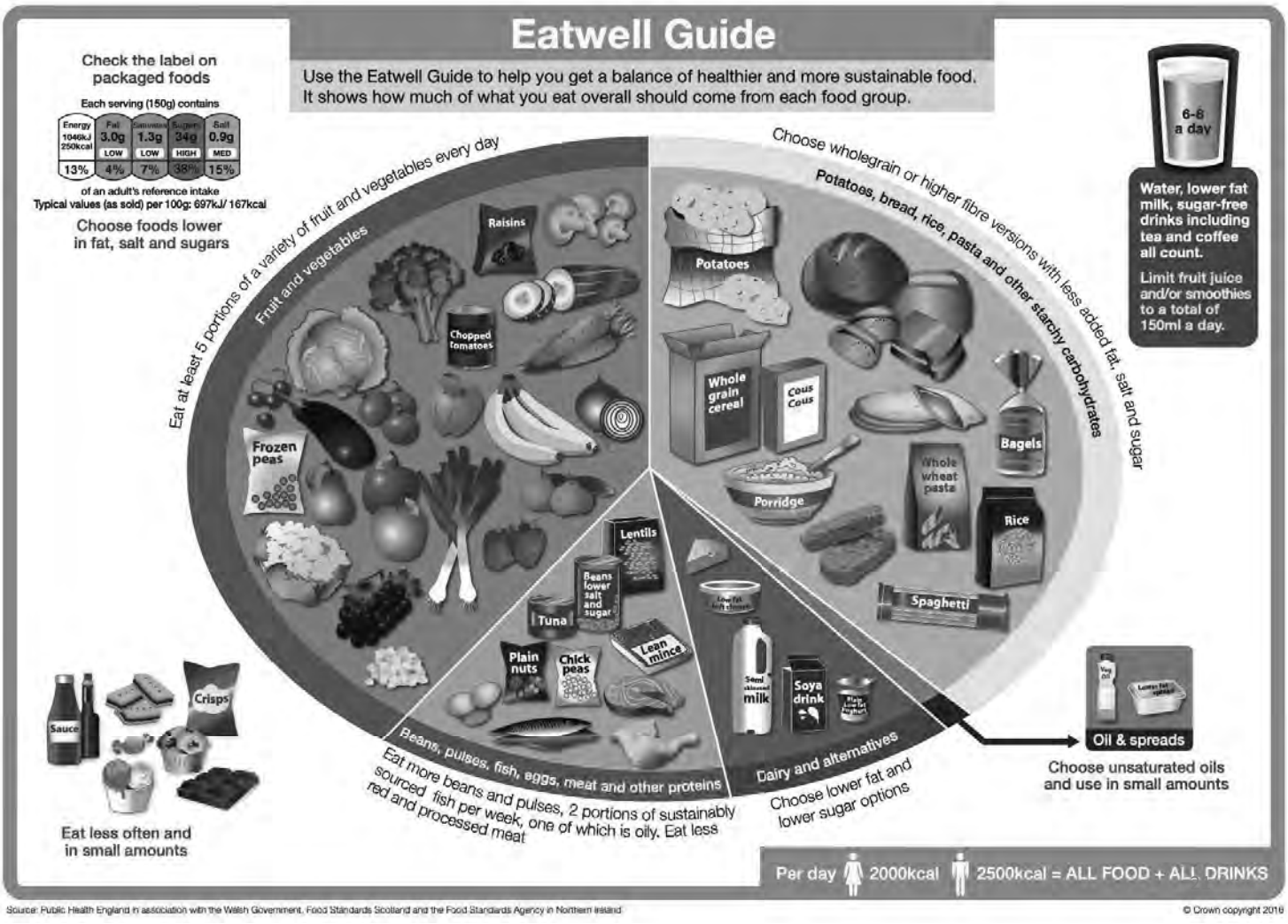
A Healthy Balanced Diet

A healthy balance diet provides all the nutrients needed for healthy body functions and normal physical activity.

To help achieve a balanced diet the Government have put together some dietary guidelines. The Eatwell Guide and 8 Tips for Healthy Eating.

8 Tips for Healthy Eating

1. Base meals on starchy foods
2. Eat 5 portions of fruit & vegetables a day
3. Eat 2 portions of fish a week
4. Small amounts of saturated fat and sugar
5. Eat less salt
6. Drink plenty of water
7. Do not skip breakfast
8. Get active



Carbohydrates

Carbohydrate provides an important source of **energy** for the body.

Carbohydrate provide energy to move and be active as well as energy for body processes such as breathing, heart beating.

Vitamin B (thiamine and riboflavin) is needed to help release the energy to the body.

All carbohydrates are converted to **glucose** when digested and this is converted to energy.

If the energy is not used up then it is stored as body fat.

Simple Carbohydrates (sugars) Sugar gives a fast release of energy that means your blood sugar levels go up. Some foods contain natural sugars such as milk, fruit & honey.		**Complex Carbohydrates (starch)** Starchy foods provide a slow release of energy and help our blood sugar levels stay the same so we don't feel tired.
glucose – Fruit, vegetables, honey, sugar beet/cane, corn	**sucrose** – Sugar beet/cane	**starch** – Potatoes, wheat, oats, pulses, corn, rice, pasta, bread, cous cous, cereals, beans, lentils, kidney beans, porridge, muesli, non-starchy vegetables
galactose – found in the milk of mammals	**maltose** – Soya beans, barley, wheat	
fructose – found in fruit Fruit, vegetables	**lactose** – Milk and milk products	**Dietary Fibre (NSP)** – found in wholegrain cereals, Fruit, vegetables, seeds and nuts

Excess carbohydrates :
Obesity, Tooth decay, Type 2 diabetes

Carbohydrates deficiency:
Lack of energy, weight loss, severe weakness

Protein

Protein is a macronutrient formed from chains of amino acids which are the building blocks of protein. There are 20 amino acids that come from animals and plants.

What is protein needed for?

Growth of skin, hair, cells, organs, bones and connective tissue. Growth especially in children and pregnancy.

Repair body tissues after illness, injury or surgery.

A **secondary source of energy** for the body.

Maintaining the body (bones and muscles)

Higher biological value (HBV) protein Contain **all** essential amino acids	**Lower biological value (LBV) protein** Contain **some** essential amino acids
From animal sources	From plant sources
Meat, fish, eggs, milk, cheese *Exception – soya beans*	Cereals, nuts, beans, seeds

Excess protein in the diet is used as energy. If it is not required for energy then it will be stored as fat.

Protein deficiencies are rare but in developing countries but can lead to stunted growth in children.

Some groups of people have a higher need for protein:
- babies and children – for growth;
- adolescents – for growth spurts;
- pregnant women – for the growing baby;
- People healing from surgery
- An athlete for growth and repair of muscle and tissue

Fat

Our bodies need fats for many essential functions, however in the modern world many people consume over the recommended daily amounts of fat which can cause problems with obesity, heart disease and stroke.

What is fat needed for?

Protect vital organs

Stores fat-soluble vitamins (A, D, E and K)

To maintain body temperate

Ensure a healthy immune system

Maintain healthy skin and hair

Provide energy (fat is very high in energy)

Fat is a source of fatty acids, these are essential mechanisms for cell membranes in the nervous system and the brain

Saturated fat	**Unsaturated fat**
Solid at room temperature	Liquid at room temperature
More harmful to health, as they raise LDL cholesterol	Considered to be the 'healthier' fats. They can help maintain healthy HDL cholesterol levels
Mainly from animal sources	From plant sources and fish
Butter, lard, ghee Coconut and palm oil Fatty and processed meats, sausages, bacon and cured meats Full fat milk and diary products (cream, ice cream, cheese) Chocolate	Vegetable oils and olive oil Nuts, flax seeds and sesame seeds Avocados and olives Fatty fish (salmon, sardines, mackerel)

Fat-soluble Vitamins

Vitamin	Function	Sources
Vitamin A	Helps with vision in dim light Helps the body grow and develop Strengthens the immune system Skin health	Animal sources (retinol) - liver, milk, oily fish (retinol) Plant sources (beta carotine) - green leafy vegetables, carrots and orange and red coloured fruits (carotenoids) Added to margarine
Vitamin D	Absorption and use of calcium and phosphorus Maintenance and strength of bones and teeth Important in brain function Supports immune and nervous system Supports lung function	Oily fish, eggs and dairy products Fortified breakfast cereals and margarines (vitamin D added by law) Sunlight on the skin
Vitamin E	Healthy skin and eyes Boosts immune system Helps clots from forming in the arteries	Sunflower seeds Almonds, peanuts Avocados, butternut squash, asparagus, pumpkin, mango, dark green vegetables Vegetable oils Oily fish
Vitamin K	Blood clotting and help healing wounds Keeps bones healthy	Leafy green vegetables, kale, spinach, broccoli, asparagus Cheese Liver, bacon

Water-soluble Vitamins

Vitamin	Function	Sources
Vitamin B	Release of energy from cfood Healthy nervous system Normal growth of children	Wholegrain products, wheat, rice Meat, fish, milk and dairy Marmite Seeds, nuts, beans and lentils. Peas Fresh fruit – bananas and oranges
Vitamin C	Helps absorb iron from foods Helps the immune system fight and prevent infection Production of collagen that binds connective tissue Antioxidant – protects from pollutants in the environment Helps heal wounds Helps skin health	Citrus fruits, lemon, oranges, limes kiwi, blackcurrants, strawberries, papaya, pineapple, mango Potatoes Salad and green vegetables, e.g. broccoli, kale, spinach Peppers, chillies, cauliflower

Minerals

Vitamin	Function	Sources
Calcium	Strengthens bones and teeth Bones are able to reach peak bone mass – maximum strength Growth of children Promotes nerves and muscles to work properly Vitamin D is needed to help absorb calcium	Dairy foods, milk, cheese, cream, yogurt Green vegetables, kale, spinach, cabbage White bread – calcium is added by law, Soya products, tofu Nuts and seeds
Iron	Supports the production of haemoglobin in red blood cells; this transports oxygen around the body Low iron levels cause anaemia Vitamin C is required to absorb iron	Red meats – liver and kidney Lentils, dried apricots, cocoa, chocolate, Curry spices, Green leafy vegetables, e.g. spinach, Breakfast cereals fortified with iron
Sodium	Regulate the amount of water in the body To assist the body in the use of energy To help control muscles and nerves Too much salt/sodium can increase blood pressure and heart disease	Processed foods – for flavour and as a preservative, Salt added to food in cooking process for flavour, Smoked meats Bacon

Dietary Fibre (NSP)

Insoluble fibre is not easily broken down by the digestive system. It passes through the body unchanged, keeping the bowels healthy and preventing digestive problems such as constipation and haemorrhoids.

Sources: Oats barley rye most beans and peas fruit root vegetables

Soluble fibre is broken down by bacteria in the bowel to be digested. It can help reduce cholesterol in the blood and guard against coronary heart disease.

Sources: wholegrain cereals, wholemeal bread Bran, nuts, corn, oats, fruit, vegetables (especially the skin)

Functions

Helps prevent constipation.
Helps prevent type 2 diabetes.
Helps reduce the risk of colon cancer.
Lowers the risk of coronary heart disease.
Reduces the temptation to snack between meals.
Helps support a healthy weight.
Slows down absorption of carbohydrates in the blood to help keep blood sugar levels constant.

Deficiency

A deficiency is often caused by eating too many refined foods, e.g. white bread instead of whole meal, or white rice instead of brown rice. It may also be caused by a general lack of fruit and vegetables in the diet. A deficiency can lead to constipation, haemorrhoids, colon cancer and/or diverticulitis.

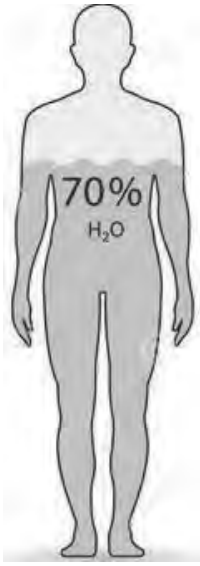
Water in the diet

Water is the major component of body fluid and has many functions in the body:

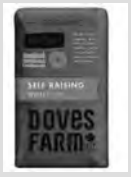
• it acts as a lubricant for joints and eyes;
• it is the main component of saliva;
• it helps get rid of waste;
• it helps regulate body temperature.

The body loses water all the time, when we go to the toilet, from sweat and also evaporation from skin. If we do not consume enough water, we become dehydrated.

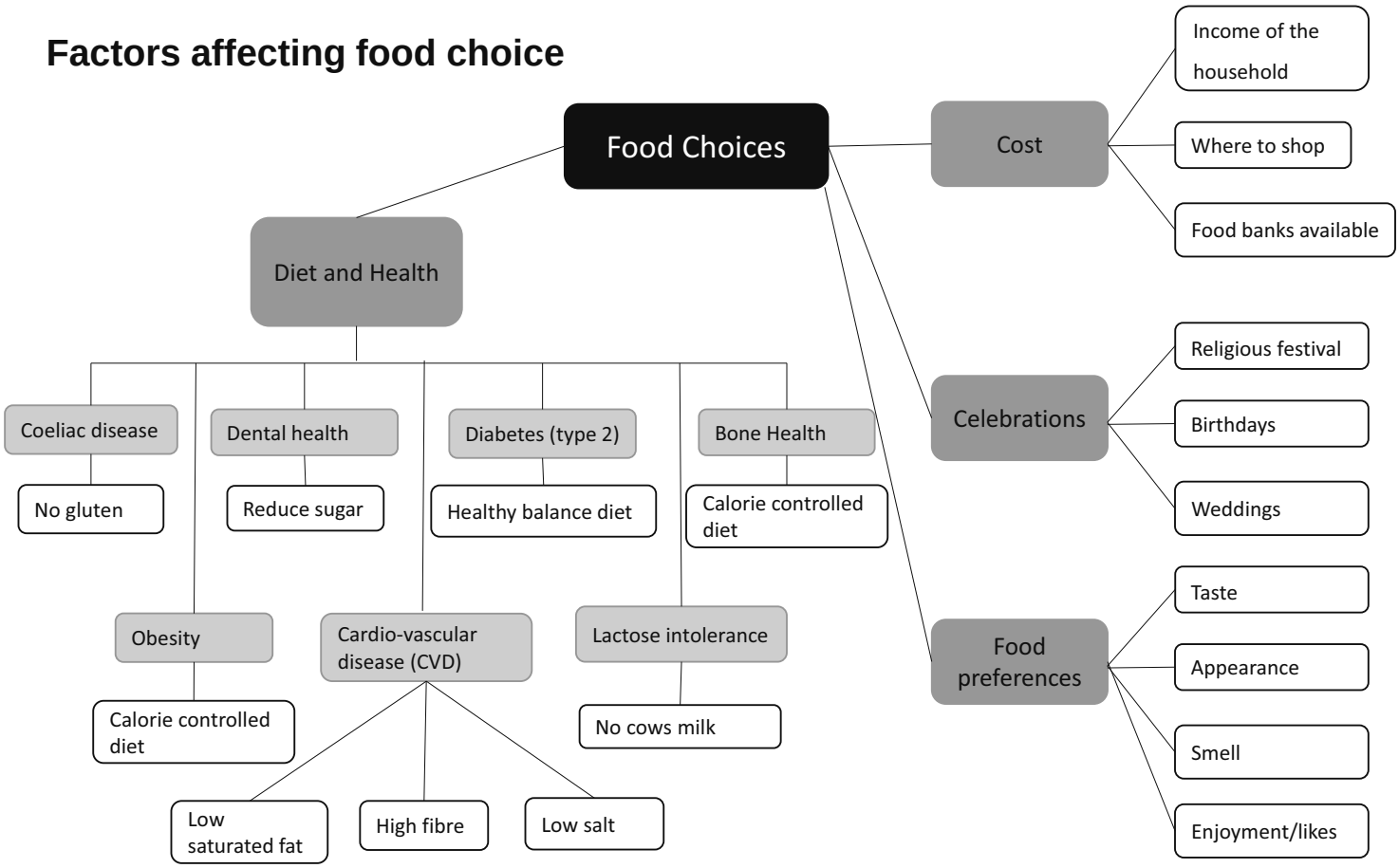
- Water is provided by food and drinks.
- 20% of water consumed is from food.
- 80% is from drinks.
- Some fluids are less beneficial, coffee and tea can increase water loss, sweetened drinks contain a lot of sugar and fizzy drinks are acidic on the teeth.



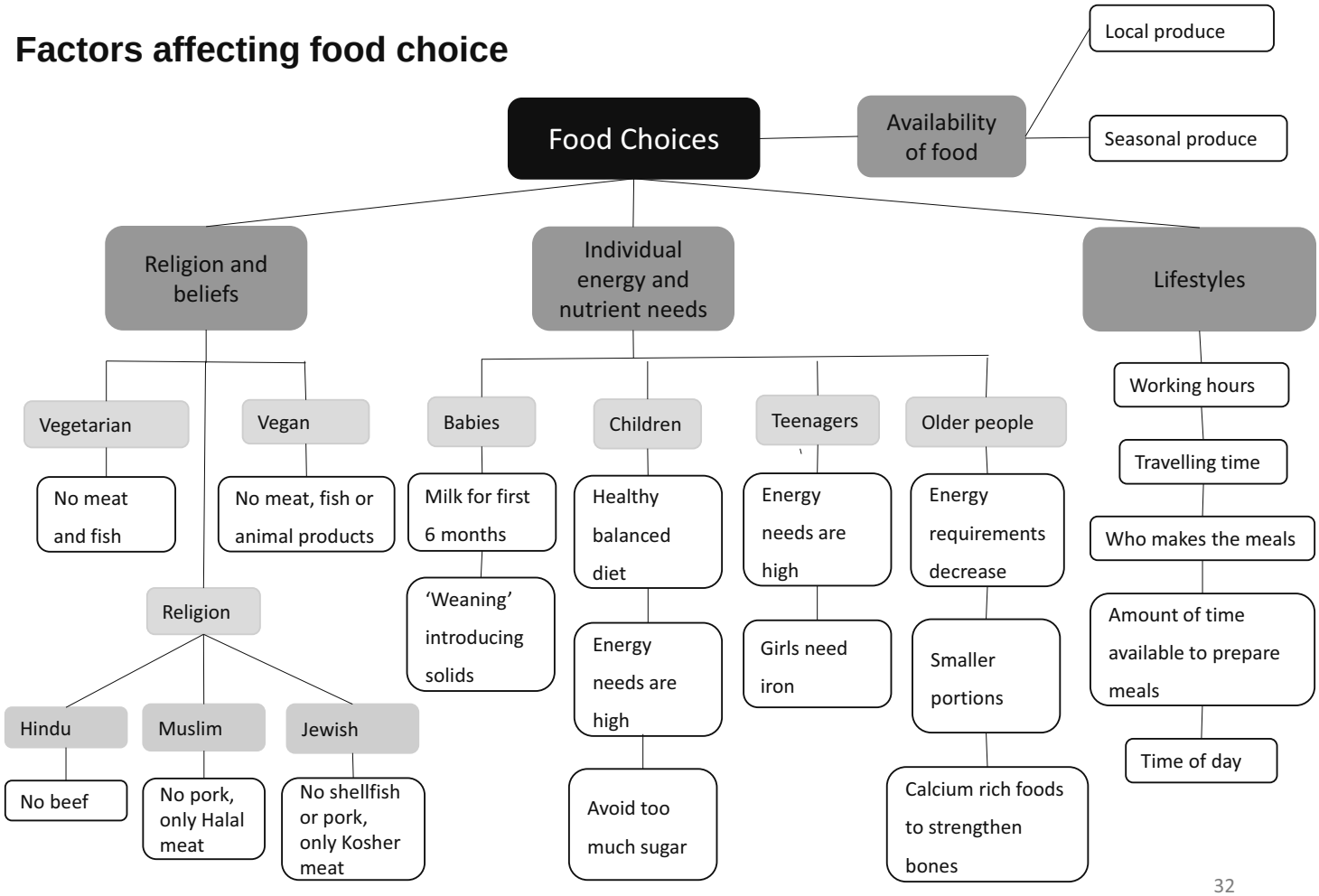
Flour

Flour Types	What makes each flour type unique?
 Plain Flour	• To make white flour 30% of the wheat is removed. • Both the bran and germ are removed. • Leaving just the endosperm
 Self Raising Flour	• Just like plain flour- this only contains the endosperm part of the wheat grain. • Chemicals are added to this flour so the mixture will rise when it is cooking. • Usually this is baking powder is used as the raising agent.
 Strong White Flour	• Strong flour is made from hard wheat • It has a high gluten protein content which helps make elasticated, soft bread. • The protein binds to the flour to trap carbon dioxide released by the yeast, resulting in a stronger rise and more chewy crumb.
 Wholemeal Flour	• This flour is made by crushing the whole of the grain. • It is brown in colour and may feel gritty. • Foods contain wholemeal flour contain more dietary fibre.

Factors affecting food choice



Factors affecting food choice



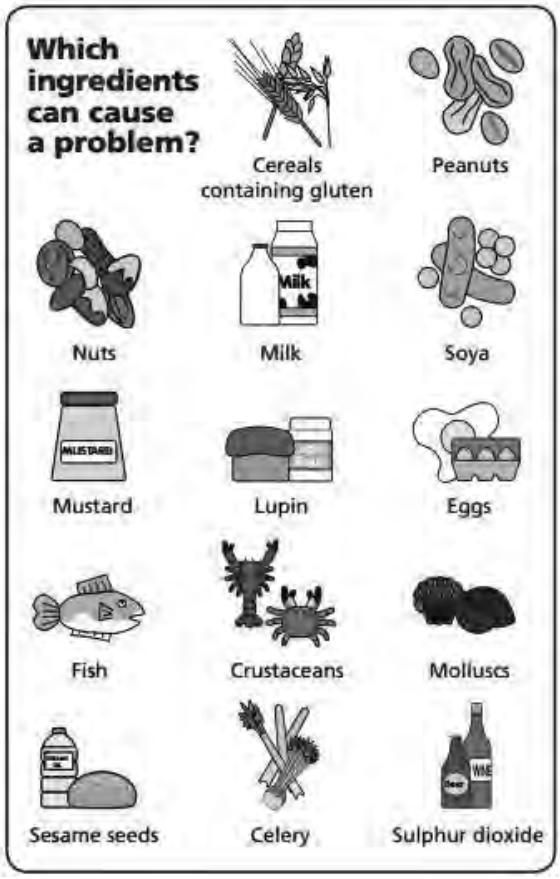
Food Assurance

Food Assurance Schemes	
	Regulates British Produce. It ensures food is traceable, farmed with care and safe. Red Tractor regulate British Meats, Crops, Sugar and Dairy. They also monitor and assess farms on their animal welfare and feed.
	The British Lion Eggs ensure a high standard of eggs. Eggs must be stamped with this label to ensure the consumer knows the type of egg they are eating: Organic, Free Range, Barn or Caged. The Use by Dates, country of origin and farm identification.
	The marine stewardship council regulates the fishing industry across the world. It helps to encourage sustainability of fishing. To keep fish levels well stocked and prevent as much damage to marine life.

Information that must appear on food packaging

Information	Description
the name of the food	It is important that the name of the food must be clearly stated with a description if needed, and not be ambiguous or misleading.
weight or volume	The weight or volume of the food must be shown on the label. By comparing the weight with the price, consumers can make sure that they are getting value for money.
ingredient list	Ingredients are listed in order of weight, according to the amounts that were used to make the food, starting with the largest ingredient and ending with the smallest.
allergen information	Allergens must be listed in **bold** to highlight them.
date mark and storage conditions	The label must say how long foods should be kept and how to store them. Following storage instructions can reduce the risk of food poisoning and help to make sure that it tastes and looks its best when it is eaten.
preparation instructions	Instructions on how to prepare and cook the food must be given on the label, if they are needed.
name and address of manufacturer, packer or seller	Consumers can then contact the manufacturer if they have a complaint about a product or if they wish to know more about it
nutrition information	Nutritional information, how much energy • fat • saturates • carbohydrate • sugars • protein • salt

Allergies on packaging



Dates on packaging

Use-by Dates

- A use-by date is a safety date found on foods and their packaging.
- Use-by dates are found on highly perishable, packaged food such as meat, fish and dairy products that require chilling and have a short shelf life.
- It is an offence for businesses to sell or use food that has passed its use-by date.

Best-before Dates

- Best-before dates usually appear on less perishable foods that have a long shelf life, such as canned, dried and frozen food products.

How to evaluate a food product

What have you made?

What skills/techniques have you used?

What went well?

How did you decorate/garnish it?

What did you like/dislike about it?

How could you improve?

What sensory words would you use to describe it? (appearance, taste, texture, smell)

Is there anything you would change? **Why**?

How would you improve your product if you were to make it again?

Sensory Words

Appearance (Looks)

Appetising	Dry	Hot
Attractive	Fattening	Moist
Clear	Firm	Runny
Cold	Fresh	Smooth
Colour	Greasy	Soft
Colourful	Hard	Tasty
Crumbly	Healthy	Tough

Taste (Flavour)

Acid	Herby	Stale
Bitter	Meaty	Sweet
Bland	Old	Tangy
Burnt	Salty	Tasteless
Cheesy	Sharp	Tasty
Creamy	Sickly	Undercooked
Dry	Sour	Watery
Fruity	Spicy	

Smell (Aroma)

Burnt	Yeasty	Garlicky
Fragrant	Sickly	Spicy
Fruity	Spicy	Stale

Texture (Mouthfeel)

Airy	Firm	Mushy
Brittle	Fizzy	Powdery
Chewy	Flaky	Slimy
Creamy	Foamy	Smooth
Crisp	Gooey	Soggy
Crumbly	Greasy	Sticky
Crunchy	Gritty	Stringy
Dry	Hard	Tender
Fatty	Lumpy	Watery

Spanish

Knowledge Organiser 2023-2024

Year 7

Contents

Phonics – sounds from specific letters or groups of letters

a	ah	araña, atención	**g** (before a/o/u)	hard ‘g’ sound	gato, golf, me gusta
e	eh	elefante	**g** (before e/i)	soft ‘j’ sound	gemelo, gimnasia
i	ee	idea	**j**	sound in back of throat	jardín, jirafa
o	oh	olvidar	**ll**	like an English ‘y’	me llamo, llave
u	oo	universo, uniforme	**ñ**	ny (like the ‘ny in canyon)	España, español, años
y	ee	yo, hoy, hay,	**r**	soft r, close to an ‘l’ sound	pero, árbol, abrir
c (before e/i)	soft ‘th’ sound	cero, cerdo, cinco	**r at the beginning of a word**	rolled sound	reloj, rabia, rápido
c (before a/o/u)	hard ‘k’ sound	casa, coche, cucaracha	**rr**	a rolled sound	perro, gorro
ch	tch	chorizo, chocolate	**v**	more like a ‘b’	vaso, veinte
ción	‘th’-ee-on soft ‘th’	información, educación, natación	**z**	a ‘th’ sound	zumo, zapatos

a. Terminology

Noun	A word that represents an object or a person.	A table John
Gender	Masculine or Feminine	**EL** chocolate = masculine **LA** mesa= feminine
Number	Singular = one OR Plural = several, more than one	One banana, some bananas
Verb	A word to describe an action.	Eat, play, sleep
Infinitive verb	A verb in its most basic form, the one you will find in a dictionary.	To run, to study, to do
Tense	This is applied to the verb to describe an action in the present, the past or the future.	I do, I have done, I did, I was doing, I’m going to do, I will do, I would like to do
Present tense	A verb in the present tense is used to describe what happens now or what usually happens.	Right now, *I’m drinking* juice. Usually I ***watch*** TV after school.
Past tense	A verb in the past tense is used to describe what happened in the past or what used to happen.	Last year I ***went*** on holidays. I ***used to do*** lots of sport.
Future tense	A verb in the future tense is used to describe what is going to happen or what will happen in the future.	I ***will visit*** my grandma this weekend. I ***am going to prepare*** a cake tomorrow.
Conditional tense	A verb in the conditional tense is used to describe what would happen in specific conditions.	If I could, I ***would travel*** the world.
Negatives	Using negative allows you to say what you don’t do or never do.	I do***n’t*** play guitar. I ***never*** eat sweets.
Agreement	This applies to adjectives and verbs. The adjective will change depending on the gender and number of the noun.	I go but he/she goes Two small[***s***] cat**s**
Adjective	A word used to describe a thing or person	Blue, small, exciting
Intensifier	A word used in front of adjective to vary its intensity.	Very, a little, quite…
Connective	A word that allows you to link two parts of information.	And, but, also, however

b. ¿Qué tienes en tu estuche?

En mi estuche (In my pencil case)	hay (there is/are) tengo (I have)	un bolígrafo (a pen) un lápiz (a pencil) un pegamento (a glue stick) un rotulador (a felt tip)	un sacapuntas (a pencil sharpener) unos bolígrafos (some pens) unos lápices (some pencils) unos rotuladores (some felt tips)		negro(s) (black) blanco(s) (white) amarillo(s) (yellow) rojo(s) (red) azul(es) (blue) verde(s) (green) gris(es) (grey) marrón / marrones (brown) rosa(s) (pink) naranja(s) (orange)
		una goma (an eraser) una pluma (a fountain pen)	una regla (a ruler) unas tijeras (some scissors)		
En mi mochila (In my schoolbag)	hay (there is/are) tengo (I have)	un cuaderno (an exercise book) un diccionario (a dictionary)	un estuche (a pencil case) unos cuadernos (some exercise books)		
		una agenda (a planner) una calculadora (a calculator)	una regla (a ruler) unas tijeras (some scissors)		
En mi clase (In my class)	hay (there is/are) tenemos (we have)	un ordenador (a computer) un pupitre (a desk)	muchos pupitres (lots of desks)		negra(s) (black) blanca(s) (white) amarilla(s) (yellow) roja(s) (red) azul(es) (blue) verde(s) (green) gris(es) (grey) marrón / marrones (brown) rosa(s) (pink) naranja(s) (orange)
		una mesa (a table) una pizarra (a chalkboard) una puerta (a door) una silla (a chair)	muchas mesas (lots of tables) muchas sillas (lots of chairs) unas ventanas (some windows)		

c. Las opiniones y los cognados

L’	*I love*	el chocolate	*chocolate*
Me chifla	*I’m crazy about*	el fútbol	*football*
Me mola	*I like a lot*	el club de tenis	*tennis club*
Me gusta mucho	*I really like*	la idea	*idea*
Me gusta bastante	*I quite like*	la radio	*radio*
Me gusta	*I like*	la guitarra	*guitar*
Prefiero	*I prefer*	los animales	*animals*
No me gusta	*I don’t like*	los comentarios	*commentaries*
No me gusta nada	*I don’t like at all*	los cómicos	*comics*
Odio	*I hate*	las plantas	*plants*
No aguanto	*I can’t stand*	las botas	*boots*
No soporto	*I can’t bear*	las hamburguesas	*hamburgers*

d. Los países hispanohablantes

Hispanophone comes from '*hispano'* meaning Spanish and and '*phone*' comes from the Greek for voice, sound or language. So, 'hispanophone' means where Spanish is spoken.

You guessed it, that is not just in Spain! It is estimated that around the world, about 425 million people speak Spanish as their first language. It is the official language in 22 countries and is widely spoken in 31 different countries in total.

That is just the native speakers. Another 80 million speak Spanish as an extra language! The total number is due to rise even more and is estimated to reach 750 million by 2050!

Spanish is the second most widely spoken language in the world, following Mandarin Chinese. English is third.

The countries that have Spanish as an official language are called the Hispanic countries. Most of them are in the Americas, which make up Latin America. However, some of these countries are also in the Caribbean Islands and other parts of the world.

So how did it happen?

This is partly because the people of Spain travelled and colonized many different parts of the world (like England did) and the Spanish language stayed when the countries regained their independence.
They created many new countries, and also new governments, in some old countries.
Here is a map of the world to show you where Spanish is spoken:

> Can you locate some of these places?

Costa Rica, Cuba, The Dominican Republic, Guatemala, Honduras, Mexico, Nicaragua, Panama, Puerto Rico, El Salvador, Argentina, Bolivia, Chile, Colombia, Ecuador, Guyana, Paraguay, Peru, Uruguay, Venezuela, The Philippines, Equatorial Guinea.

1. ¿Cómo te llamas?

<table>
<tr><td colspan="2" rowspan="3">¿Cómo=How</td><td>me llamo?=am I called?</td><td rowspan="3"></td><td rowspan="3">¿Cuántos años
=How many years</td><td>tengo?=do I have?</td></tr>
<tr><td>te llamas?=are you called?</td><td>tienes?=do you have?</td></tr>
<tr><td>se llama?=is s/he called?</td><td>tiene?=does s/he have?</td></tr>
<tr><td colspan="2">Yo me llamo=I am called</td><td rowspan="3">Alejandro=Alejandro
Antonio=Antonio
Carlos=Carlos
Diego=Diego
Felipe=Felipe
José=José
Paco=Paco
Roberto=Roberto</td><td rowspan="5">y=and</td><td>tengo=I have</td><td colspan="2">un año=1 year</td></tr>
<tr><td colspan="2">Tú te llamas=You are called</td><td>tienes=you have</td><td rowspan="4">dos=2
tres=3
cuatro=4
cinco=5
seis=6
siete=7
ocho=8
nueve=9
diez=10
once=11
doce=12
trece=13
catorce=14
quince=15
dieciséis=16
diecisiete=17
dieciocho=18
diecinueve=19
veinte=20</td><td rowspan="4">años=years</td></tr>
<tr><td>Mi hermano=My brother</td><td rowspan="2">se llama=
is called</td><td>tiene=he has</td></tr>
<tr><td>Mi hermana=My sister</td><td>Alejandra=Alejandra
Ana=Ana
Arantxa=Arantxa
Belén=Belén
Emilia=Emilia
Isabel=Isabel
María=María
Sofía=Sofía</td><td>tiene=she has</td></tr>
</table>

2. ¿Cuándo es tu cumpleaños?

¿Cuándo es (When is)	mi cumpleaños? (my birthday?)		tu cumpleaños? (your birthday?)		su cumpleaños? (his / her birthday?)	el cumpleaños de Ana? (Ana's birthday?)
Mi cumpleaños es (My birthday is) Tu cumpleaños es (Your birthday is) Su cumpleaños es (His / Her birthday is) El cumpleaños de Antonio es (Antonio's birthday is) El cumpleaños de mi amigo es (My friend's (m) birthday is) El cumpleaños de Ana es (Ana's birthday is) El cumpleaños de mi amiga es (My friend's (f) birthday is) Hoy es (Today it is)	el (the)	primero (1st) dos (2nd) tres (3rd) cuatro (4th) cinco (5th) seis (6th) siete (7th) ocho (8th) nueve (9th) diez (10th)	once (11th) doce (12th) trece (13th) catorce (14th) quince (15th) dieciséis (16th) diecisiete (17th) dieciocho (18th) diecinueve (19th) veinte (20th)	veintiuno (21st) veintidós (22nd) veintitrés (23rd) veinticuatro (24th) veinticinco (25th) veintiséis (26th) veintisiete (27th) veintiocho (28th) veintinueve (29th) treinta (30th) treinta y uno (31st)	de (of)	enero (January) febrero (February) marzo (March) abril (April) mayo (May) junio (June) julio (July) agosto (August) septiembre (September) octubre (October) noviembre (November) diciembre (December)

3. ¿Dónde vives?

Yo vivo (I live)	en (in)	un piso (a flat)	bonito (pretty) feo (ugly) grande (big) pequeño (small)	en un edificio antiguo (in an old building) en un edificio moderno (in a modern building) en el centro (in the centre) en las afueras (on the outskirts) en la costa (on the coast) en el campo (in the country) en la montaña (in the mountains)	y soy de=and i'm from	Italia=Italy Francia=France Portugal=Portugal Alemania=Germany Polonia=Poland Brasil=Brazil
Tú vives (You live)		una casa (a house)	bonita (pretty) fea (ugly) grande (big) pequeña (small)		y tú eres de=and you are from	
Él vive (He lives) Ella vive (She lives)		un pueblo (a town) una ciudad (a city)	en el norte de (in the north of) en el este de (in the east of) en el sur de (in the south of) en el oeste de (in the west of)	Escocia (Scotland) España (Spain) Gales (Wales) Inglaterra (England) Irlanda (Ireland) los Estados Unidos (the USA)	y él es de=and he's from y ella es de=and she's from	

4. Describe tu familia

En mi familia (In my family)	hay (there are) tengo (I have)	tres (3) cinco (5) cuatro (4) seis (6)	personas (people)	
Me gusta (I like) Me llevo bien con (I get on well with)	mi abuelo (my grandfather) mi padre (my father) mi tío (my uncle) mi hermano (my brother) mi primo (my cousin (m))	porque es (because he is)	divertido (fun (m)) generoso (generous (m)) inteligente (intelligent) trabajador (hard working)	interesante (interesting) paciente (patient) simpático (nice (m)) fiable (reliable)
			antipático (mean (m)) pesado (annoying (m)) terco (stubborn (m)) mandón (bossy)	perezoso (lazy) malo (mean) quisquilloso (fussy) egoísta (selfish)
No me gusta (I don't like) No me llevo bien con (I don't get on well with) Me llevo mal con (I get on badly with)	mi abuela (my grandmother) mi madre (my mother) mi tía (my aunt) mi hermana (my sister) mi prima (my cousin (f))	porque es (because she is)	divertida (fun (f)) generosa (generous (f)) inteligente (intelligent) trabajadora (hard working)	interesante (interesting) paciente (patient) simpática (nice (f)) fiable (reliable)
			antipática (mean (f)) pesada (annoying (f)) terca (stubborn (f)) mandona (bossy)	perezosa (lazy) mala (mean) quisquillosa (fussy) egoísta (selfish)

En mi familia (In my family)	hay (there are) tengo (I have)	tres (3) cinco (5) cuatro (4) seis (6)	personas (people)	
Me gusta (I like) Me llevo bien con (I get on well with)	mi abuelo (my grandfather) mi padre (my father) mi tío (my uncle) mi hermano (my brother) mi primo (my cousin (m))	porque es (because he is)	divertido (fun (m)) generoso (generous (m)) inteligente (intelligent) trabajador (hard working)	interesante (interesting) paciente (patient) simpático (nice (m)) fiable (reliable)
			antipático (unpleasant (m)) pesado (annoying (m)) terco (stubborn (m)) mandón (bossy)	perezoso (lazy) malo (mean) quisquilloso (fussy) egoísta (selfish)
No me gusta (I don't like) No me llevo bien con (I don't get on well with) Me llevo mal con (I get on badly with)	mi abuela (my grandmother) mi madre (my mother) mi tía (my aunt) mi hermana (my sister) mi prima (my cousin (f))	porque es (because she is)	divertida (fun (f)) generosa (generous (f)) inteligente (intelligent) trabajadora (hard working)	interesante (interesting) paciente (patient) simpática (nice (f)) fiable (reliable)
			antipática (unpleasant (f)) pesada (annoying (f)) terca (stubborn (f)) mandona (bossy)	perezosa (lazy) mala (mean) quisquillosa (fussy) egoísta (selfish)

5. ¿Qué te gusta hacer en tu tiempo libre?

A menudo (Often) A veces (Sometimes) Casi nunca (Hardly ever) Nunca (Never) Cuando hace buen tiempo (When it is good weather) Cuando hace mal tiempo (When it is bad weather)		juego (I play)	al ajedrez (chess) al baloncesto (basketball) a las cartas (cards)	al fútbol (football) al tenis (tennis) con los amigos (with friends)	a menudo (often) de vez en cuando (from time to time) una vez a la semana (once a week) dos veces a la semana (twice a week) una vez al mes (once a month) dos veces al mes (twice a month) una vez al año (once a year) muy raramente (very rarely) todos los días (every day)
		hago (I do)	ciclismo (cycling) deporte (sport) equitación (horse riding) escalada (climbing) esquí (skiing)	footing (jogging) natación (swimming) los deberes (homework) pesas (weights) senderismo (hiking)	
		voy (I go)	a casa de un amigo (to a friend's house) a la montaña (to the mountains) a la piscina (to the swimming pool) a la playa (to the beach)	al gimnasio (to the gym) al parque (to the park) al polideportivo (to the sports centre) de pesca (fishing)	

6. ¿Cómo son tu pelo y tus ojos?

Yo tengo (I have) Tú tienes (You have) Él tiene (He has) Ella tiene (She has) Mi amigo tiene (My friend (m) has) Mi amiga tiene (My friend (f) has)	el pelo (the hair)	castaño (brown) moreno (dark brown) negro (black) pelirrojo (red) rubio (blond)	y (and)	a media melena (medium length) corto (short) en punta (spiky) largo (long)	liso (straight) rapado (very short) rizado (curly) ondulado (wavy)
	los ojos (the eyes)	azules (blue) marrones (brown) negros (black) verdes (green) de color avellana (hazel)	y (and)	llevo (I wear) llevas (you wear) lleva (s/he wears) no llevo (I don't wear) no llevas (you don't wear) no lleva (s/he doesn't wear)	gafas (glasses) barba (a beard) bigote (a moustache)

7. ¿Cómo eres?

Yo soy (I am)							
Tú eres (You are)							
Él (He) Mi hermano (My brother) Mi padre (My father)	es (is)	alto (tall (m)) bajo (short (m)) bueno (good (m)) delgado (slim (m)) feo (ugly (m))	fuerte (strong) gordo (fat (m)) guapo (good looking (m)) malo (bad (m)) musculoso (muscular (m))	y / e (and)	aburrido (boring (m)) antipático (unpleasant (m)) divertido (fun (m)) generoso (generous (m)) hablador (talkative (m))	impaciente (impatient) paciente (patient) simpático (nice) terco (stubborn (m)) tímido (shy (m))
Ella (She) Mi hermana (My sister) Mi madre (My mother)		alta (tall (f)) baja (short (f)) buena (good (f)) delgada (slim (f)) fea (ugly (f))	fuerte (strong) gorda (fat (f)) guapa (good looking (f)) mala (bad (f)) musculosa (muscular (f))		aburrida (boring (f)) antipática (unpleasant (f)) divertida (fun (f)) generosa (generous (f)) habladora (talkative (f))	impaciente (impatient) paciente (patient) simpática (nice (f)) terca (stubborn (f)) tímida (shy (f))

Yo soy (I am)							
Tú eres (You are)							
Él (He) Mi hermano (My brother) Mi padre (My father)	es (is)	alto (tall (m)) bajo (short (m)) bueno (good (m)) delgado (slim (m)) feo (ugly (m))	fuerte (strong) gordo (fat (m)) guapo (good looking (m)) malo (bad (m)) musculoso (muscular (m))	y / e (and)	aburrido (boring (m)) antipático (mean (m)) divertido (fun (m)) generoso (generous (m)) hablador (talkative (m))	impaciente (impatient) paciente (patient) simpático (nice) terco (stubborn (m)) tímido (shy (m))
Ella (She) Mi hermana (My sister) Mi madre (My mother)		alta (tall (f)) baja (short (f)) buena (good (f)) delgada (slim (f)) fea (ugly (f))	fuerte (strong) gorda (fat (f)) guapa (good looking (f)) mala (bad (f)) musculosa (muscular (f))		aburrida (boring (f)) antipática (mean (f)) divertida (fun (f)) generosa (generous (f)) habladora (talkative (f))	impaciente (impatient) paciente (patient) simpática (nice (f)) terca (stubborn (f)) tímida (shy (f))

8. ¿Qué es la personalidad de tu familia?

Él (He) Mi hermano (My brother) Mi hijo (My son) Mi novio (My boyfriend) Mi padre (My father) Mi tío (My uncle)	es (is)		más (more) menos (less)	alto (tall (m)) amable (kind) cariñoso (affectionate (m)) débil (weak) delgado (slim (m)) deportista (sporty) fuerte (strong) guapo (good looking (m)) hablador (talkative (m))	joven (young) perezoso (lazy (m)) ruidoso (noisy (m)) serio (serious (m)) simpático (nice (m)) trabajador (hard working (m)) tranquilo (relaxed (m)) tonto (stupid (m)) viejo (old (m))	que (than)	él (him) ella (her) mi abuela (my grandmother) mi abuelo (my grandfather) mis abuelos (my grandparents) mi amiga María (my friend María) mi amigo Juan (my friend Juan) mi hijo (my son) mi hija (my daughter) mi tía (my aunt) mi tío (my uncle) tú (you) yo (me)
Ella (She) Mi hermana (My sister) Mi hija (My daughter) Mi madre (My mother) Mi novia (My girlfriend) Mi tía (My aunt)				alta (tall (f)) amable (kind) cariñosa (affectionate (f)) débil (weak) delgada (slim (f)) deportista (sporty) fuerte (strong) guapa (good looking (f)) habladora (talkative (f))	joven (young) perezosa (lazy (f)) ruidosa (noisy (f)) seria (serious (f)) simpática (nice (f)) trabajadora (hard working (f)) tranquila (relaxed (f)) tonta (stupid (f)) vieja (old (f))		
Mis abuelos (My grandparents) Mis padres (My parents)	son (are)		tan (as)	altos (tall (pl)) amables (kind (pl)) débiles (weak (pl)) deportistas (sporty (pl)) habladores (talkative (pl))		como (as)	
Mis hermanas (My sisters) Mis amigas (My friends (f))				altas (tall (pl)) amables (kind (pl)) débiles (weak (pl)) deportistas (sporty (pl)) habladoras (talkative (pl))			

Él (He) Mi hermano (My brother) Mi hijo (My son) Mi novio (My boyfriend) Mi padre (My father) Mi tío (My uncle)	es (is)		más (more) menos (less)	alto (tall (m)) amable (kind) cariñoso (affectionate (m)) débil (weak) delgado (slim (m)) deportista (sporty) fuerte (strong) guapo (good looking (m)) hablador (talkative (m))	joven (young) perezoso (lazy (m)) ruidoso (noisy (m)) serio (serious (m)) simpático (nice (m)) trabajador (hard working (m)) tranquilo (relaxed (m)) tonto (stupid (m)) viejo (old (m))	que (than)	él (him) ella (her) mi abuela (my grandmother) mi abuelo (my grandfather) mis abuelos (my grandparents) mi amiga María (my friend María) mi amigo Juan (my friend Juan) mi hijo (my son) mi hija (my daughter) mi tía (my aunt) mi tío (my uncle) tú (you) yo (me)
Ella (She) Mi hermana (My sister) Mi hija (My daughter) Mi madre (My mother) Mi novia (My girlfriend) Mi tía (My aunt)				alta (tall (f)) amable (kind) cariñosa (affectionate (f)) débil (weak) delgada (slim (f)) deportista (sporty) fuerte (strong) guapa (good looking (f)) habladora (talkative (f))	joven (young) perezosa (lazy (f)) ruidosa (noisy (f)) seria (serious (f)) simpática (nice (f)) trabajadora (hard working (f)) tranquila (relaxed (f)) tonta (stupid (f)) vieja (old (f))	que (than)	
Mis abuelos (My grandparents) Mis padres (My parents)	son (are)		tan (as)	altos (tall (pl)) amables (kind (pl)) débiles (weak (pl)) deportistas (sporty (pl)) habladores (talkative (pl))		como (as)	
Mis hermanas (My sisters) Mis amigas (My friends (f))				altas (tall (pl)) amables (kind (pl)) débiles (weak (pl)) deportistas (sporty (pl)) habladoras (talkative (pl))			

9. ¿Qué llevas en general?

Cuando (When) Si (if)	hace buen tiempo (it is good weather) hace calor (it is hot) hace sol (it is sunny)	llevo (I wear) llevas (you wear) lleva (s/he wears) llevamos (we wear) lleváis (you all wear) llevan (they wear)	un abrigo (a coat) un bañador (a swimsuit) un chándal (a tracksuit) un jersey (a jumper) un sombrero (a hat) un traje (a suit) un uniforme (a uniform) un vestido (a dress)	negro (black) blanco (white) rojo (red) amarillo (yellow) verde (green) gris (grey) marrón (brown) rosa (pink) naranja (orange)
	hace frío (it is cold) hace mal tiempo (it is bad weather) llueve (it rains) nieva (it snows)		una bufanda (a scarf) una camisa (a shirt) una camiseta (a T-shirt) una corbata (a tie) una falda (a skirt) una gorra (a cap)	negra (black) blanca (white) roja (red) amarilla (yellow) verde (green) gris (grey) marrón (brown) rosa (pink) naranja (orange)
En casa (At home) En el colegio (At school) En la discoteca (At the nightclub) En el gimnasio (At the gym) En la playa (On the beach) A veces (Sometimes) Nunca (Never) Por lo general (Usually) Siempre (Always)			calcetines (socks) guantes (gloves) pantalones (trousers) pantalones cortos (shorts) vaqueros (jeans) zapatos (shoes)	negros (black) blancos (white) rojos (red) amarillos (yellow) verdes (green) grises (grey) marrónes (brown) rosa (pink) naranja (orange)
			botas (boots) chanclas (flip flops) pantuflas (slippers) sandalias (sandals) zapatillas de deporte (trainers)	negras (black) blancas (white) rojas (red) amarillas (yellow) verdes (green) grises (grey) marrónes (brown) rosa (pink) naranja (orange)

Cuando (When) Si (if)	hace buen tiempo (it is good weather) hace calor (it is hot) hace sol (it is sunny)	llevo (I wear) llevas (you wear) lleva (s/he wears) llevamos (we wear) lleváis (you all wear) llevan (they wear)	un abrigo (a coat) un bañador (a swimsuit) un chándal (a tracksuit) un jersey (a jumper) un sombrero (a hat) un traje (a suit) un uniforme (a uniform) un vestido (a dress)	negro (black) blanco (white) rojo (red) amarillo (yellow) verde (green) gris (grey) marrón (brown) rosa (pink) naranja (orange)
	hace frío (it is cold) hace mal tiempo (it is bad weather) llueve (it rains) nieva (it snows)		una bufanda (a scarf) una camisa (a shirt) una camiseta (a T-shirt) una corbata (a tie) una falda (a skirt) una gorra (a cap)	negra (black) blanca (white) roja (red) amarilla (yellow) verde (green) gris (grey) marrón (brown) rosa (pink) naranja (orange)
En casa (At home) En el colegio (At school) En la discoteca (At the nightclub) En el gimnasio (At the gym) En la playa (On the beach) A veces (Sometimes) Nunca (Never) Por lo general (Usually) Siempre (Always)			calcetines (socks) guantes (gloves) pantalones (trousers) pantalones cortos (shorts) vaqueros (jeans) zapatos (shoes)	negros (black) blancos (white) rojos (red) amarillos (yellow) verdes (green) grises (grey) marrónes (brown) rosa (pink) naranja (orange)
			botas (boots) chanclas (flip flops) pantuflas (slippers) sandalias (sandals) zapatillas de deporte (trainers)	negras (black) blancas (white) rojas (red) amarillas (yellow) verdes (green) grises (grey) marrónes (brown) rosa (pink) naranja (orange)

10. ¿Qué haces en tu tiempo libre?

Cuando está despejado (When the sky is clear) Cuando está nublado (When it is cloudy) Cuando hace buen tiempo (When it is good weather) Cuando hace calor (When it is hot) Cuando hace frío (When it is cold) Cuando hace mal tiempo (When it is bad weather) Cuando hace sol (When it is sunny) Cuando hace viento (When it is windy) Cuando hay niebla (When it is foggy) Cuando hay tormenta (When it is stormy) Cuando llueve (When it rains) Cuando nieva (When it snows) Entre semana (During the week) Los fines de semana (At weekends)	juego (I play) juegas (you play) mi amigo juega (my friend (m) plays) mi amiga juega (my friend (f) plays)	al ajedrez (chess) al baloncesto (basketball) a las cartas (cards)	al fútbol (football) al tenis (tennis) con los amigos (with friends)
	hago (I do) haces (you do) mi amigo hace (my friend (m) does) mi amiga hace (my friend (f) does)	ciclismo (cycling) deporte (sport) equitación (horse riding) escalada (climbing) esquí (skiing)	footing (jogging) natación (swimming) los deberes (homework) pesas (weights) senderismo (hiking)
	voy (I go) vas (you go) mi amigo va (my friend (m) goes) mi amiga va (my friend (f) goes)	a casa de un amigo (to a friend's house) a la montaña (to the mountains) a la piscina (to the swimming pool) a la playa (to the beach)	al gimnasio (to the gym) al parque (to the park) al polideportivo (to the sports centre) de pesca (fishing)
	me quedo (I stay) te quedas (you stay) mi amigo se queda (my friend (m) stays) mi amiga se queda (my friend (f) stays)	en casa (at home) en mi habitación (in my room)	en tu habitación (in your room) en su habitación (in his/her room)

11. ¿Qué te gusta comer?

Para el desayuno (for breakfast) Para el almuerzo (for lunch) Para la merienda (for after school snacks) Para la cena (for dinner)	como (I eat) comes (you eat) él come (he eats) ella come (she eats)	cereales con leche (cereals with milk) huevos (eggs) una barra de chocolate (a chocolate bar)		una ensalada (a salad) una manzana (an apple)	carne y verduras (meat and vegetables) churros (fritters)
Me encanta (I love) Me gusta (I like) Prefiero (I prefer)		el arroz (rice) el chocolate (chocolate) el pan (bread)	el pescado (fish) el pollo asado (roast chicken) el queso (cheese)	porque es (because it is)	delicioso/a (delicious) sabroso/a (tasty) sano/a (healthy)
No me gusta (I don't like) Odio (I hate) No aguanto (I can't stand)	comer (to eat)	la carne (meat) la ensalada (salad) la fruta (fruit)	la mermelada (jam) la miel (honey) la paella (paella)		asqueroso/a (disgusting) malsano/a (unhealthy)
	beber (to drink)	el café (coffee) el zumo de fruta (fruit juice)	el agua (water) la leche (milk)		
	la comida (food)		dulce (sweet) grasienta (fatty)		picante (spicy) rica en proteínas (rich in protein)
Me encantan (I love) Me gustan (I like) Prefiero (I prefer)	los bocadillos de queso (cheese sandwiches) los calamares (squid rings) los chocolates (chocolates)	los huevos (eggs) los plátanos (bananas) los tomates (tomatoes)		porque son (because they are)	deliciosos/as (delicious) sabrosos/as (tasty) sanos/as (healthy)
No me gustan (I don't like) Odio (I hate)	las fresas (strawberries) las gambas (prawns) las hamburguesas (burgers) las manzanas (apples)	las naranjas (oranges) las patatas fritas (fries) las salchichas (sausages) las verduras (vegetables)			asquerosos/as (disgusting) malsanos/as (unhealthy)

Para el desayuno (for breakfast) Para el almuerzo (for lunch) Para la merienda (for after school snacks) Para la cena (for dinner)	como (I eat) comes (you eat)él come (he eats) ella come (she eats)	cereales con leche (cereals with milk) huevos (eggs) una barra de chocolate (a chocolate bar)		una ensalada (a salad) una manzana (an apple)	carne y verduras (meat and vegetables) churros (fritters)
Me encant**a** (I love) Me gust**a** (I like) **Prefiero** (I prefer)		el arroz (rice) el chocolate (chocolate) el pan (bread)	el pescado (fish) el pollo asado (roast chicken) el queso (cheese)	porque es (because it is)	delicioso/a (delicious) sabroso/a (tasty) sano/a (healthy)
	com**er** (to eat)	la carne (meat) la ensalada (salad) la fruta (fruit)	la mermelada (jam) la miel (honey) la paella (paella)		asqueroso/a (disgusting) malsano/a (unhealthy)
No me gust**a** (I don't like) **Odio** (I hate) No **aguanto** (I can't stand)	beb**er** (to drink)	el café (coffee) el zumo de fruta (fruit juice)	el agua (water) la leche (milk)		
	la comida (food)		dulce (sweet) grasienta (fatty)		picante (spicy) rica en proteínas (rich in protein)
Me encant**an** (I love) Me gust**an** (I like) **Prefiero** (I prefer)	los bocadillos de queso (cheese sandwiches) los calamares (squid rings) los chocolates (chocolates)	los huevos (eggs) los plátanos (bananas) los tomates (tomatoes)		porque son (because they are)	deliciosos/as (delicious) sabrosos/as (tasty) sanos/as (healthy)
No me gust**an** (I don't like) **Odio** (I hate)	las fresas (strawberries) las gambas (prawns) las hamburguesas (burgers) las manzanas (apples)	las naranjas (oranges) las patatas fritas (fries) las salchichas (sausages) las verduras (vegetables)			asqueros**os**/as (disgusting) malsan**os**/as (unhealthy)

12. Háblame de un día normal

Por la mañana (In the morning) Antes del colegio (Before school)	desayun**o** (I have breakfast) **me** duch**o** (I shower) **me** lav**o** los dientes (I clean my teeth) **me** levant**o** (I get up) **me** pein**o** (I do my hair)	**me** pong**o** el uniforme (I put on my uniform) salg**o** de casa (I leave the house) **me** vist**o** (I get dressed) voy al colegio (I go to school)		a la una (at 1:00) a las dos (at 2:00) a las seis (at 6:00) a las siete (at 7:00) a las ocho y cinco (at 8:05) a las ocho y diez (at 8:10) a las ocho y cuarto (at 8:15) a las ocho y veinte (at 8:20) a las ocho y media (at 8:30) a las nueve menos veinticinco (at 8:35) a las nueve menos veinte (at 8:40) a las nueve menos cuarto (at 8:45) a las nueve menos diez (at 8:50) a las nueve menos cinco (at 8:55) a las diez y cuarto (at 10:15) a las once y media (at 11:30)
Entre semana (During the week) Los fines de semana (At weekends) Todos los días (Every day)	**me** acu**e**st**o** (I go to bed) almu**e**rz**o** (I have lunch) cen**o** (I have dinner) descans**o** (I rest) hag**o** mis deberes (I do my homework) j**ue**g**o** a los videojuegos (I play videogames)	le**o** un libro (I read a book) **me** met**o** en Internet (I go on the internet) pase**o** al perro (I walk the dog) prepar**o** mi mochila (I prepare my schoolbag) ve**o** la tele (I watch TV) v**ue**lv**o** a casa (I return home)		
Después del colegio (After school) Por la tarde (In the afternoon/evening) Por la noche (At night)				
Puedo (I can) No puedo (I can't) Quiero (I want) No quiero (I don't want) Tengo que (I have to) No tengo que (I don't have to) Voy a (I'm going to) No voy a (I'm not going to)	ac**o**st**ar**me (to go to bed) ayud**ar** en casa (to help at home) despert**ar**me (to wake up) duch**ar**me (to shower)	hac**er** la cama (to make the bed) hac**er** mis deberes (to do my homework) hac**er** las tareas domésticas (to do the housework) **ir** al colegio (to go to school)	levant**ar**me (to get up) met**er**me en internet (to go on the internet) sal**ir** con mis amigos (to go out with my friends) v**o**lv**er** a casa (to return home)	

13. ¿Qué haces en general los fines de semana?

A (At) A eso de (Around)	las once de la mañana (11:00 in the morning) las cuatro de la tarde (4:00 in the afternoon) las siete de la tarde (7:00 in the evening) las diez de la noche (10:00 at night)	charl**o** con mi madre (I chat with my mother) desayun**o** (I have breakfast) descans**o** (I rest) escuch**o** música (I listen to music) hago mis deberes (I do my homework) jueg**o** al la Play (I play Playstation) le**o** el periódico (I read the newspaper) le**o** revistas (I read magazines) le**o** tebeos (I read comics) **me** lav**o** los dientes (I clean my teeth) **me** met**o** en internet (I go on the internet) **me** relaj**o** (I relax) prepar**o** la comida (I prepare food) sub**o** fotos a Instagram (I upload photos to Instagram) ve**o** la tele (I watch TV) ve**o** películas (I watch films) ve**o** series en Netflix (I watch series on Netflix)	en la cocina (in the kitchen) en el comedor (in the dining room) en el cuarto de baño (in the bathroom) en el dormitorio **de** mi hermana (in my sister's bedroom) en el dormitorio **de** mi hermano (in my brother's bedroom) en el dormitorio **de** mis padres (in my parents' bedroom) en mi dormitorio (in my bedroom) en el garaje (in the garage) en el jardín (in the garden) en la sala **de** juegos (in the games room) en el salón (in the living room) en la terraza (on the terrace)
Cuando tengo tiempo (When I have time) Dos veces a la semana (Twice a week) Entre semana (During the week) Los fines de semana (At weekends) Nunca (Never) Por lo general (Usually) Siempre (Always) Una vez a la semana (Once a week) Todos los días (Every day			

Year 7 Geography knowledge organiser

Contents Page

Key Terminology

SEEP

Social = Issues to do with peoples lives

Economic = Jobs, business and money

Environmental = The Environment

Political = Countries and Governments

Stakeholder = Somebody who has an interest in an issue

Timescale = Are you talking short term (days and weeks) Or long term (months and years) ?

Spatial = What scale are you looking at ? Is it *local* scale, *regional* scale , *national* scale or *global* scale ?

Sustainability

"*Meeting the needs of the present without compromising the ability of future generations to meet their own needs"*

Enough , For all, Forever

Geography Connectives

At the end of every sentence ask yourself – 'So ?' , 'And ?' and **'Why ?'**

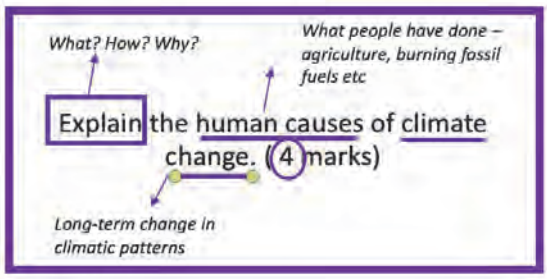
This means that …
As a result of this …
This leads to …
The result of this …
This results in …
In the future this may lead to …
As a consequence of this …
This occurs because …
The reasons for this is …
This causes …
An example of this is …
The reason for this is …

… leading to …
… meaning that …
The impact of this is …
This produces …
This may bring about …
…and because of this …
This is due to …
This suggests that …
…and this means that …
One reasons for this is

BUG the exam question

Before you answer any question remember to **BUG** the question

B – box the command work
U – Underline any other key words
G – glance at the mark



Developing your points using the PEEL structure

Point
What is the point you are making ?

Evidence
Which examples / facts / data link to your point ?

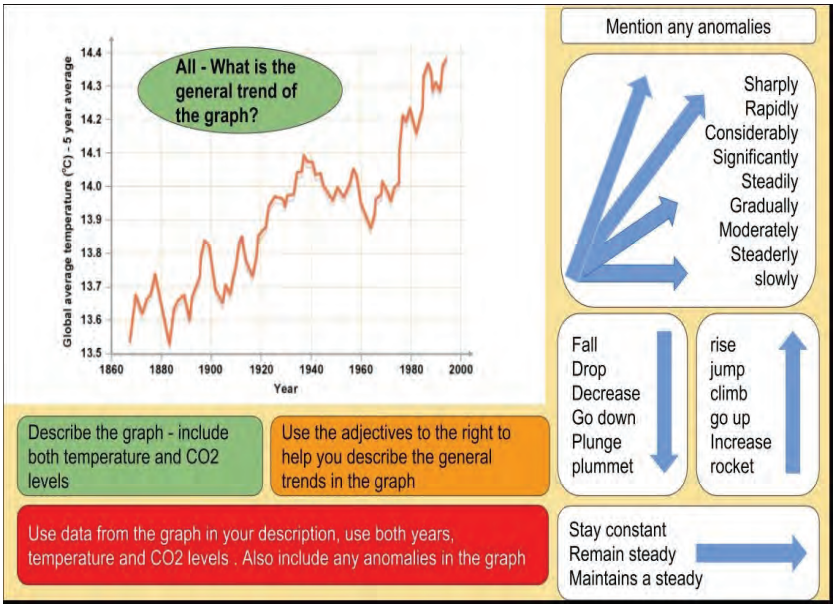
Explain
Develop your point using connectives such as '*This means that*' or '*therefore*' or '*this shows that*'

Link
How does your point link back to the question ?

Reading a graph in Geography

PEA

P	**Pattern**	E.g. "Its increasing"
E	**Evidence**	E.g. "Between 1990 and 2005 it increased …"
A	**Anomalies**	Is there anything different ? A sudden drop ? Point it out.



Reading maps in Geography – 'CLOCK'

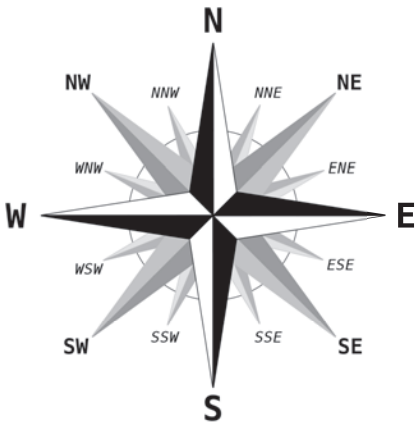
C = Country

L = Latitude / longitude

O = Oceans and Seas

C = Compass points

K = Kilometres (distance and scale



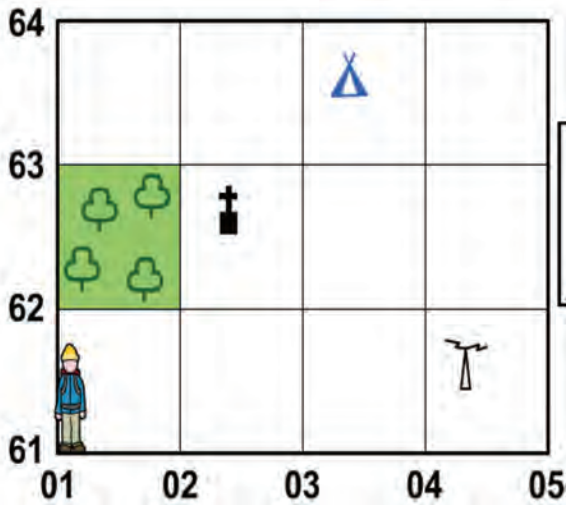
Using OS maps in geography

Follow the 3 Grid reference rules

1. Always go across the landing and then up the stairs .

2. If you are 'in' a square, then go down and left.

3. If you are given a grid reference and need to find it ,go up and right.



Decision making exercises checklist.

Did you …

1. Plan your answer ?
2. Rank your option choices ?
3. Develop your points using TAT ?
4. Link to SEE ? (*Social , Economic, Environmental*)
5. Mention stakeholders ?
6. Use the resource booklet ?
7. Link to scale – *local, regional and national* ?
8. Link to time – *short term vs long term* ?
9. Think about the bigger picture – national or global issues ?

Welcome to the UK

'Welcome to the UK' keywords

Keyword	Definition
Human geography	How and where people live, develop and earn a living
Physical geography	What our planet is like, the work of the rivers, the sea and ice
Environmental geography	The study of habitats such as mountains, forests, oceans and how they develop and change.
Sustainable development	Sustainable development is the kind of development that meets the needs of the present without compromising the ability of future generations to meet their own needs.
Ecosystem	A community of plants and animals and the environment in which they live. Ecosystems include both living (biotic) and non-living (abiotic) parts.
Producer	Plants that create chemical energy from the suns light. Producers are at the bottom of the food chain.
Primary consumers	Animals that eat vegetation (producers) in the food chain. These are herbivores. These animals may be eaten by secondary consumers.
Secondary consumers	Animals that are higher up the food chain and that eat primary consumers
Tertiary consumer	Tertiary consumers eat primary and secondary consumers as their main source of food.
Geology	The structure of the earth and its rocks
Primary industry	Where raw materials (natural resources) are extracted from the land and the sea. E.g. farmers, fishermen, miners etc
Secondary industry	Making things (manufacturing) from the raw materials e.g. factory workers, builders, steelworkers etc
Tertiary industry	Providing a service to others. E.g. teachers, police, doctors, shop assistants
Quaternary industry	Research and development e.g. new technology, f
Social	Factors concerned with peoples lives
Economic	Jobs and money
Environmental	The environment
Political	Policies and government
Stakeholder	A group of people who have an interest or concern in something
Conflict	Where people or organisations disagree with each other

‘Welcome to the UK’ keywords

Keyword	Definition
Weather	Weather is the condition of the atmosphere, such as temperature and presence of rain and cloud. Weather changes daily.
Climate	Climate is the average weather conditions over a long period of time .
Climate graph	A graph that shows both temperature and rainfall in an area
Population distribution	Population distribution is the pattern of where people live and how populations are spread out.
Population density	Population density is the number of people living in a given area, usually a square kilometre
Densely populated	Places that are crowded are called **densely populated**
Sparsely populated	Places that only have a few people living there are called sparsely populated
Choropleth map	A type of map which uses different colours to show variations between places

Keyword	
Meander	A bend in a river
Erosion	Erosion is the wearing away of land
Deposition	The laying down of material in a landscape
Hydraulic action	the force of the river compresses air trapped in cracks in the river banks. The increased pressure weakens and gradually wears away the banks
Attrition	Rocks carried by the river collide with each other and break into smaller pieces.
Abrasion	Rocks carried by the river rub and scrape along the river bed and banks, wearing them down
Solution	where water is slightly acidic, it dissolves certain types of rock on the river bed and banks
Trade	The buying and selling of natural resources, manufactured goods and services.
Import	The raw materials, goods and services that a country buys
Export	The raw materials, goods and services that a country sells
Balance of trade	The difference between the money a country earns from its exports, and the money it pays for its imports

What is Geography ?

Geography helps you to make sense of:
The physical world – what our planet is like, the work of the rivers, the sea and ice
The human world – how and where people live, develop and earn a living
The environmental world – habitats such as mountains, forests, oceans and how they develop and change

A good geographer :

1. Investigates and understands all these aspects of the world in which we live
2. Develops a locational knowledge of where places are in the world
3. Asks questions and uses a wide range of geographical data to investigate places.

Where is the UK ?

Population in the UK

Population in the UK

Population distribution is the pattern of where people live and how populations are spread out.

Population density is the number of people living in a given area, usually a square kilometre

The populations of most countries, and even the world, are not evenly spread out. There are some areas with many people ,and others with very few people.

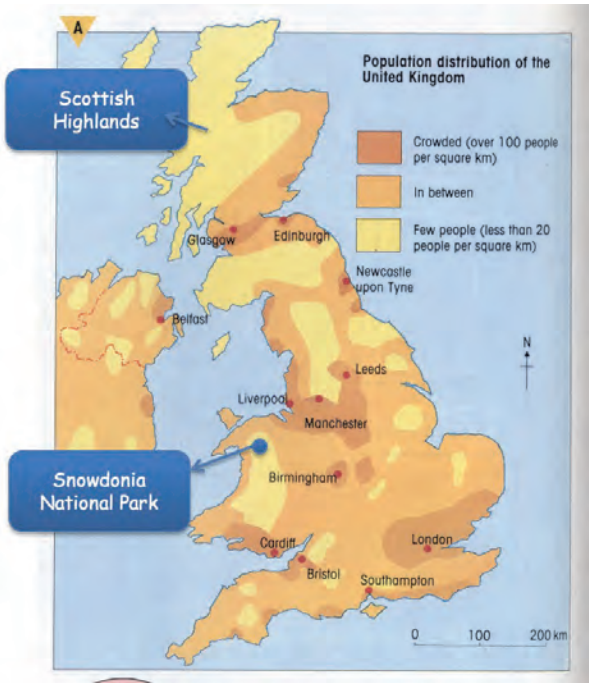
Places that are crowded are called **densely populated**

Reasons to explain why some areas are densely populated include rich soils for farming, good communication options such as ports and temperate weather conditions (not too hot or too cold)

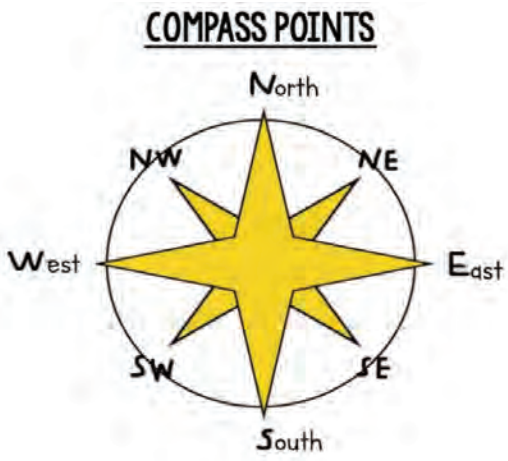
Places that only have a few people living there are called **sparsely populated**

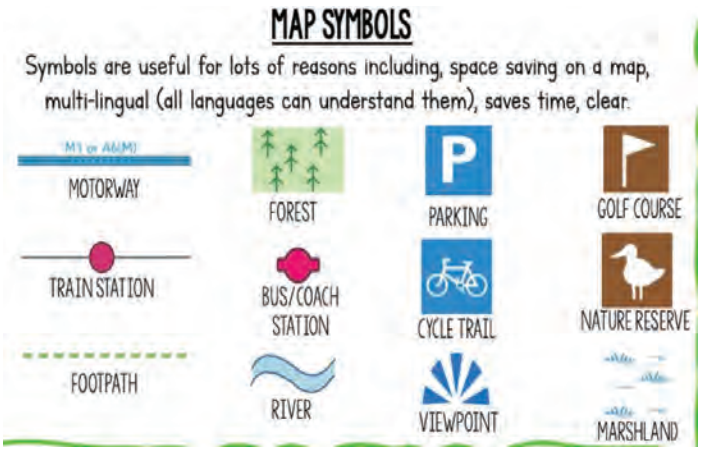
Reasons to explain why some areas are sparsely populated include areas where climate and landscape are extreme – too hot, too cold, too steep or too dry.

The type of map which uses different colours to show variations between places is called a **choropleth map**. A choropleth map is shown in Map A

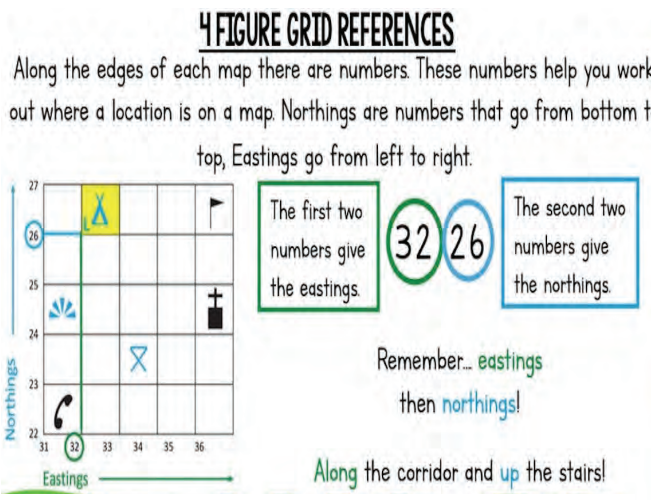


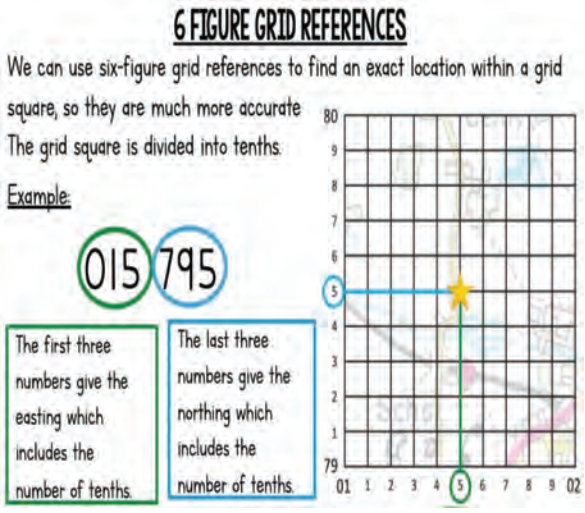
Geographical skills





Geographical skills



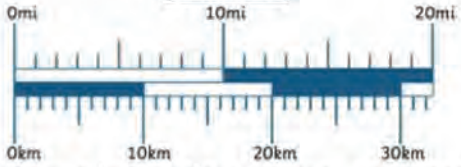


Geographical skills

SCALE AND DISTANCE

OS maps have a scale. On some smaller maps, 1cm on the map equals 250m in real life. On some larger maps, 1cm on the map equals 500m. Different maps might have different scales, so check on your map to find its scale.

LINE SCALE



Using a line scale on a map is as easy as using a ruler. The important thing to remember is that a line scale shows measurements in km and the measurements on a ruler are in cm.

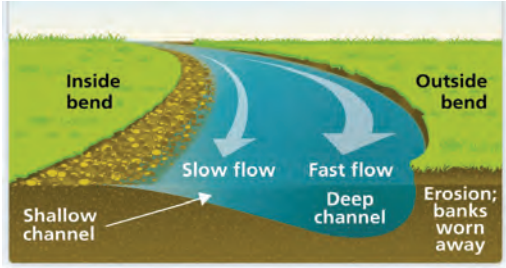
WORD SCALE

One centimeter on the map represents 3 kilometers on the ground. (1cm = 3 km)

Using the scale above, if we measure the distance on a map between two places with our ruler. The measurement is 4cm. We then have to multiply that measurement by 3 to calculate that the real distance between the two places is 12km.

How does a Meander form ?

Types of river erosion	
Hydraulic action	the force of the river compresses air trapped in cracks in the river banks. The increased pressure weakens and gradually wears away the banks
Abrasion	rocks carried by the river rub and scrape along the river bed and banks, wearing them down
Solution	where water is slightly acidic, it dissolves certain types of rock on the river bed and banks
Attrition	rocks carried by the river collide with each other and break into smaller pieces.



A **meander** is a bend in a river

Erosion and Transportation

Erosion and transportation take place on the outside bend, where the river flows fast. The deeper channel creates less friction, which enables the water to flow quickly.

Over time, erosion causes the riverbanks to be undercut and worn away, forming river cliffs.

Deposition

Deposition takes place on the inside bend, where the river flows slowly. The shallow channel creates greater friction, which slows the river down.

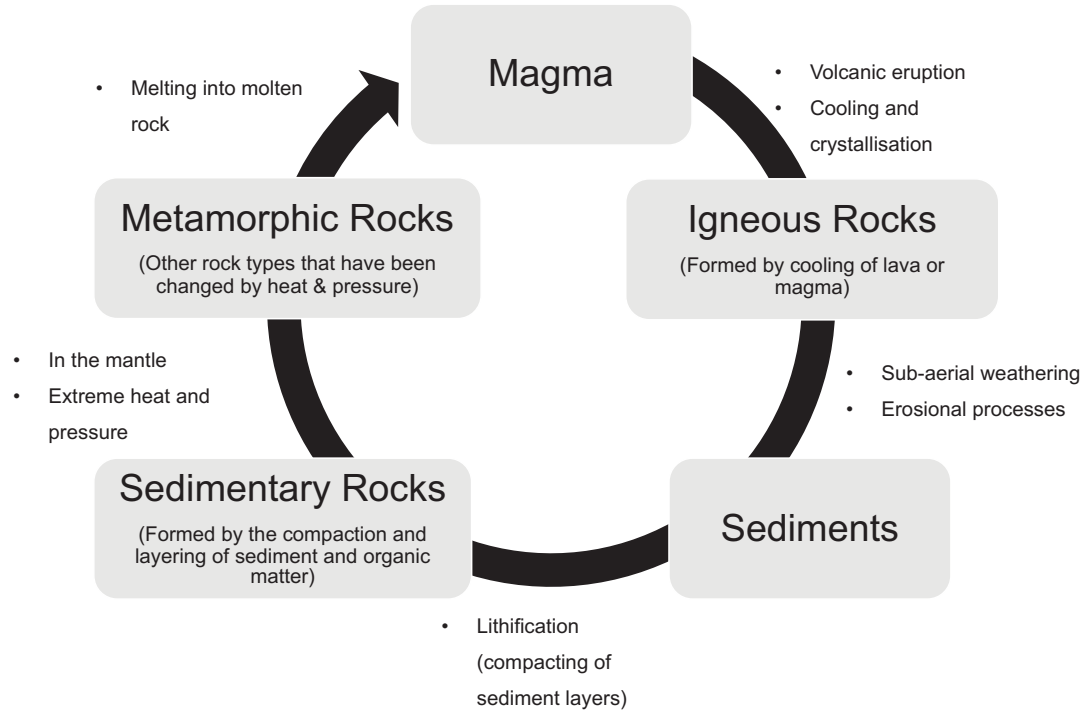
Sand and shingle are deposited on the inside of the river bend, forming slip-off slopes.

The 2019 Derbyshire floods

Key Information
The UK experienced an extreme weather event in November 2019 when exceptionally heavy rainfall caused flooding in parts of the UK.
Heavy downpours across large parts of northern England led to surface water and river flooding in parts of Yorkshire, Nottinghamshire, Greater Manchester, Derbyshire and Lincolnshire.
According to the Met Office, on Thursday 7th November 2019 over half of the average rainfall for the whole of November fell in parts of the Midlands and Yorkshire.
In Derbyshire, the River Derwent at Chatsworth reached its highest recorded level and council workers put up sandbags around Matlock and Matlock bath where the river was *'dangerously high'*.
A number of properties in Derby city centre were flooded, however, a full evacuation was not ordered as the River Derwent didn't burst its banks to the extent emergency services believed it would.
The A52 – the main road route into Derby – was closed westbound between the city and the M1 along with a handful of smaller roads in the county.

Key Information
On Friday, the floods claimed the life of a woman who was swept into the River Derwent at Rowsley in Derbyshire. Her body was found about two miles away in Darley Dale. She was named as Derbyshire's former high Sherriff Annie Hall
Trains were cancelled in Yorkshire and parts of the East Midlands as rail routes were flooded.
More than 100 flood warnings were put in place across England. The Environment Agency (EA) urged people to take them seriously.
The Environment Agency responded to the flood risk by working closely with police, fire and rescue, local authorities and partners to reduce the risk of flooding and keep communities safe. On the ground, Environment Agency field teams worked through the night to operate flood storage areas and pump away flood water.
Funding for local councils where households and businesses have been affected – equivalent to £500 per eligible household
Up to £2,500 for small and medium-sized businesses which have suffered severe impacts not covered by insurance

The Rock Cycle



The Geology of Derbyshire

The Geology of Derbyshire
The geology of the Peak District is what makes it such a diverse and beautiful land.
Split in half between the limestone outcrops of the white peak and the spectacular gritstone edges of the dark peak, the geology underneath the soil is a very fascinating tale to tell.
Limestone has cracks and is soluble in water, therefore rivers have been able to carve deep, narrow valleys. The rivers then often find routes underground, creating cave systems e.g. The Blue John mine in
Gritstone is in insoluble.
The different types of rock beneath the soil strongly influence the landscape; they determine the type of vegetation that will grow, and ultimately the type of animal that will inhabit the area.
The gritstone and shale of the Dark Peak supports heather moorland and bog environments, with rough sheep pasture and grouse shooting being the main land uses.
The limestone of the White Peak are more intensively farmed, with sheep and dairy usage.

The White Peak

The Dark Peak

National Parks

National Parks
National Parks are large areas of scenic countryside protected for use by the public, now and in the future.
The First National Parks were set up in the 1950's when the Government was worried some of Britain's finest scenery would be damaged or permanently destroyed.
The first National Park was the Peak District National Park which was set up in 1951.
Although people live and work in the National Parks there is little industry.
Development in National Parks is controlled. New buildings or roads must have special planning permission and keep with the local traditional style.
Each National Park is managed by a National Park Authority (NPA), which works to balance the needs of the landscape, the residents and the visitors
The areas include mountains, moorland, heathland, woodland and coasts.

National Parks

Conflict in National Parks

Many groups of people use National Parks for a variety of activities

Activities include walking, cycling, sailing, birdwatching, horse riding, gliding, abseiling, off road car racing, fishing and climbing

Tourist numbers have increased in National parks because:

Ownership of cars have increased

The development of motorways have reduced driving times which have allowed more people to travel easily to distant parts of the country.

Located within easy reach of the major cities enabling the maximum number of people to escape to a quieter more pleasant rural environment.

Many of these groups come into conflict with each other when they use National Parks.

The Peak District authority has to manage these conflicts to try to make as many users to the National Park as happy as possible.

Management strategies include rangers, litter bins, education and advice

Why did Toyota locate in Derbyshire ?

Manufacturing in the UK

Manufacturing in the UK has declined, with growth in tertiary and quaternary sectors. There are a number of reasons for this.

1. new technologies such as robots replacing people in modern industry

2. competition from other countries such as China, which can produce goods cheaper as labour is less expensive

Many industries that were once important in the UK, such as iron and steel, shipbuilding and cloth- and textile-making, have all but disappeared.

This has led to high levels of unemployment in areas of the UK where such industries were once located.

The government has attempted to attract new foreign industries

Toyota has 2 plants in the UK. The engine manufacturing plant is located in North Wales and the vehicle manufacturing plant is located at Burnaston in Derbyshire

In 1992 the first car drove off the production line at Burnaston.

Why did Toyota choose Burnaston ?

The UK has a strong tradition of Manufacturing. This is especially true of Derbyshire which has large multinational companies such as Rolls Royce and Bombadier.

A highly skilled and flexible workforce

Strong positive attitude and support from the UK government and Derbyshire county council

Derbyshire is a central UK county

Burnaston offered a 600 acre site

The site is relatively flat and was a disused airfield

Excellent transport links to distribute their cars to their 230 supply partners. The Burnaston site crosses the A38 and the A50 roads.

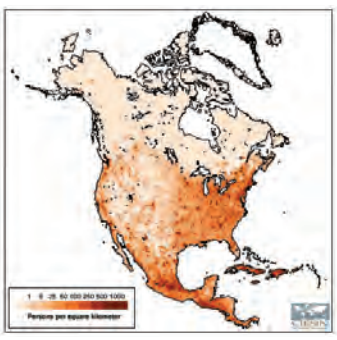
How does the UK trade with other countries ?

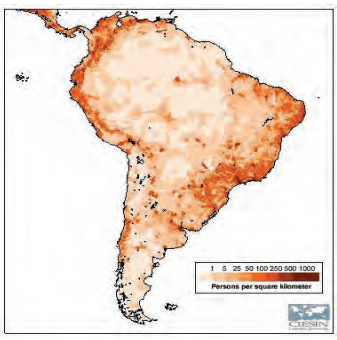
No single country has all of the natural resources or manufactured goods and services that it needs.
Countries therefore need to work together to exchange the things they have and the things they need
Trade is the buying and selling of natural resources, manufactured goods and services.
The raw materials, goods and services that a country buys are called **imports**
Those that a country sells are called **exports**.
The difference between the money a country earns from its exports, and the money it pays for its imports is called the **balance of trade**
A country is making a profit if it earns more from exports than it pays for imports and a loss if it does not.
Trade has always been important for the UK. It is the ninth largest export economy in the world
The major products we import include manufactured goods, clothing, oil, food and drink and machinery
The major goods that we export include manufactured goods, oil and machinery

The Americas

Where does everyone live and why?

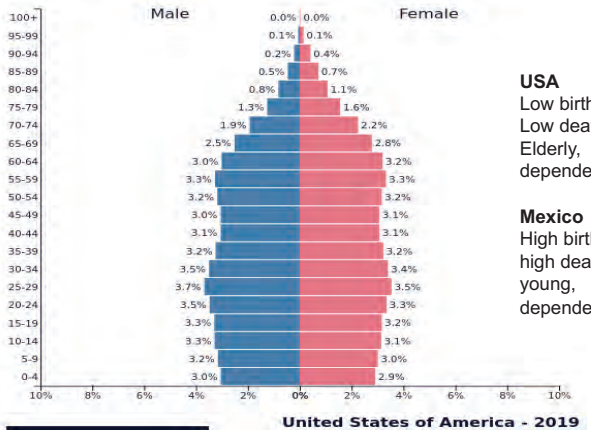
Key Terminology
Population distribution – the patterns of where people live and how populations are spread out.
Population density – the number of people living in a given area. Usually 1km.
Densely populated – a large number of people in a given area.
Sparsely populated – a small amount of people in a given area.





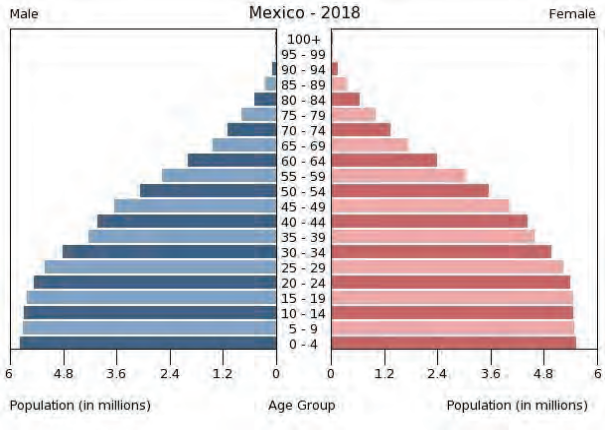
Reasons why populations are unevenly distributed.
Climate
Relief (Height and shape of the land)
Water supply
Natural resources
Natural Hazards

How can we describe the structure of a population?



USA
Low birth rate,
Low death rate.
Elderly,
dependent population.

Mexico
High birth rate
high death rate,
young,
dependent population.



Key Terminology	
Death Rate	the average amount of people who die per 1000 of the population
Birth Rate	the average amount of babies born per 1000 of the population
Life Expectancy	the average years a person can expect to live.
Dependent Population	members of a population who are not of working age. These include those under 18 and over 65.

Why are people migrating from Mexico to the USA?

Key Terminology	
Migration	the movement of people from one place to another.
Voluntary Migration	making the choice to move from one place to another ie for work
Forced Migration	having to move as a result of danger to life ie war
Push Factor	Reason to leave a place (negative)
Pull Factor	Reason to move to a place (positive)

Causes – Why do people migrate from USA to Mexico?

Push factors -
- Young population
- Lack of jobs
- High crime rate

Pull factors -
- Education
- Availability of jobs
- More opportunities
- Safer environment

Effects – what are the impacts of moving on the USA and Mexico?

Positives for Mexico:
Reduces pressure on resources

Money often gets sent back home

More educated workforce

Negative for Mexico:

Woking population leaves

Families separated

Positives for USA:
Introduces a new culture

Migrants work for lower wages

Fills low skilled jobs

More people paying tax

Negatives for USA:
Lack of job for US citizens

Pressure on resources ie housing

Cultural tension

Many undocumented people

What is America's climate like?

Key Terminology	
Biome	large scale ecosystem
Ecosystem	a community of living and non-living components that work together.

The Americas have many different climates.

In the North it is largely Taiga and Tundra

The USA is mainly Temperate and Desert.

In South America climates are generally warmer.

The main biomes of South America are Tropical Rainforest, Savanna and Desert.

What is Alaska' Tundra?

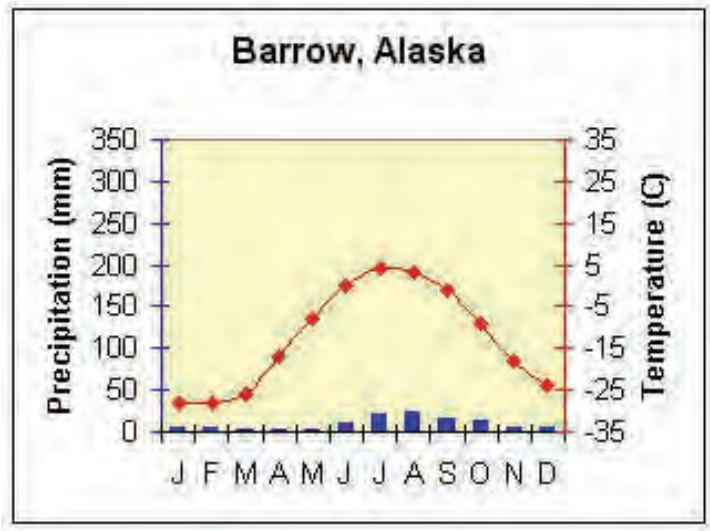
Barrow is the most Northern city in the USA.

It received very little rainfall.

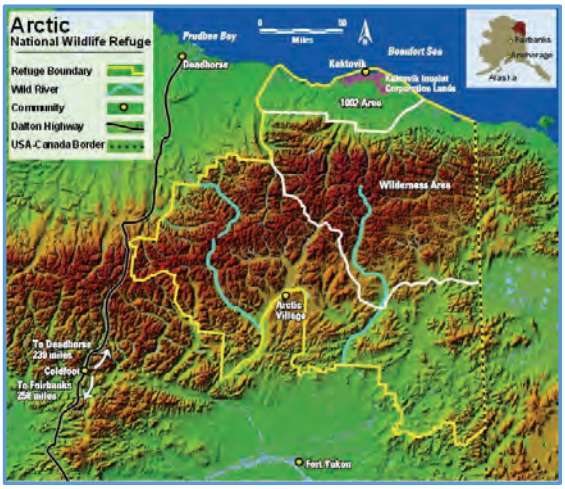
The months of July, August and September receive the most rainfall.

These same months are also when the temperatures are the highest.

Temperatures rainge between –27' and 5' (C)



Why is Oil important to Alaska?



Key Terminology	
Stake Holder	an individual or group with an invested interest in an issue
Economic	money and jobs
Social	people and the environment
Environmental	the natural world
Political	the government

Positive effects of oil drilling:

Brings jobs to the area

Brings money to the area

Stops dependency on other countries for oil

Funds resources and infrastructure in remote places

Negative effects of oil drilling:

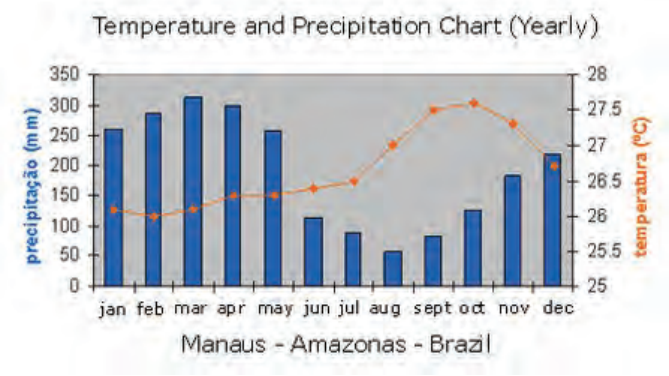
Destroys ocean and land ecosystems

Causes an increase in green house gases

Threatens native communities

Threat of oil spills

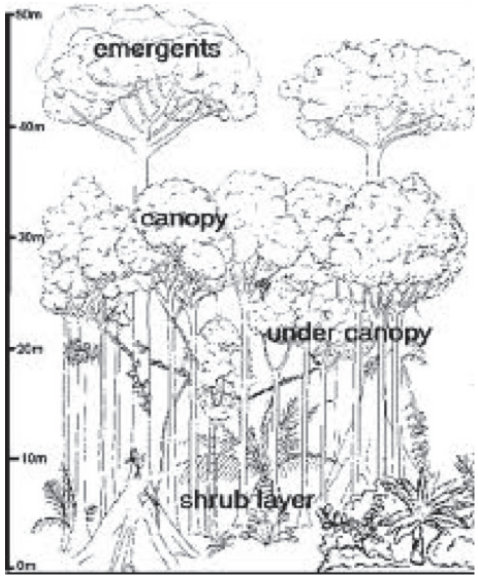
What is the dominant biome in Brazil?



Brazi has a hot, humid climate

It receives large amounts of rainfall all year round.

Temperatures range between 26' and 29' all year round..



4 layers of the rainforest

How have plants adapted to the Tropical Rainforest?

Drip Tips

Allows excess water to run off
Stops the rotting of the leaves

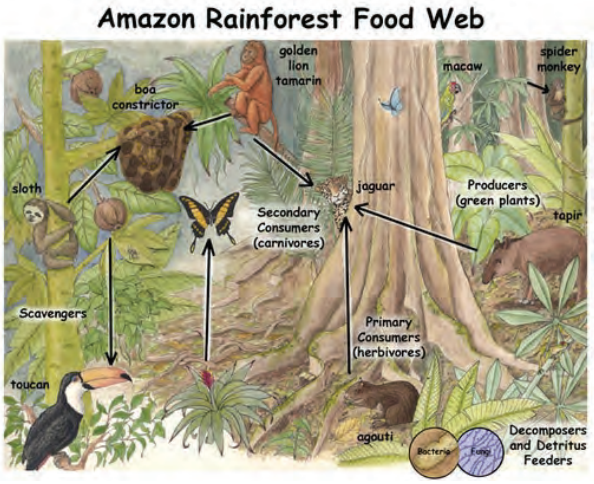
Buttress Roots

Shallow roots as nutrients are at the surface
Provides stability to the tree

Lianas

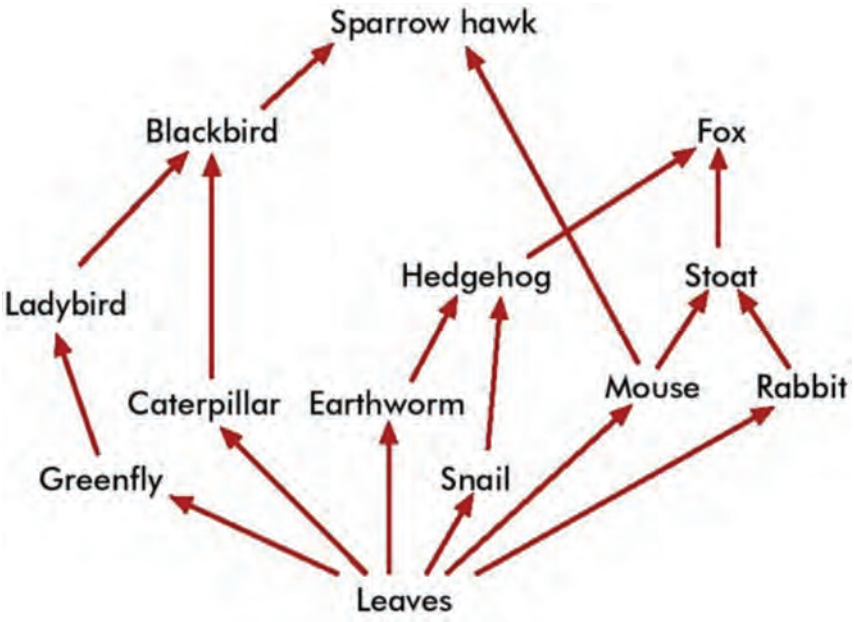
Uses other trees to climb up to reach the sun and gain nutrients

What are Food Chains and Webs?



Key Terminology	
The Producers	the trees, shrubs, bromeliads and other plants
The Primary Consumers	the macaws, monkeys, agouti, tapir, butterflies, sloths, toucans.
The Secondary Consumers	the jaguar and boa constrictor.
The Scavengers	the butterflies and other insects.
The Decomposers or Detrivores	mushrooms, insects and microorganisms.

The UK woodland ecosystem



Energy flows

The main source of energy for all living things is sunlight. This is absorbed by producers such as plants. They convert the light energy from the sun into chemical energy by the process of **photosynthesis**.

This energy is passed on to animals when they eat the plants.

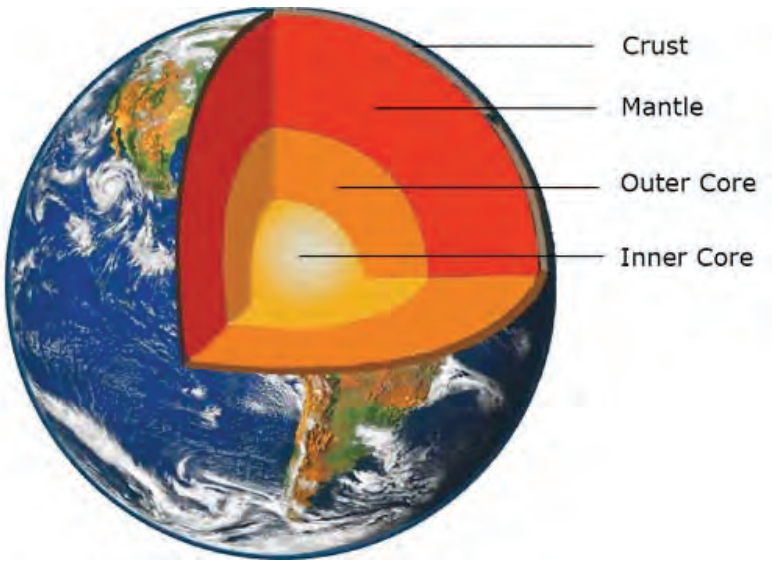
These animals are called herbivores or **primary consumers.**

In turn, these are eaten by other animals called carnivores or **secondary consumers**.

An omnivore eats both vegetation and animals

This is called a food chain. Energy flows up the food chain .

What are the layers of the Earth?



Crust:
Thinnest layer
Solid
Floats on the mantle

Mantle:
Biggest layer
Hot magma
Molten rock
Viscous

Outer Core:
Hotter than the mantle
Viscous liquid
Molten rock

Inner Core:
Solid
Extremely hot
Under pressure
Made of iron and nickel

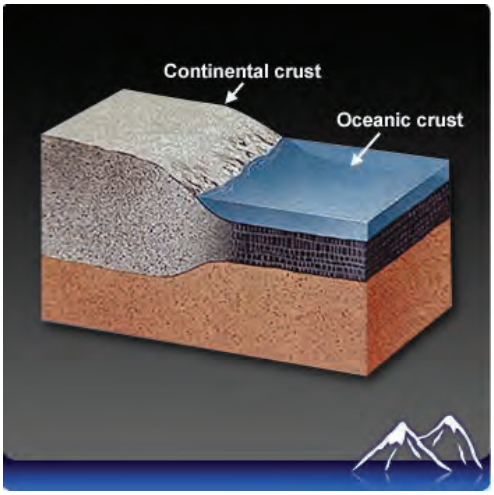
What's the difference between continental and oceanic crust?

Continental Crust:

Older

Bigger

Lighter



Oceanic Crust:

Younger

Smaller

Denser

How are Plate Boundaries different?

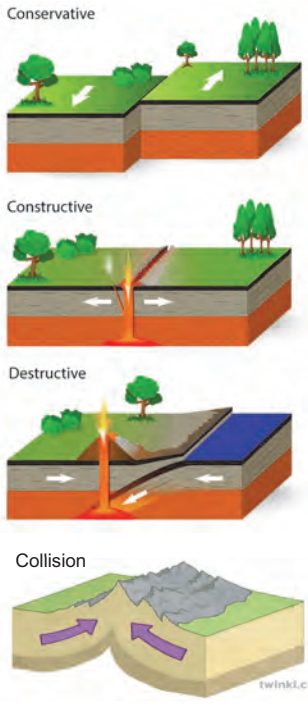
Key Terminology	
Subducts	Goes under

Two plates slide past each other causing earthquakes

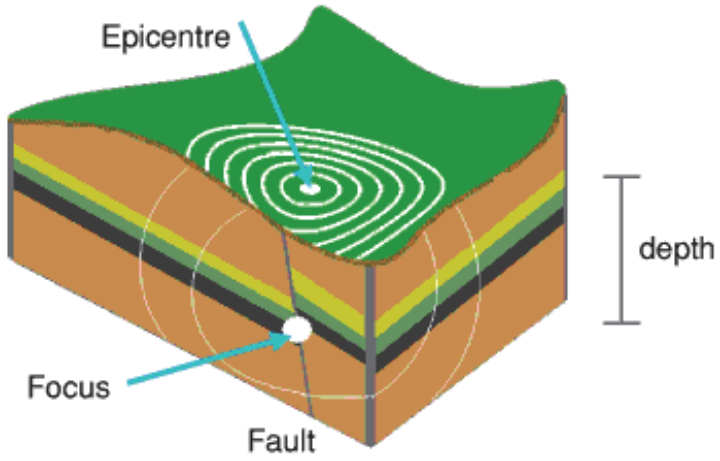
Two plates move apart. Magma rises Gentle earthquakes Magma cools creating new land

One continental and one oceanic plate Move towards one another oceanic subducts causing volcanoes and earthquakes

Two of the same plates Move towards one another land buckles and folds causing earthquakes and fold mountains



What does an Earthquake look like?



Key Terminology	
Fault	the point where to plates meet
Focus	the point where the pressure is released
Epicentre	the point on the earth's surface directly above the focus
Seismic Waves	waves of energy that travel through the earth's surface

What caused the Haiti Earthquake?

Key Terminology	
Richter Scale	a measure of the energy released in an earthquake

Haiti lies on a conservative boundary.

The epicentre was close to the capital Port Au Prince

The earthquake was a 7 on the Richter scale

Haiti is an LIC

Buildings are poorly constructed

There is little technology to predict an earthquake

What were the effects of the Haiti earthquake?

Social Effects

3 million people affected.

Over 220,000 deaths.

300,000 injured.

1.3 million made homeless.

Several hospitals collapsed.

Economic Effects

30,000 commercial buildings collapsed.

Businesses destroyed.

Damage to the main clothing industry.

Airport and port damaged.

Environmental Effects

Haiti was unable to dispose of the bodies and this led to the spread of disease.

Building, dust and debris remained for months after.

What were the responses of the Haiti earthquake?

Key Terminology	
Short term responses	reactions immediately after the earthquake. Usually concerning survival.
Long term responses	reaction in the months following the earthquake. Usually concerning repair and rebuilding.

Short Term Responses

Dominican Republic provided **emergency water** and **medical supplies** as well as heavy machinery to help with search and rescue.

Most people were left to dig through the rubble by hand.

Emergency **rescue teams** arrived from a number of countries.

Medical teams began treating the injured - **temporary field hospitals** were set up by organisations like the Red Cross.

People from around the world **pledged money** over their mobile phones.

United Nations troops and police were sent to help distribute **aid** and keep order.

Long Term Responses

Money was pledged by organisations and governments to assist in rebuilding, but only slow progress had been made after one year.

After one year, there were still 1,300 camps.

'Cash for work' programs are paying Haitians to clear rubble.

Small farmers are being supported - so crops can be grown.

Schools are being rebuilt.

Russia

Where is Russia?

Key facts on the Russian Federation:

Largest country on Earth and covers 1/10 of all land on Earth.

It is twice as big as Canada and 70 times the size of the UK

It spans 9 time zones.

It is mostly in Asia, but the western part is in Europe.

Accounts for 20% of the World's forest area.

142 million people live in Russia.

It is rich in natural resources, Russia produces 20% of the World's natural gas.

It is surrounded by the Pacific and Arctic Oceans.

85 of the worlds 100 coldest cities are in Russia

It spans two continents – Asia and Europe

Russia's Physical Geography

Physical Features

Caucasus Mountains

Mount Elbrus is the highest peak in Russia at 15,462 metres

West Siberian Plain

Largest plain in the World. Stretches from North to South Russia.

It is frozen in the winter and a huge marshland in the summer.

Coastline

Russia has over 37,000 km of coastline. Most of the coastline is frozen for some of the year meaning Russia has few usable ports.

Kamchatka Peninsula

Over 70 volcanoes and an area that has lots of Earthquakes.

Russia Climate

Continental Climate: Long, cold winters with brief, often warm, summers.
Precipitation is low throughout the year.

Average January temperatures:

In the west around Moscow temperatures are between –10 to 0.

In the East around Yakutsk temperatures average –40.

Average July temperatures:

In the south of the country temperatures average 30.

In the north temperatures average 10.

Biomes in Russia

Taiga Biome
Coniferous forests of pines, spruces and larches.
Found in the Northern hemisphere.
Largest biome in Russia.
Russian Taiga is the largest forested region on Earth.
Contains more than 55% of the World's conifers.

Tundra Biome
Coldest of biomes.
Located in North-East of Russia.
Winters are long and summers are short.
Soil forms very slowly.
Plants include fungus, grasses and shrubs. They stay low to protect from the cold and the wind.

Glaciation

Glaciers are masses of ice that fill valleys and hollows and slowly move downhill

Glacial erosion

Glaciers erode the landscape as the move

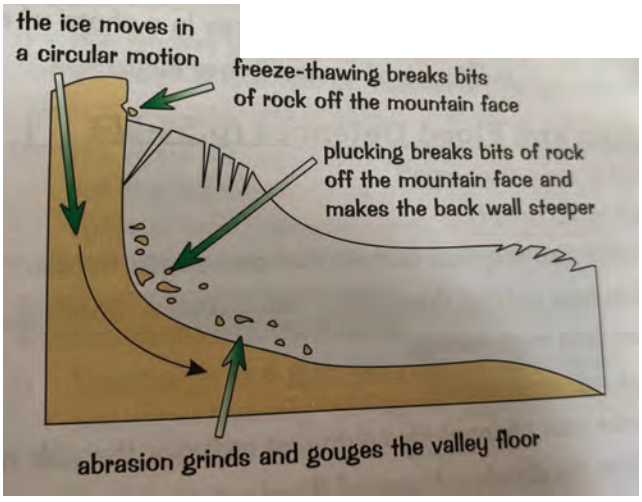
The weight of ice in a glacier makes it move downhill (advance) , eroding the landscape as it goes

The moving ice erodes the landscape in two ways

1. **Plucking** occurs when meltwater at the base , back or sides off a glacier freezes onto the rock. AS the glacier moves forward it pulls pieces of rock out
2. **Abrasion** is where bits of rock stuck in the ice grind against the rock below the glacier wearing it away (as if the glaciers got sandpaper on the bottom of it)

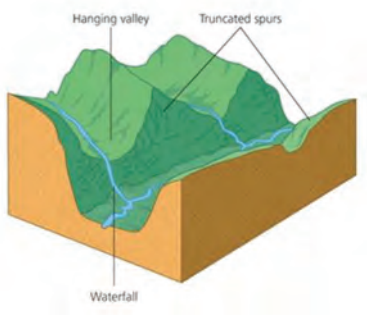
At the top of the glacier the ice doesn't move in a straight line-it moves in a circular motion called rotational slip. This can erode hollows in the landscape

Freeze-thaw weathering is where water gets into cracks in rocks. The water freezes and expands, putting pressure on the rock. The ice then thaws, releasing the pressure. If this process is repeated it can make bits of the rock fall off.



Glaciation erosion landforms

U shaped valley
One of the most dramatic changes to a landscape caused by glacial erosion is the formation of U-shaped valleys
A series of small corrie glaciers move down-slope from the hollow on the mountainside where they formed. They slowly join together to form one large glacier
This large glacier can erode more powerfully. It therefore creates a deeper valley with sheer, straight sides and a flat bottom. This valley looks like the letter 'U', hence the name – U-shaped valley.
Hanging valleys and truncated spurs
When a U-shaped valley is created, the glacier cuts through the interlocking spurs that previously formed the river valley
This leaves behind steep cliffs along the sides of the U-shaped valley – these are called truncated spurs.
Once the ice melts and the river flows once more, the tributary streams and their small valleys are left hanging high above the new U-shaped valley floor. This landform is called a hanging valley



Glaciation transportation

Glacial transportation
Glaciers can move material over very large distances. This unsorted material is called **till**
The material is frozen in the glacier, carried on its surface, or pushed in front of it.
When the ice carrying the material melts, material is deposited on the valley floor , forming landforms such as moraines
Most glacial deposits aren't sorted by size or weight like river deposits – rocks of all shapes and sizes are mixed up together

Glaciation deposition

Glacial deposition

Moraines are landforms made out of till dropped by the glacier as it moves

There are four different types of moraines – as shown on diagram 1 below

Drumlins are elongated hills of glacial deposits – the largest ones can be over 1000m long, 500m wide and 50m high .

Drumlins are round, blunt and steep at the upstream end, and pointed and gently sloping at the downstream end . They are shown in diagram 2 below

Erratics are rocks that have been picked up by a glacier, carried along and dropped in an area that has a completely different rock type. This means that erratics often look out of place

Diagram 1 – types of Moraine

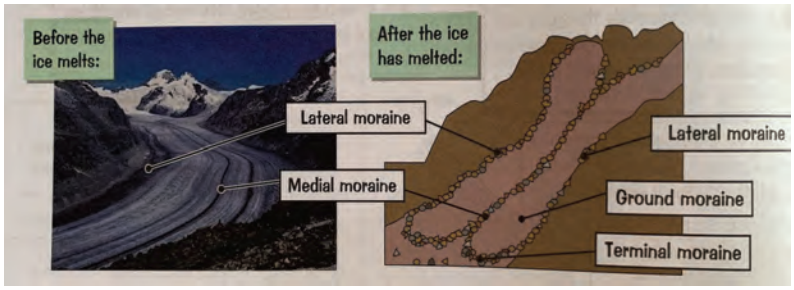
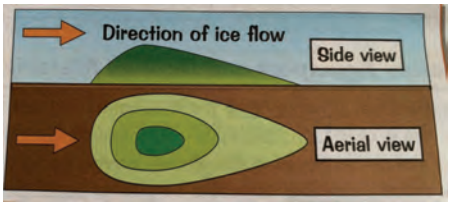


Diagram 2 – Drumlins



Russian population distribution and density

Russia's population density is not even.
77% of Russia's population live West of the Ural mountains
There are very few large cities in the East of Russia.

Key terms	Definition
Population Density	Population/Area
Densely populated	High population density.
Sparsely populated	Low population density.
Choropleth map	A type of mapping where a range of increasingly dark colours is used to represent data grouped into categories.

Reasons for population Density.
Rich soil for farming.
Temperate weather conditions.
Good communication options.
Harsh climate.
Risks of flooding or Earthquakes.
Difficult landscapes e.g. deserts

Russian Economy

Key Facts

Capital City: Moscow

Russia has lots of natural resources.
It produces 20% of the World's natural gas.

It has the eight largest oil reserves.

Exports lots of timber.

Russia struggles to move raw materials from the East to the West.

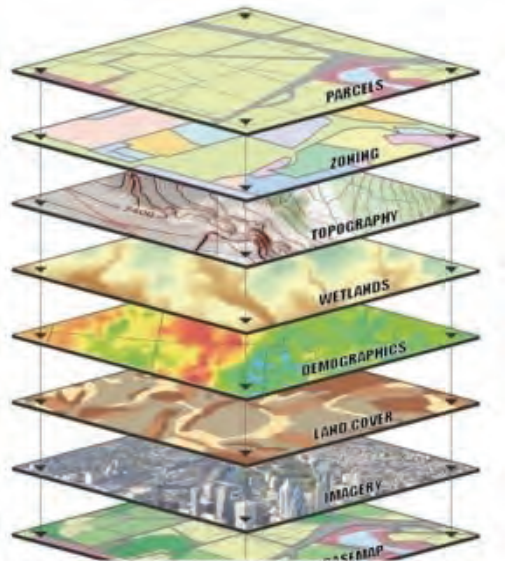
Roads in Russia are in poor condition due to the cold weather.

Largely depends on railways.

Economic Sector	Definition	% of jobs in Russia
Primary	Extracting raw materials	9.4
Secondary	Making things from raw materials	27.6
Tertiary	Providing a service to others	63

Geographical Information System

Key term	Definition
Geographical Information System (GIS)	A GIS works on a computer; the software connects data to maps quickly so you can focus on looking at patterns and make decisions. The information is shown in layers.
Google Earth	Google Earth is a geobrowser that allows you to view the Earth through satellite and aerial imagery, and other geographic data over the internet. It represents the Earth as a three-dimensional globe.
Global Positioning System (GPS)	US navigational tool that uses satellites to track positions and give directions.



What is the Arctic?

Key Facts

The Arctic region surrounds the North Pole and the Arctic Ocean.

It is defined as the region north of Arctic Circle.

Some of the surface of the ocean is frozen for some or all the year.

Winter temperatures of –40

Contents Page

Contents Page

Time Periods, Factors & Themes

Time Period	Details
1170 -1500	Medieval
1500 – 1750	Renaissance
1750 –1900	Industrial
1900 +	Modern

Themes
the development of **rights**,
the development of **parliament**,
authority and challenge to **authority**

Factor	
War and violence	
Religion	
Chance	
Government	
Communication	
Economic	
The role of the individual in encouraging or inhibiting change.	
New Ideas (about equality & representation)	

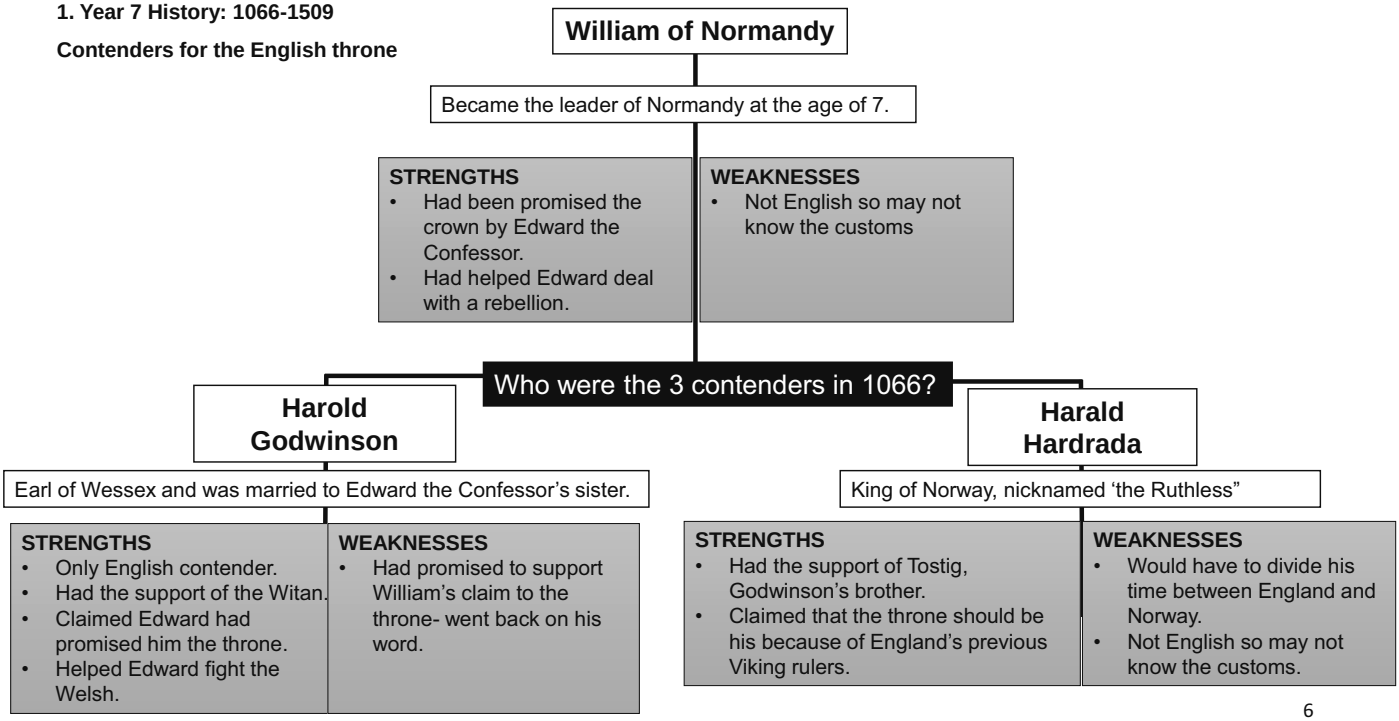
Year 7 History

The development of Church, state and society in Medieval Britain

1066-1509

1. Year 7 History: 1066-1509

Contenders for the English throne



2. Year 7 History: 1066-1509

Battles of 1066

Battle	Events
Battle of Stamford Bridge **25th September 1066** **At Stamford near York**	Between Harold Godwinson and Harald Hardrada Hardrada invaded England and took control of York. Godwinson launched a surprise attack on the Vikings. Vikings were unprepared. Godwinson's army won. Hardrada and Tostig were killed.

Battle	Events
Battle of Hastings **14th October 1066** **At Senlac Hill** **East Sussex**	Between Harold Godwinson and William of Normandy Godwinson's army marched 250 miles from Yorkshire to meet William's army. Godwinson's army used the shield-wall tactic William's army used the feigned retreat tactic. William won. Godwinson was killed.

3. Year 7 History: 1066-1509

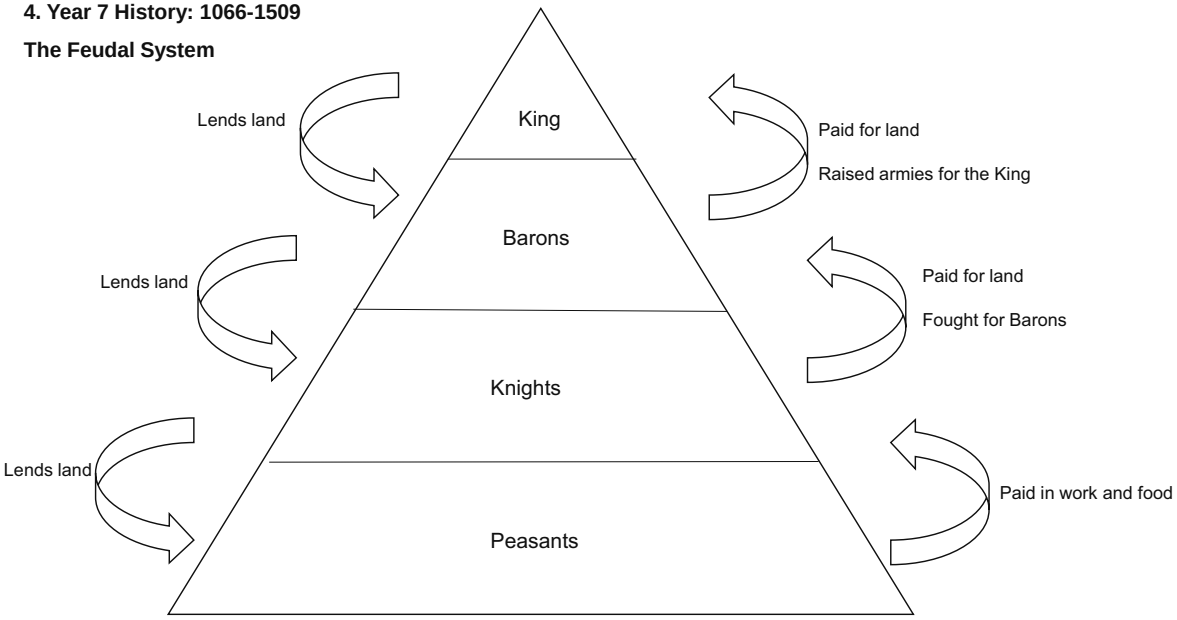
Armies

William's Army	
Mercenaries	Professional soldiers. Well trained and equipped.
Archers	Equipped with bows and arrows. Effective long-range but limited in short-range fighting
Knights	Fought on horseback. Could charge at high speeds towards enemies.

Godwinson's Army	
Fyrd	Untrained peasants. No armour. Equipped with farming tools.
Housecarls	Trained professional soldiers. Well armoured. Equipped with battle-axes and shields

4. Year 7 History: 1066-1509

The Feudal System



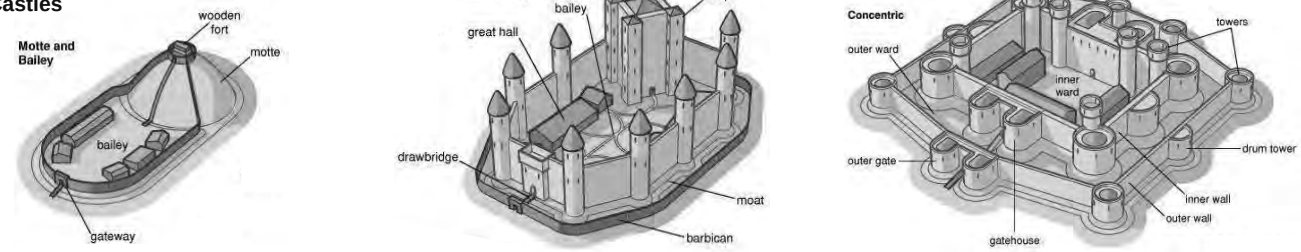
5. Year 7 History: 1066-1509

Domesday Book

The Domesday Book	
What was it?	William needed to know how much money people had. He created a survey of land and wealth in England. This became known as the Domesday Book.
How did William use it?	To work out how much people could be taxed To work out how many people could fight for him To settle arguments over land

6. Year 7 History: 1066-1509

Castles



Motte and Bailey

Wooden castle on top of a hill (Motte) Enclosed area at the bottom of the hill (Bailey)

Quick and easy to build

Stone Keep

This type of castle was made of stone and was strong as a result.

Much harder to attack than a wooden castle

Concentric Castle

Castle surrounded by two layers of high walls.

Much easier to defend than a stone keep.

Types of Castle

7. Year 7 History: 1066-1509

Why castles were built

William I

William built castles to protect against invasions and rebellions.

Chepstow Castle built on the border of England and Wales in 1067

Edward I

Castles were used for trade by the end of the Norman period

Caernarfon Castle was built in 1283 after Edward I defeated the Welsh with access to the sea for trading.

Elizabeth I

Elizabeth used castles as patronage, to reward her loyal followers.

Elizabeth gave Kenilworth Castle to Robert Dudley, the Earl of Leicester, one of her favourites.

CASTLE DEVELOPMENT

Richard I

Castles were built to establish control over people.

Chateau Gaillard was built in Normandy, France in 1196.

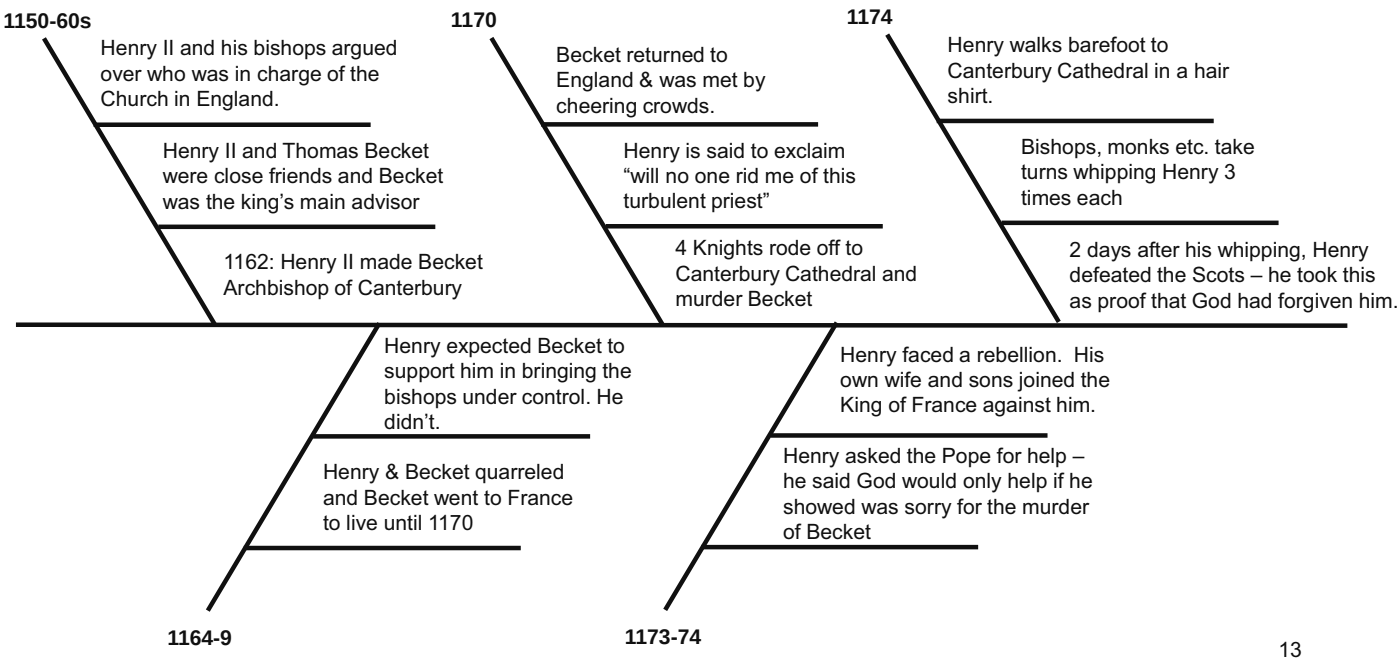
Henry VIII

Henry VIII wanted castles to show his wealth.

Henry made changes to Hampton Court to make it into a 'pleasure palace'.

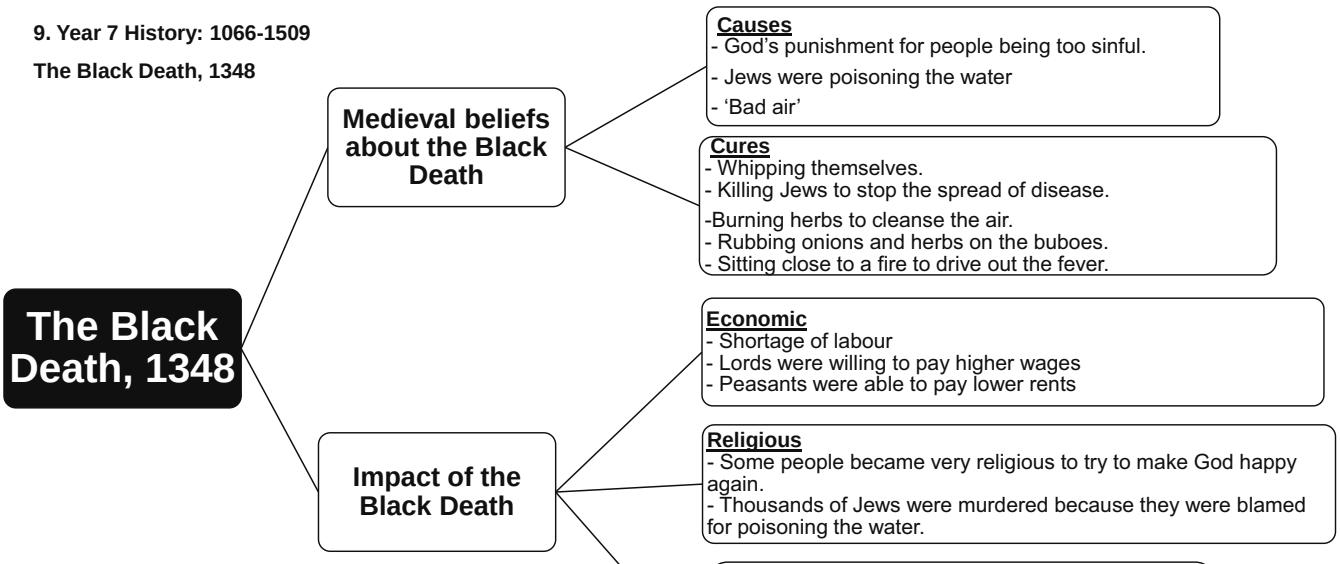
8. Year 7 History: 1066-1509

Why was Thomas Becket murdered in 1170?



9. Year 7 History: 1066-1509

The Black Death, 1348



Definition	
Bubonic plague	Pus-filled boils (buboes) around the neck, armpits and groin
	Black or purple spots on skin due to internal bleeding
	Symptoms lasted around 1 week and 70% of people died from it.

10. Year 7 History: 1066-1509

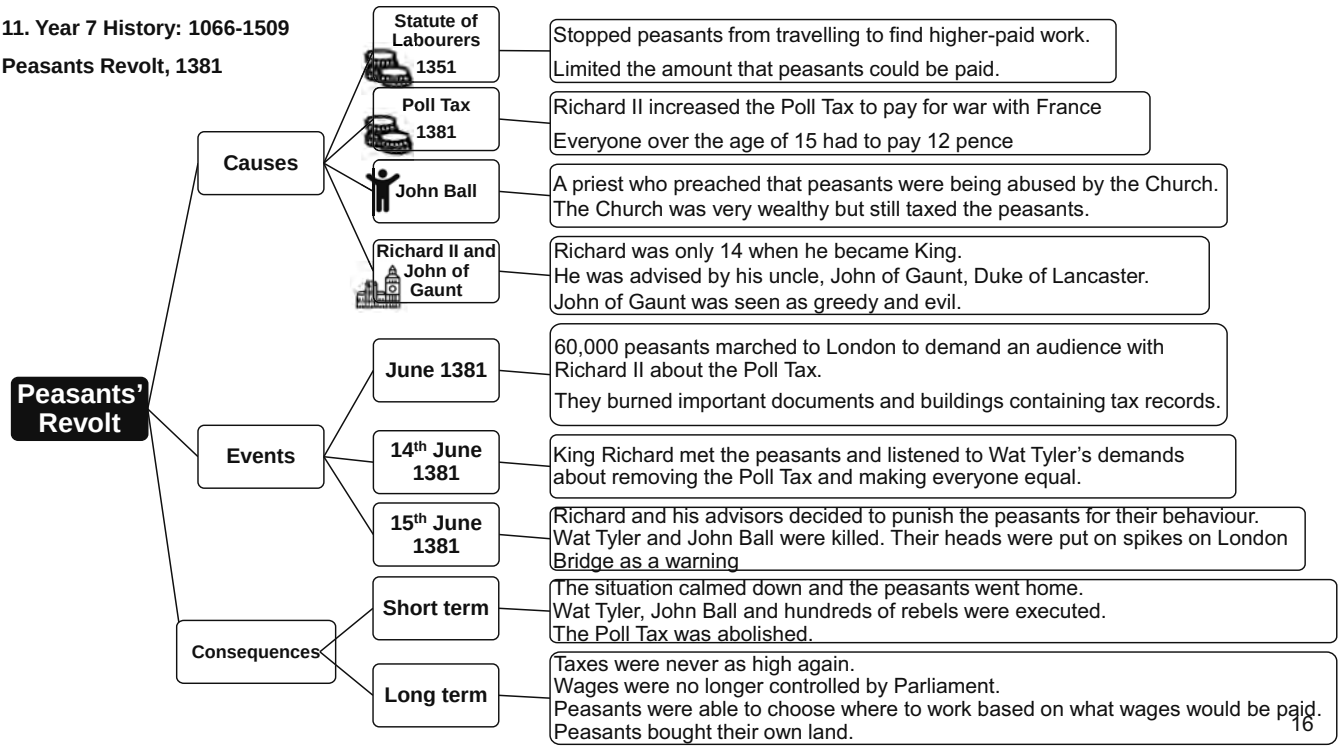
Impact of the Black Death

Impacts	
Economic 	Shortage of labour Lords were willing to pay higher wages Peasants were able to pay lower rents
Religious 	Some people became very religious to try to make God happy again. Thousands of Jews were murdered because they were blamed for poisoning the water.

Impacts	
Social	Over 1/3 of the Population in England was killed. Peasants had more freedom to move to find work Crops were left to rot in the fields Entire generations were wiped out Some began to live a wild life because they believed they might die any day. Villages were deserted

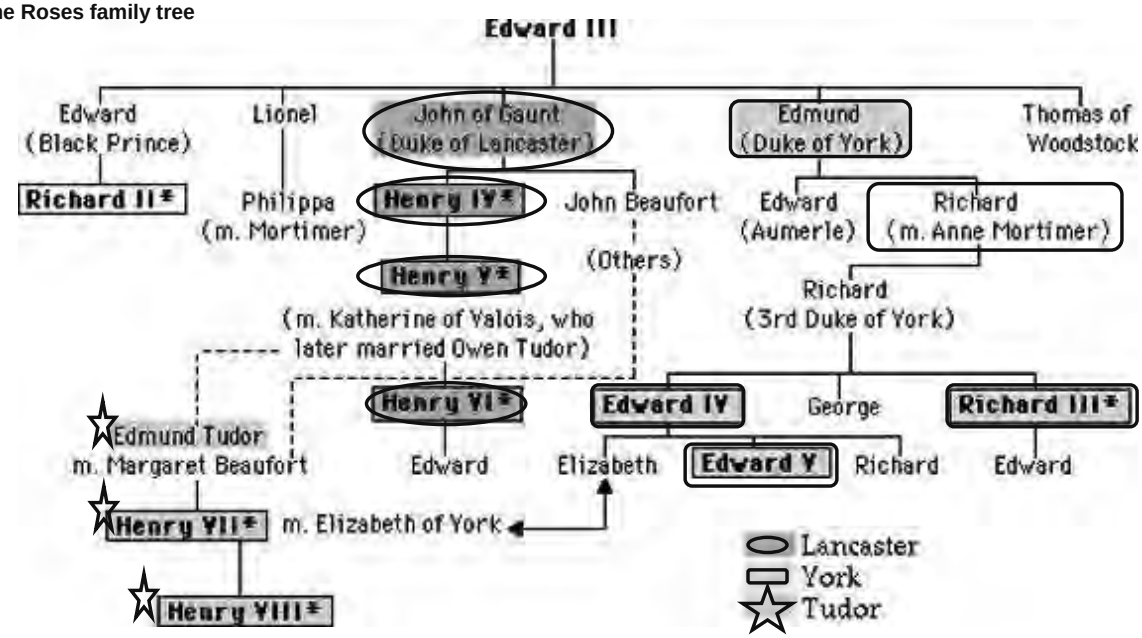
11. Year 7 History: 1066-1509

Peasants Revolt, 1381



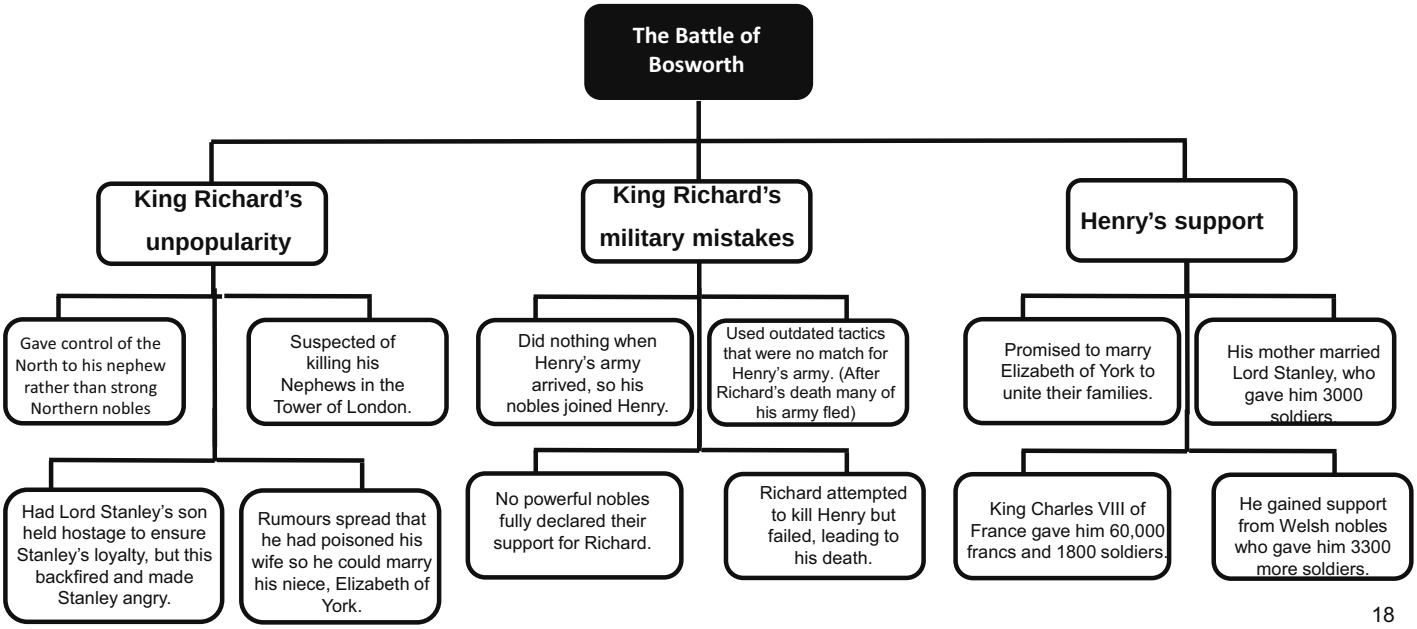
12. Year 7 History: 1066-1509

War of the Roses family tree



13. Year 7 History: 1066-1509

The Battle of Bosworth, 1485



14. Year 7 History: 1066-1509

Henry VII's problems

Problem	Solution
He worried that they would not accept him as king because he killed a member of their family.	Married Elizabeth of York in 1486, uniting the two families
Without money he could not buy armies and weapons to secure his reign.	Forced all people in England to give him money.
He was worried about threats from France, Spain and Scotland.	Threatened to go to war with France unless they paid him £150,000. Married his son, Prince Arthur, to Spanish Princess Catherine of Aragon. Married his daughter, Margaret, to the King of Scotland.
Some barons did not support Henry as King. They were powerful and had their own armies.	Banned private armies and fined any Baron who kept them.

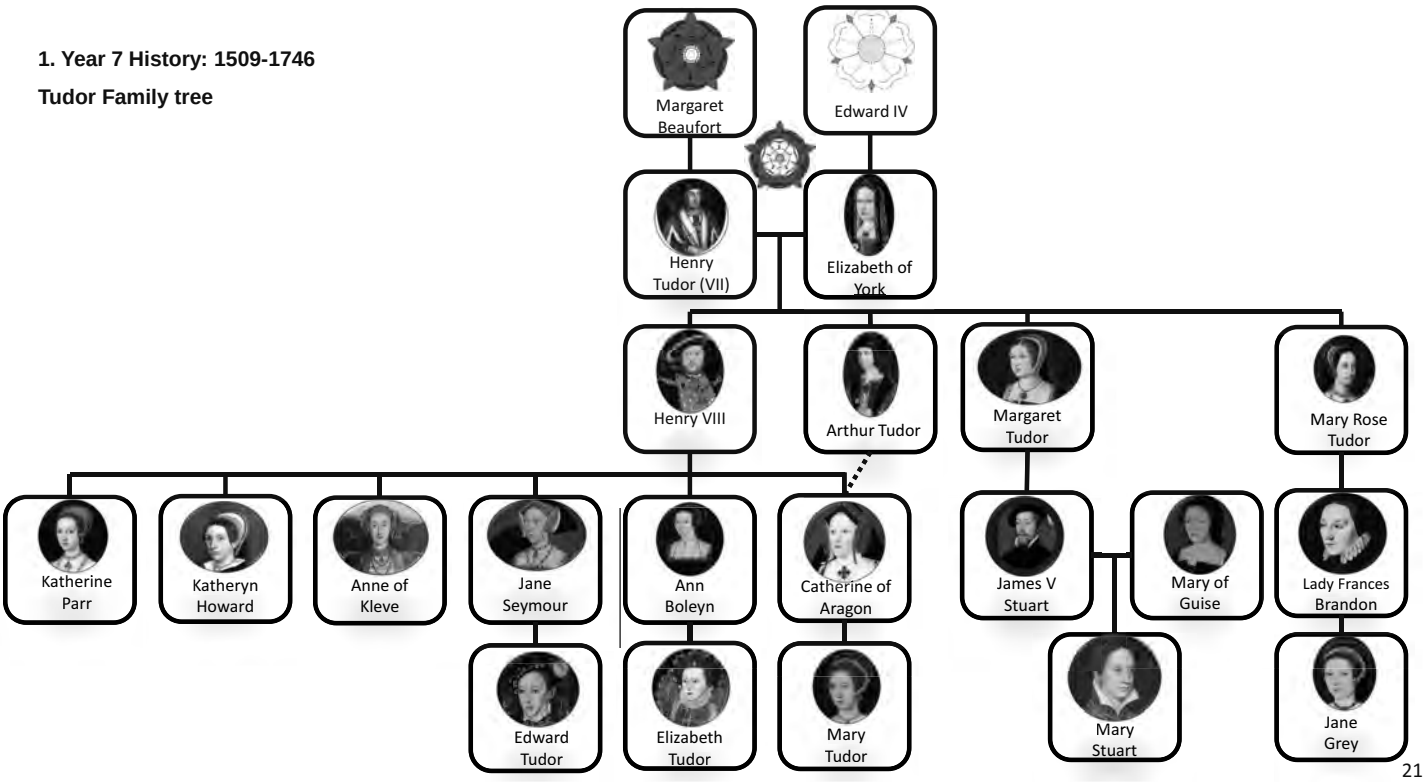
Year 7 History

The development of Church, state and society in Britain

1509-1746

1. Year 7 History: 1509-1746

Tudor Family tree



2. Year 7 History: 1509-1746

Reformation and Renaissance

Why were people challenging the Church?		
Printing Press	**Martin Luther**	**Renaissance and new discoveries**
• Created by Johannes Gutenberg in 1453. • Used woodcuts to print books and leaflets. • Allowed people to buy books and learn things for themselves. • Ideas from books were spread by communication Ideas spread by the printing press: • Luther's 95 Theses • Galileo's work on the Earth travelling around the Sun was published in 1632. • These ideas challenged the Church's teachings.	• A German Monk. • Wrote the 95 Theses: a list of complaints about the Church in 1517. • Argued that the Bible should be written in the language of the country, not just in Latin. • In 1522 he translated the Bible into German	• Renaissance: a period of discovery and change. • During the renaissance people could question existing ideas through investigation and experiments. • The discovery of the Americas in 1492 made people doubt the teachings of the Church. • Copernicus' works in 1543 challenged the idea taught by the Church that the Earth was the centre of the universe.

3. Year 7 History: 1509-1746

Reformation and Renaissance in England

Why did Henry VIII change the Church in England?	
No heir	His first wife, Catherine of Aragon failed to produce a son. The Catholic Church did not allow divorce, so Henry changed the Church to be able to divorce and remarry.
Money	By breaking from the Catholic Church, Henry was able to close down over 800 monasteries in England and keep their money for himself.
Power	The Pope had religious authority over England. Henry saw the Pope as a rival to his power.

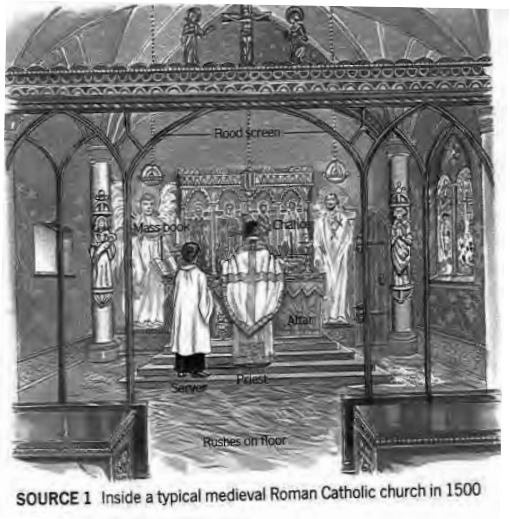
Act of Supremacy 1534:

This made Henry, and all his heirs, Supreme Head of the Church of England.

This removed the Pope's religious authority in England.

4. Year 7 History: 1509-1746

Changes in the Church in the 1500s



SOURCE 1 Inside a typical medieval Roman Catholic church in 1500

Catholic

SOURCE 11 A church in Edward's reign

Protestant

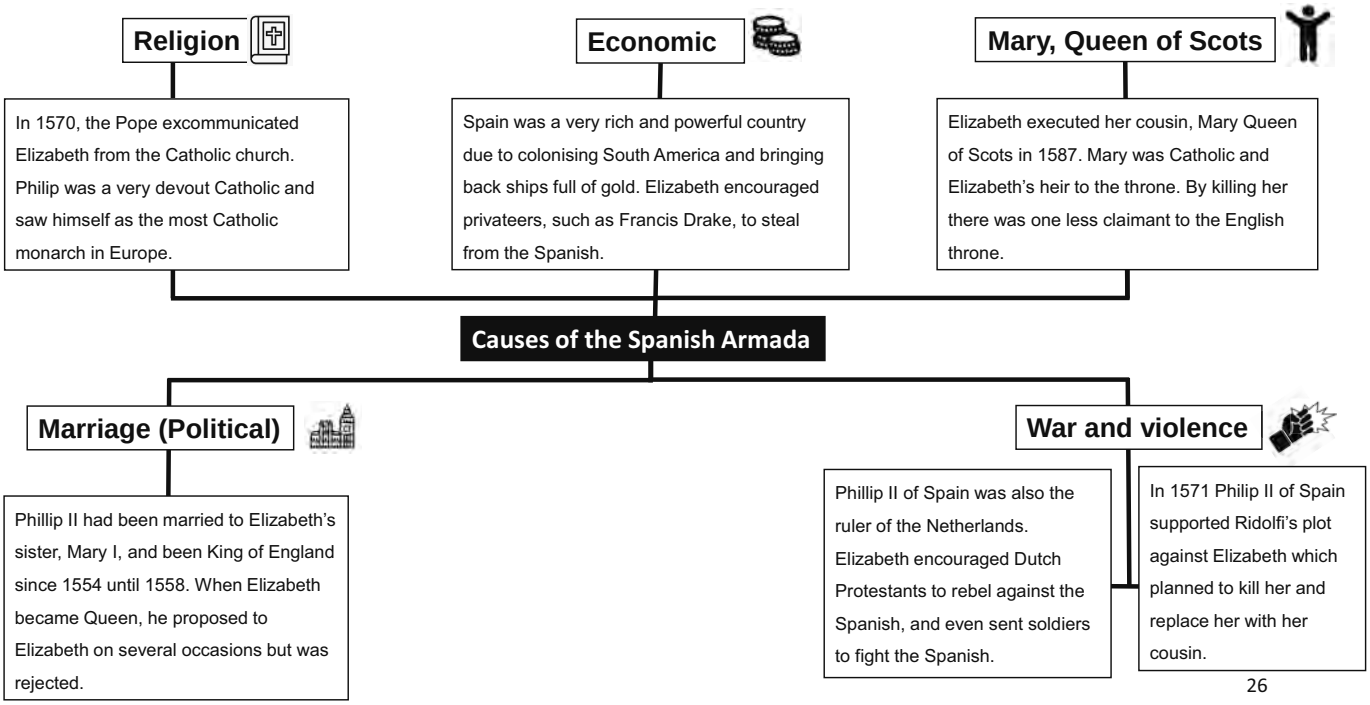
5. Year 7 History: 1509-1746

Religious changes under Edward, Mary and Elizabeth

Elizabeth I
Officially made the Church Protestant but tried to compromise: • Act of Supremacy: made Elizabeth the Supreme Governor of the Church • Act of Uniformity: everyone had to attend the Church of England and use the English Prayer Book • English Church services and Bible • Allowed elements of the Catholic church to remain, such as church decorations and music. • Compromised on beliefs about communion • Punished those who refused to attend Church of England services.

6. Year 7 History: 1509-1746

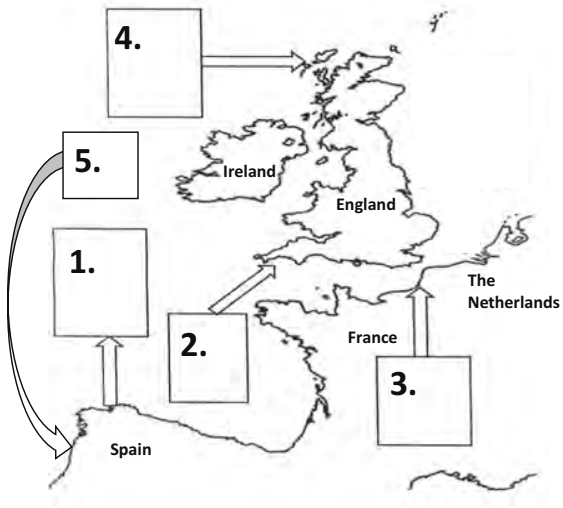
Conflict with Catholics- causes of the Spanish Armada



7. Year 7 History: 1509-1746

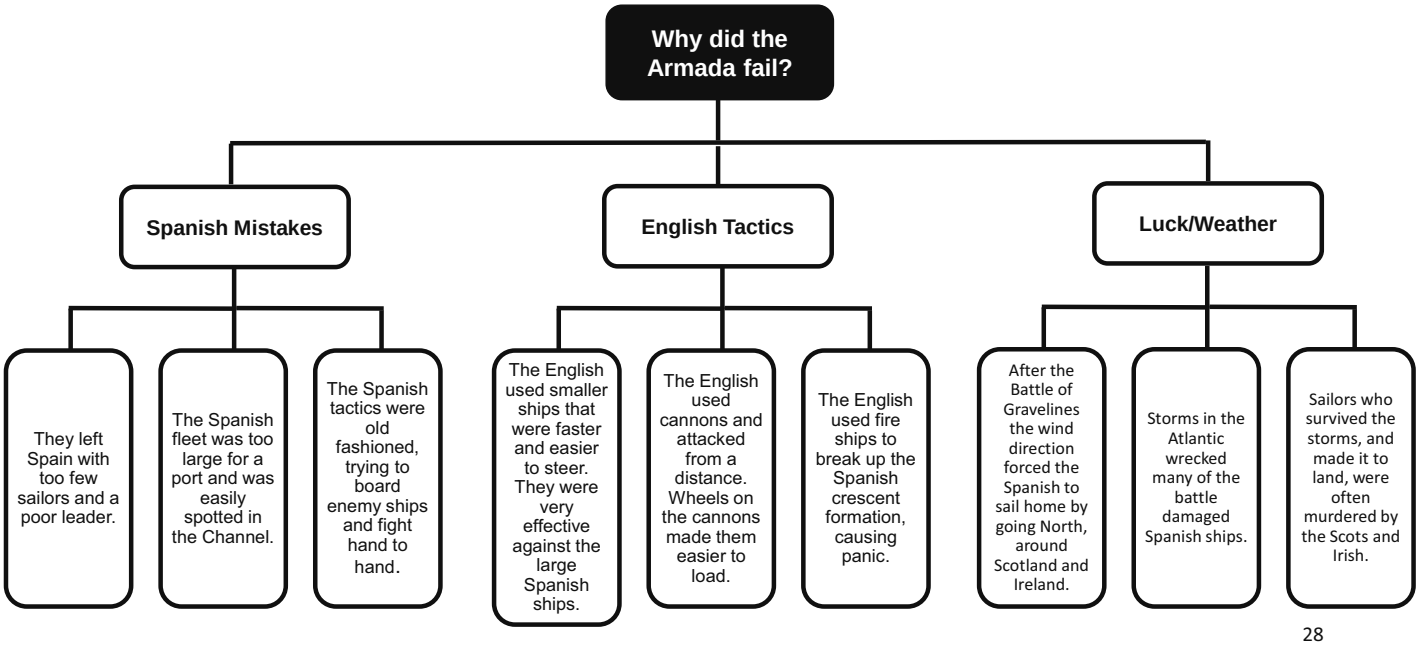
Conflict with Catholics- Events of the Spanish Armada

Events
1. 131 warships left Spain in July 1588.
2. The Spanish ships were seen by the English and beacons were lit along the English coast.
3. The Armada stopped at Calais, France and the English used fire ships to break Spain's formation which meant the Spanish couldn't pick their soldiers up from the Netherlands.
4. The Armada sailed north around Scotland to escape the English but on the way south, the Armada hit very bad weather and lots of the ships were wrecked.
5. Less than half the Armada returned to Spain.



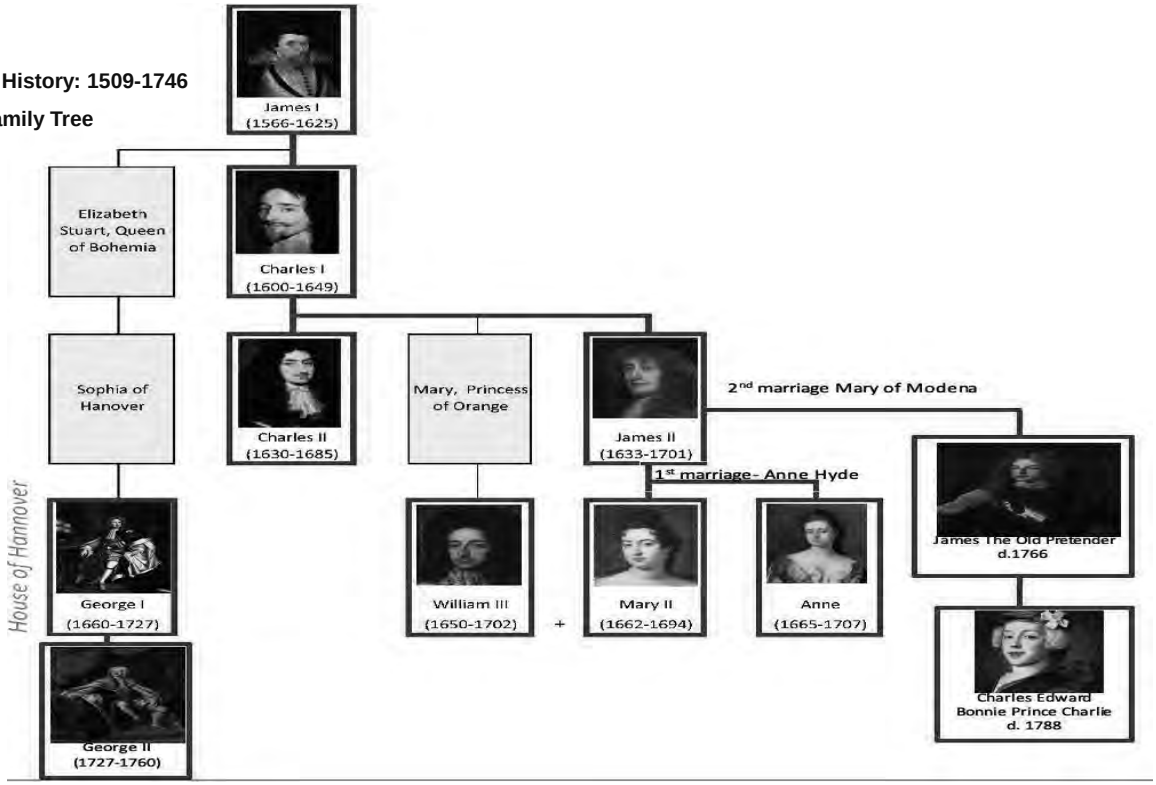
8. Year 7 History: 1509-1746

Failure of the Spanish Armada



9. Year 7 History: 1509-1746

Stuart Family Tree



10. Year 7 History: 1509-1746

How far was James I to blame for the Gunpowder plot?

Causes of the Gunpowder plot	
James' actions	Reintroduced fines for not attending Church services. Had a very expensive coronation and lots of parties. Announced his 'utter detestation' of Catholicism. Rounded up and fined hundreds of Catholics. Ordered all Catholic priests to leave England.
Social issues	No-one in authority was doing anything about the plague. The Spanish hated that another Protestant was ruling England. England was in debt and thousands were starving.

Causes of the Gunpowder plot	
Religious issues	James announced his 'utter detestation' of Catholicism. James rounded up and fined hundreds of Catholics. James ordered all Catholic priests to leave England. James reintroduced fines for not attending Church services. All Catholics seen as traitors after the discovery of two plots against James in 1603

11. Year 7 History: 1509-1746

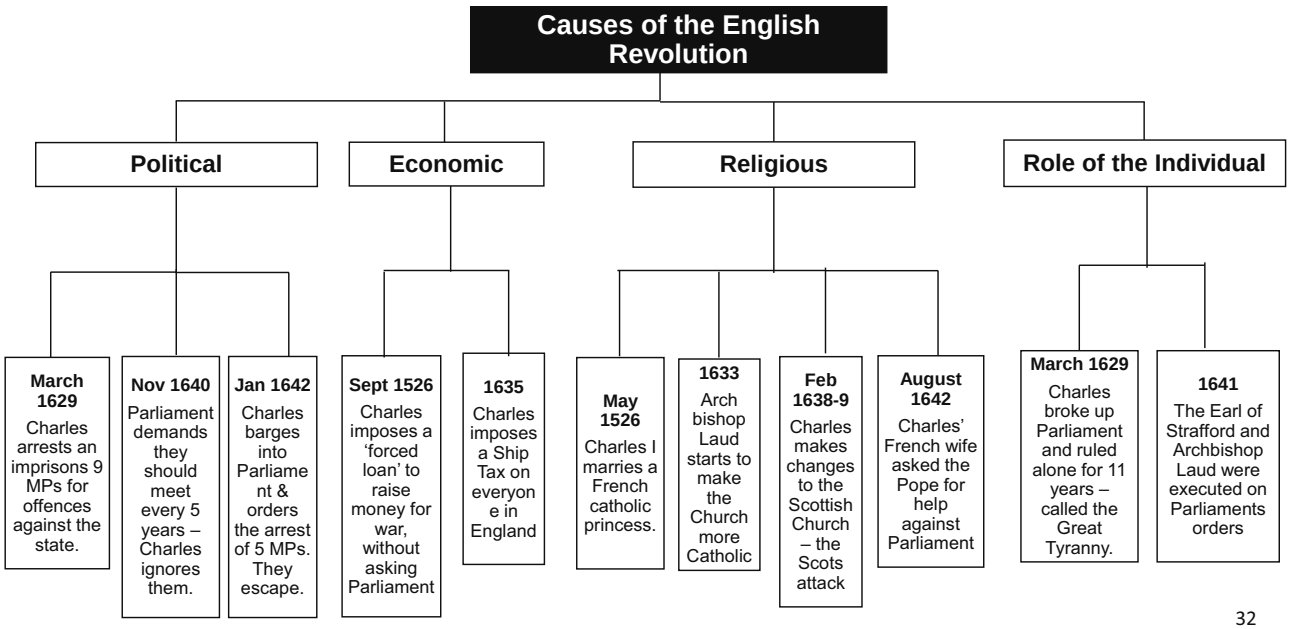
Why did Britain colonise North America?

Motives	
Religious 	Protestant, Catholic and Jewish groups went to the colonies to find religious freedom. Some groups wanted to spread Christianity with natives.
Political 	Taking over new land would show England's strength and give them more power. The English wanted to limit Spain's expansion

Motives	
Economic 	Land was plentiful in America Colonists believed North America would bring them riches. North America had a lot of resources like wood and furs New crops such as tobacco could be grown
Social 	People wanted to escape poverty, war, political unrest, food shortages and disease. People wanted to find a better life.

12. Year 7 History: 1509-1746

Causes of the English Revolution



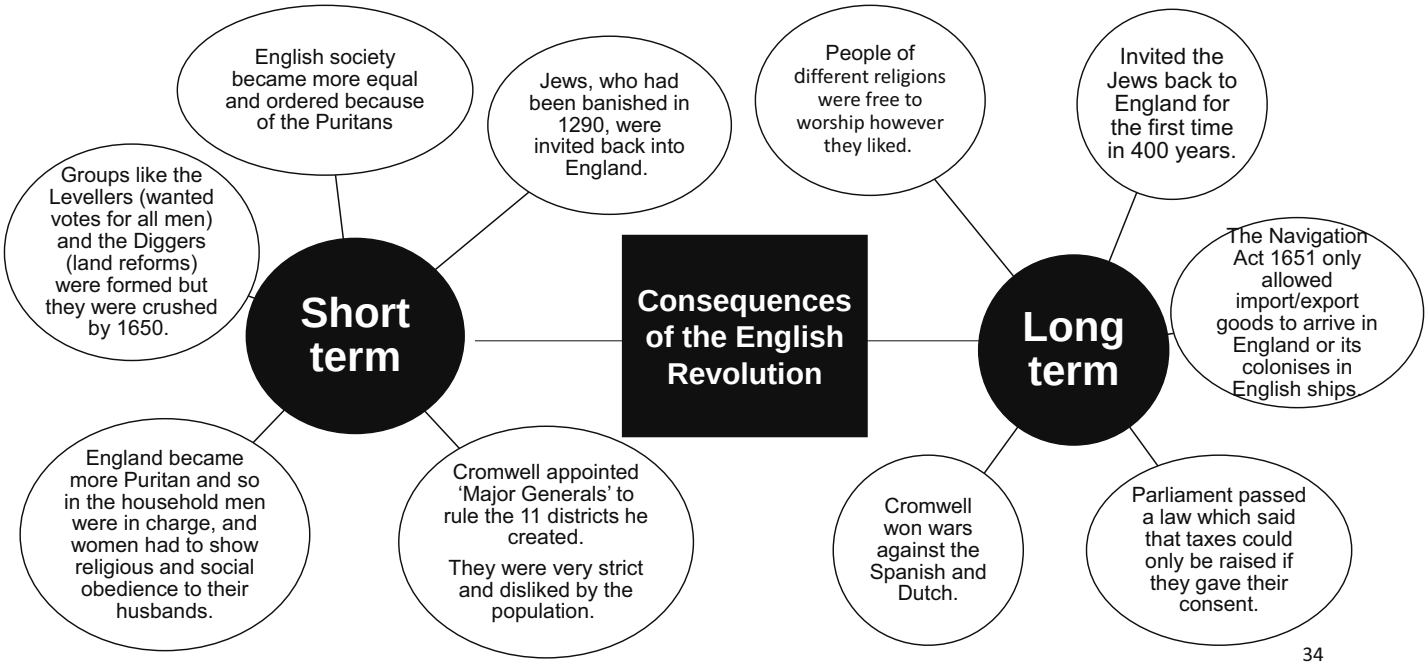
13. Year 7 History: 1509-1746

Events of the English Revolution

Event	Description
Battle of Edgehill	No clear victory for either army.
Oct 1642	
Battle of Marston Moor	Royalists were outnumbered by Parliament's army.
July 1644	Parliament won, giving them control over Yorkshire.
Battle of Naseby	The New Model Army was created in January 1645 and was very disciplined.
Jun 1645	The New Model Army first battle was Naseby where it defeated the Royalist army.
Execution of Charles I	In 1646 Charles I surrendered to the Scottish Army who sold him to the English Parliament.
Jan 1649	Parliament put Charles on trial for treason and executed him in January 1649.

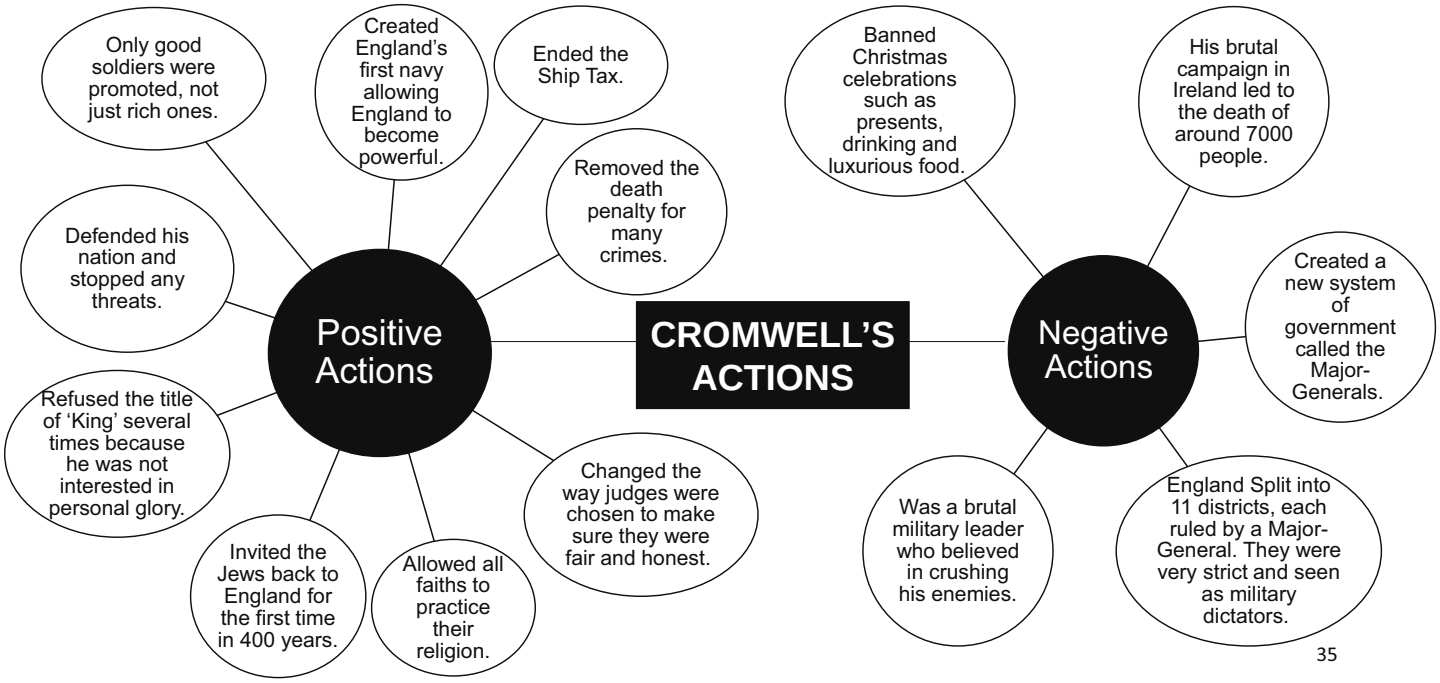
14. Year 7 History: 1509-1746

How significant was the English Revolution?



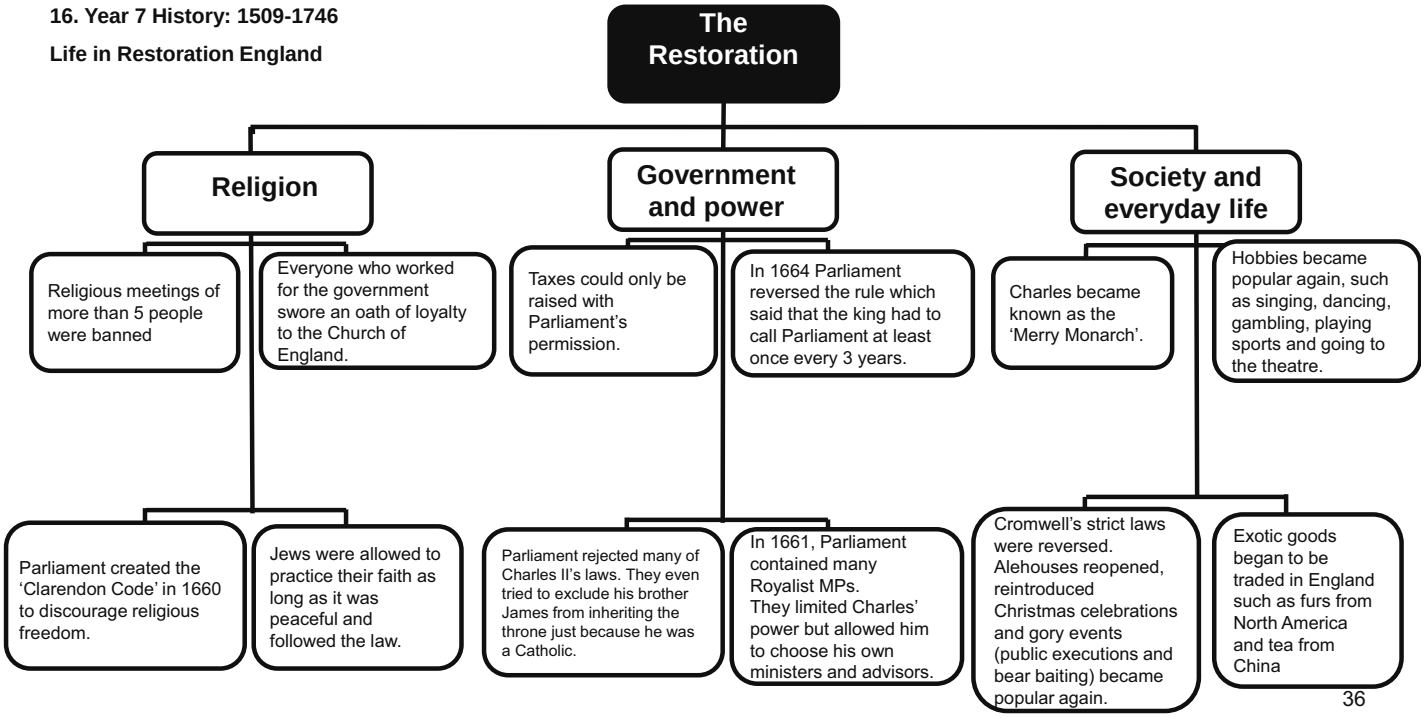
15. Year 7 History: 1509-1746

Cromwell's actions



16. Year 7 History: 1509-1746

Life in Restoration England



17. Year 7 History: 1509-1746

Glorious Revolution 1688

Cause	Description
Religion 	James II was an enthusiastic Catholic. Appointed Catholics to high ranks in the army and in government. 1687 Declaration of Indulgence: ends punishments for being Catholic. This worried the Protestants in Parliament. James' Protestant daughter Mary was the heir to the throne. In June 1688 James had a son, who was Catholic, which changed the line of succession.

Cause	Description
James' relationship with Parliament 	1687: James dissolved Parliament. He hoped to elect a new Parliament which would support his belief in the Divine Right of Kings.

18. Year 7 History: 1509-1746

Glorious Revolution 1688

Event	Description
Immortal 7 June 1688	6 MPs and 1 Bishop wrote to William of Orange (James' son-in-law) to ask him to help England.
William invaded Nov 1688	William of Orange gathered an army and sets sail. He landed in Torbay in Devon and began to march to London
James lost support Dec 1688	Many of James' supporters changed sides and joined William's army. This worried James, so he escaped to France with his wife and son.

Event	Description
Bill of Rights Feb 1689	Parliament invited William and Mary to be King and Queen. They passed the Bill of Rights, which limited the power of the monarch
William and Mary are crowned April 1689	William and Mary became joint monarchs

19. Year 7 History: 1509-1746

Glorious Revolution 1688

Consequence	Description
Bill of Rights 1689	Made it illegal for monarchs to rule without Parliament. Made it illegal to raise taxes without the consent of Parliament. Named Mary's Protestant sister Anne as the next heir Made it illegal to hold a standing army in peacetime
Toleration Act 1689	Gave freedom of worship to people of all faiths except Catholics.
Triennial Act 1694	Ordered general elections to be held every three years.

Consequence	Description
Act of Settlement 1701	Gave the throne to the Hanover dynasty Ensured all monarchs must be Protestant.
Economy	Bank of England was founded in 1694. Parliament began to look more closely at the monarch's spending. Only Parliament was allowed to raise taxes. England and the Netherlands were now allies, which increased trade.

Year 7 History

Ideas, political power, industry and empire including Derby as Local History Study

1746-1901

1. Year 7 History: 1746-1901

History of Derby

Era	
Roman	Between 60 and 80 AD the Romans used a wooden fort at Strutt's Park, between Duffield Road and Belper Road. A second fort was build at Little Chester in 80 AD. A town called Derventio grew up along side the fort. Both forts defended the Roman roads that crossed the River Derwent nearby.
Anglo Saxon	By the 7th Century a settlement called Northworthy had been set up near to Iron Gate and Queen Street. A second settlement was set up called Wardwick in the 8th Century. The two settlements grew and merged.

Era	
Viking	The Danes conquered Northworthy in 874 AD and renamed the town Derby. The use of the word Gate for Street in the city is evidence of Danish occupation. Derby was conquered again by the English at the Battle of Derby in 917AD

2. Year 7 History: 1746-1901

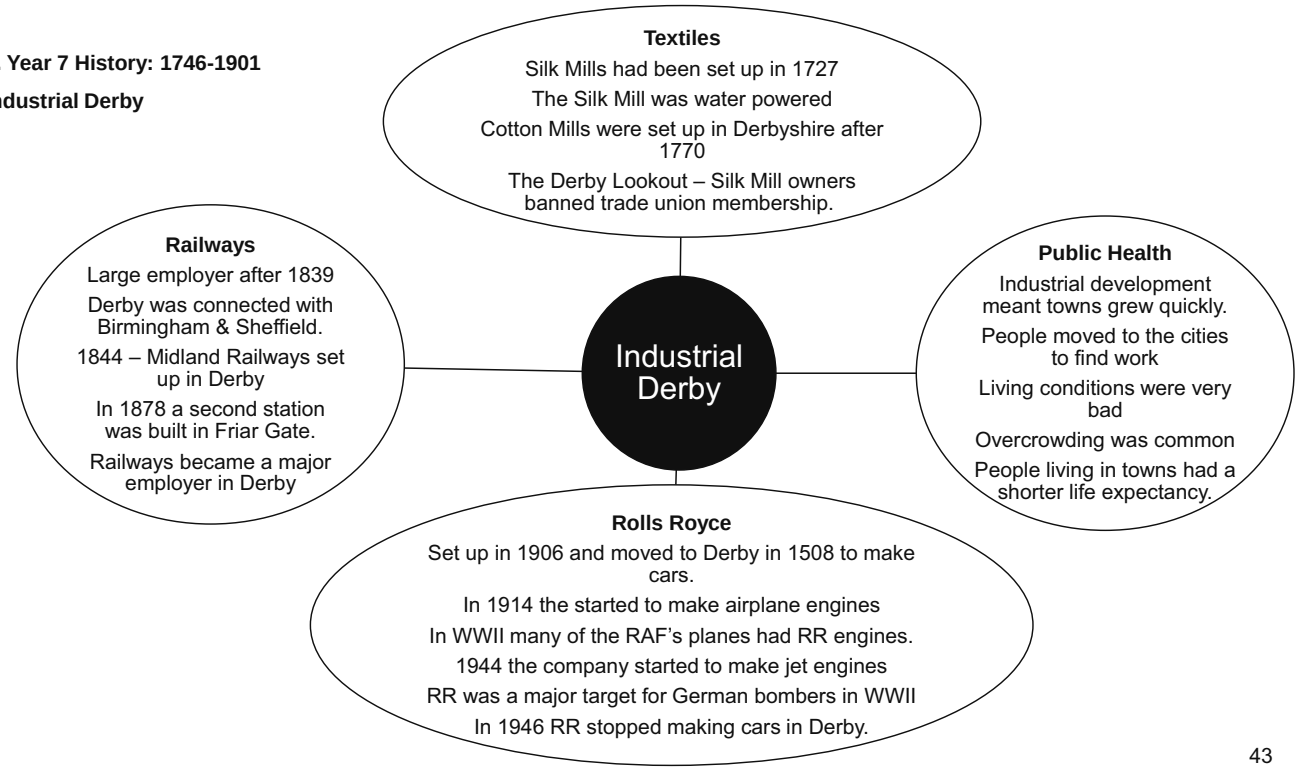
Derby and the Enlightenment (1760 – 1830)

Enlightenment figure	Why they are important
Erasmus Darwin	Set up the Derby Philosophical Society in 1783. Great scientist – writing about plant biology. Doctor. Had been a member of the Lunar Society. Grandfather of Charles Darwin
Joseph Wright	Famous Artist and Associate of the Royal Academy . Known for his paintings dealing with light and shade and also with scientific themes.
Josiah Wedgwood	Member of the Derby Philosophical Society. Successful businessman owning a famous pottery works in Stoke and developing modern marketing methods.

Enlightenment figure	Why they are important
John Whitehurst	Clock and instrument maker. Scientist who helped to develop the science of Geology – the study of the Earth's structure.
William Duesbury	Successful business man who set up Crown Derby.
William Strutt	Member of the Derby Philosophical Society. Great architect designing fire-proof cotton mills.

3. Year 7 History: 1746-1901

Industrial Derby



4. Year 7 History: 1746-1901

19th Century Reforms

Changes/aspects of life	Details
Chartism – the Chartists existed as a mass movement between 1836 and 1848.	After 1832 most men still could not vote. You had to be well off to vote or be an MP. Voting was not done in secret. Many felt British politics did not work for ordinary people. The Chartists wanted to allow all men to vote and be able to become MPs. They wanted to reform politics. They campaigned using petitions, marches, newspapers and sometimes violence.

5. Year 7 History: 1746-1901

19th Century Reforms

Changes/aspects of life	Details
Factory Reform	There were no laws controlling they way people were made to work in early factories. Many children, like Robert Blincoe were treated very cruelly when they worked in the Mills. People campaigned to pass laws controlling factory work. The Factory Act of 1833 banned children under 9 years old from working in textile mills. Children Aged 9 to 13 could only work part time and had to go to school.

6. Year 7 History: 1746-1901

Queen Victoria's Reign

1837	1901
Population of the United Kingdom was 26.9 million.	Population of the United Kingdom was 41.6 million.
Most worked on farms but factories were growing.	Britain was an industrial nation with only some working on farms.
Transport and communication was very slow- most used canals. Peoples' lives revolved around their local community.	Railways made quick travel possible. People travelled to the seaside for holidays.
Very few people went to school. Law and order was still harsh if you were caught.	Everyone aged 5 to 11 years old went to school. All areas had a police service and prison.
Only the rich could vote. The Whig and Tory factions controlled politics.	Nearly all men could vote. The Liberal and Conservative parties controlled politics.
Britain was a powerful nation with a growing Empire. The Royal Navy was very powerful	Britain was the most powerful nation and controlled a quarter of the World's land.

7. Year 7 History: 1746-1901

Ireland and Home Rule

Date	Event
1801	Ireland becomes a part of the United Kingdom.
1845 -9	Irish Famine caused by potato blight
1848	Young Ireland Rebellion fails
1858	Irish Republican Brotherhood set up to gain Irish Independence
1867	Fenian uprising fails
1870	Irish Government Association set up to campaign for Irish Home rule.
1882	Irish Parliamentary Party set up by Charles Steward Parnell to campaign for Irish Home rule.

Date	Event
1885	Irish Parliamentary Party won the majority of Irish seats in the General Election.
1886	First Irish Home Rule Bill was defeated in Parliament.
1893	Second Irish Home Rule Bill was passed by the House of Commons but was defeated in the House of Lords.
1912	Third Irish Home Rule Bill was passed by the Houses of Parliament. It was suspended in 1914 on the outbreak of World War 1.
1912	The Ulster Volunteers were set up in Belfast to prevent Irish Home Rule.
1916	Easter Rising in Dublin by the Irish Volunteers is defeated and brutally crushed.

Year 7 History

Challenges for Britain, Europe and the wider world

1901-1918

1. Year 7: 1901-1918

Causes of the Liberal Reforms

Date	Event	Details
1886-1903	Charles Booth's enquiry 	Charles Booth's made a survey called 'Life and Labour of the People in London'. It found that 30% of employed Londoners were so poor they could not afford food.
1899	Boer War 	The government needed soldiers to fight in the Boer War in South Africa. Whilst recruiting it was found that 40% of all young men who volunteered were unfit to be soldiers.

Date	Event	Details
1901	Seebohm Rowntree's study 	Rowntree published his study called 'Poverty: A Study of Town Life' based on the people of York in 1901. 28% did not have the minimum amount of money to live on at some time in their life. People feared that Britain would fall behind countries like Germany who had a good welfare system.

2. Year 7: 1901-1918

Causes of the Liberal Reforms

Date	Event	Details
1904	'Physical Deterioration of the People' report 	The government investigated why so many men did not reach army requirements and created a report. The report said that many men were too unhealthy to join the army.
1906	New Liberal Government 	Some politicians, including Winston Churchill and David Lloyd-George from the Liberal Party wanted the government to improve public health. In 1906 the Liberal Party won the general election and started to introduce new laws which were aimed to improve the lives of people in Britain.

3. Year 7: 1901-1918

The Liberal Reforms

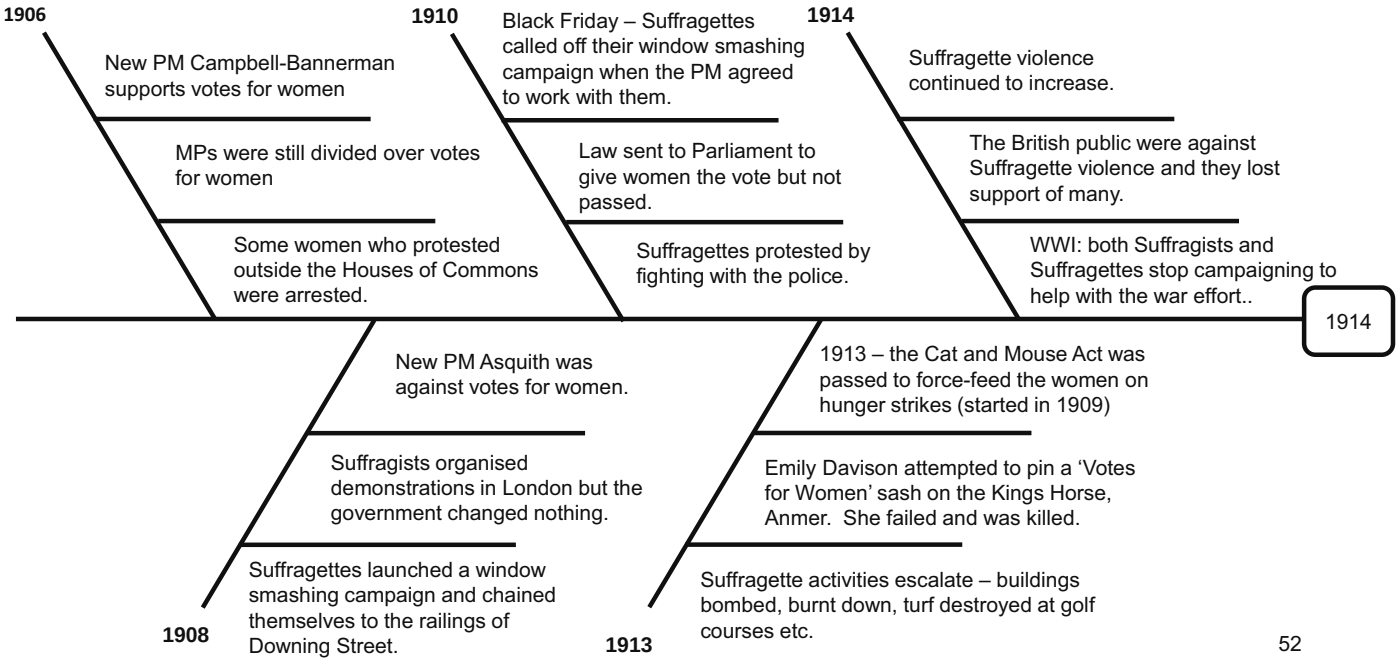
Who was helped?	Law	Details
Children	**1906**: School Meals Act	This law allowed local councils to provide free school meals to poorer children. By 1914, over 158,000 children were having free school meals every day.
	1907: Children's health	The government paid for free clinics to be setup in schools. In 1918 Health visitors were created.
	1908: The Children and Young Person's Act	This law made children into 'protected persons' so parents could be punished for neglecting or abusing their children.

Keyword	Meaning
Poverty	The state of being extremely poor.
Recruitment	The action of enlisting new people in the armed forces.
Deterioration	The process of becoming progressively worse.
Welfare	Government benefits given to poorer people to help them live to a good standard of living.

Who was helped?	Law	Details
Unemployed and sick	**1911**: National Insurance Act	This law introduced unemployment benefit, free medical treatment and sickness pay.
Elderly	**1908**: The Pensions Act	Everyone over the age of 70 could get a state pension A single person could get 5s a week and a married couple 7s 6d.

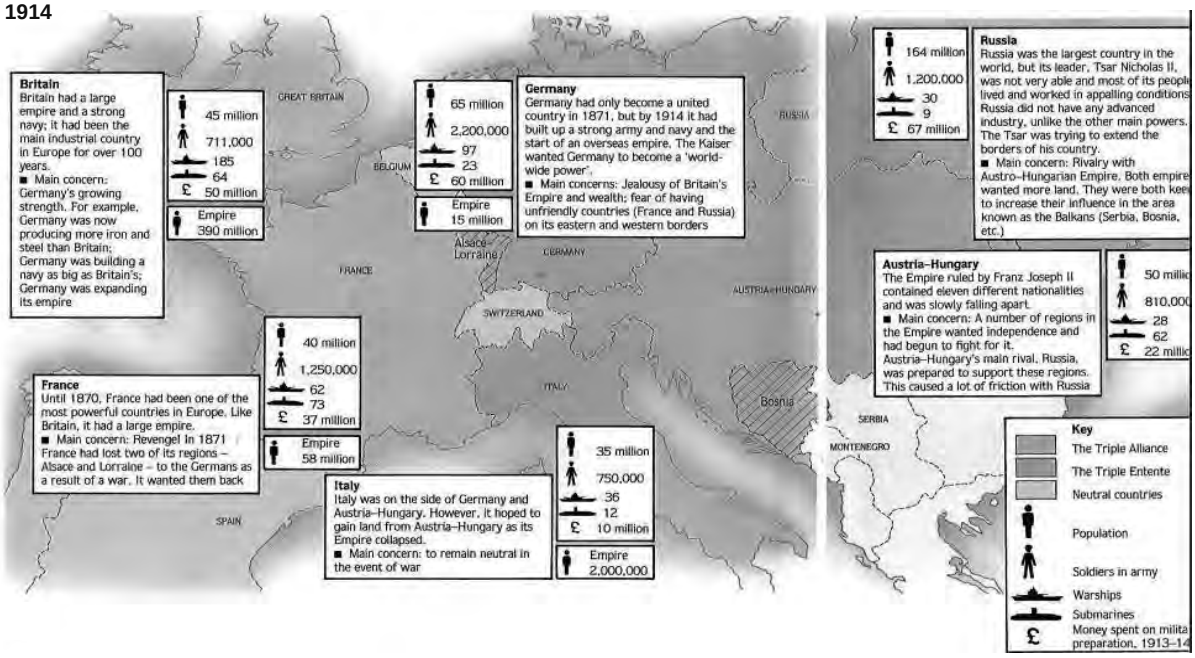
4. Year 7: 1901-1918

Women's' Suffrage up to 1914



5. Year 7: 1901-1918

Europe in 1914



6. Year 7: 1901-1918

Long Term Causes of the First World War

Cause	Definition	Example
Militarism	The belief that a country should have a strong army and use it when a problem occurs.	Britain and Germany tried to compete against each other by building as many Dreadnoughts as possible. This was known as the Naval Arms Race.
Alliances	When countries agree, sometimes through a treaty or through promises, to protect one another against threats.	Germany, Austria and Italy created the Triple Alliance. Britain, France and Russia formed the Triple Entente.

Cause	Definition	Example
Imperialism	When a country wants to expand its power by invading other countries and colonising them to make an empire.	France was trying to colonise Morocco but the Kaiser made a speech in 1905 encouraging the Moroccan people to fight the French.
Nationalism	When a country felt it was more superior than other countries and tried to prove it.	Germany defeated France during the Franco-Prussian war, 1871. Germany took Alsace-Lorraine, French land, when they won.

7. Year 7: 1901-1918
Short term causes of the First World War

Assassination of Franz Ferdinand

- In June 1914 Gavrilo Princip, a member of a Serbian terrorist group called the Black Hand Gang killed the heir to the throne of Austria.
- The Austrian government blamed Serbia and declared war in July 1914.

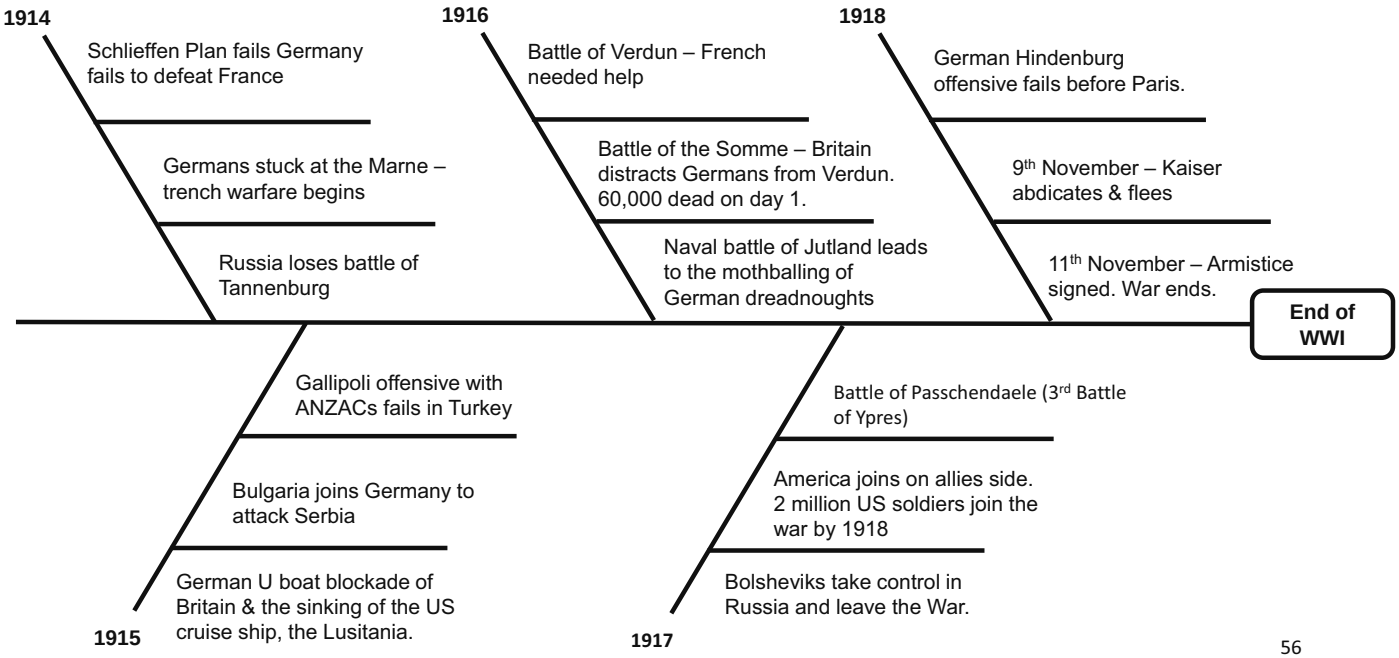
War escalates

- Russia was allied to Serbia and prepared its army to defend Serbia.
- Germany was allied to Austria and on the 1st August 1914 declared war on Russia and then, two days later on France.

The Schlieffen Plan

- Germany attacked France first. As the border between France and Germany was fortified Germany followed the Schlieffen Plan.
- The Schlieffen Plan meant that Germany would invade France via neutral Belgium before attempting to attack Russia.
- The German attack on Belgium brought the UK into the war. The UK had agreed to protect Belgium in 1839.
- The Schlieffen Plan failed as France was not defeated.

8. Year 7: 1901-1918
Events of the First World War



9. Year 7: 1901-1918

Ireland during the First World War

Nationalist: Mainly Catholic and lived in the South. Wanted Ireland to remain independent.

Unionist: Mainly Protestant and lived in the North. Wanted to remain part of the UK.

Date	Event
1916	Easter rising in Dublin. Even though it was easily defeated it increased support for an independent Ireland.
1918	In the election Sinn Fein gain the most seats and declare Ireland independent from Britain. The IRA (Irish Republican Army) begin attacking British troops and police.
1920	Britain sends ex-soldiers (Black and Tans) to stop the fighting. This only made the situation worse.
1921	A solution was found. Southern Ireland would become independent and the North where most Protestant live would become Northern Ireland and remain part of the United Kingdom.

10. Year 7: 1901-1918

Women during the First World War

Date	Event	Details
From 1914	Suffragists support the war effort	The Suffragists organized women to take over men's jobs as they left for war but they still had meetings about getting women the vote.
1915	Worker shortage	Women took over men's jobs as they were fighting in WW1. Over 1 million women took on jobs in munition factories making bullets and weapons.
January 1917	Women's Land Army	The Women's Land Army was founded in January 1917 so that enough food was grown in Britain. Only 16,000 women joined.
1918	Some women gain the vote	The vote was given to women over the age of 30 who were householders, the wives of householders, occupiers of property with an annual rent of £5, and graduates of British universities. About 8.4 million women gained the vote. The voting age for men was 21. The majority of women who had helped during the war were young, working class women who did not get to vote under the 1918 law.
1928	Equal voting rights	The Equal Franchise Act was a law which gave women equal voting rights to men. All men and women aged 21 and over were allowed to vote.

Year 7 History

Challenges for Britain, Europe and the wider world

1918-present day

1. Year 7: 1918-present

Britain in the Great Depression

Date	Event
1928	Women over 21 gained the vote in Britain.
1929	Wall Street Crash leads to a Worldwide economic downturn (Depression).
1932	Nearly 20% of workers in the worst hit areas were unemployed.
1932	British Union of Fascists is founded by Sir Oswald Mosley.
1936	Jarrow Crusade – march from Jarrow, in Northern England, to London to take a petition to Parliament.

Date	Event
1938	Government tried to help and make more money available to the hardest hit areas.
1939	The outbreak of war brought more jobs in factories and in the military. The worst effects of the Depression were over.

2. Year 7: 1918-present
Rise of dictators

Democracy: People have more freedom in their lives.
They can vote for who their leader is.

Dictatorship: People have little freedom and cannot vote in elections.

Date	Event
1917	Russia becomes Communist, following Karl Marx's ideas.
1919	Italy is disappointed at its lack of reward from the Treaty of Versailles after WW1.
1922	Russia becomes the USSR (Union of Soviet Socialist Republics).
1922	Mussolini becomes leader of Italy.
1929	Stalin becomes undisputed leader of the USSR after a brief power struggle.
1933	Hitler becomes Chancellor of Germany.
1936-39	Spanish Civil War. General Franco wins and establishes a dictatorship in Spain until 1975.

3. Year 7: 1918-present
Events of the Second World War

Date	Event
1939 **Bliztkreig**	Hitler quickly defeats Poland using Blitzkrieg tactics.
1940 **Dunkirk**	British troops in France rescued by the navy with 338,226 soldiers evacquated from the beaches at Dunkirk.
July 1940-October 1940 **Battle of Britain**	The Royal Air Force and the German Luftwaffe fought the Battle of Britain and the British won- this was their first victory in WW2.
June 1941 **Hitler invades Russia**	Hitler invaded Russia and did well at first but when the winter set in German equipment froze and their soldiers were forced to retreat.
7th December 1941 **Pearl Harbour**	Japan attacked America at Pearl Harbor. America declared war on Japan and Germany declared war on America (to protect their ally Japan).

Date	Event
1942 **Battle of El Alamein**	Germany and Britain were fighting in Egypt over the oil supplies in the Middle East. The British won.
1942- 1943 **Battle of Stalingrad**	Germany and Russia fought over Stalingrad. The Germans surrendered in February 1943.
6th June 1944 **D-Day**	Russia attacked Germany from the east whilst Britain and the USA agreed attack from the west. They landed on Normandy beaches to try and retake France.
7 May 1945 **Germany surrendered**	Hitler commits suicide. Germany surrendered to the Allies.

4. Year 7: 1918-present

The Blitz and Dresden

Date	Event
7th September 1940 – 11th May 1941	The main Blitz campaign against Britain. Over 40,000 civilians were killed and two million homes were destroyed.
14-15 November 1940	Coventry was bombed by the Germans. 568 people were killed.
27th July 1942	Rolls Royce was bombed killing 23 people, the city's worst night.

Precision bombing: Hitting specific targets in a city e.g. railways or factories.

Area bombing: Bombing whole areas of a city with no specific target.

Date	Event
13th February 1945	Dresden was bombed. A firestorm started that killed at least 150,000 civilians.
9th-10th March 1945	US air force bombed Tokyo. Over a million homes were destroyed and over 100,000 people were killed.

5. Year 7: 1918-present

Causes of the creation of the Welfare State

Cause	Details
War 	After both world wars people wanted the government to help support society through welfare. People wanted a better and fairer healthcare system. Many were shocked the health of some of the evacuee children during WW2.
Government 	After the Second World War a political election-the Labour Party won. Labour had promised they would follow the advice of the Beveridge Report. Winston Churchill lost the election because his party, the Conservatives, did not agree with the Beveridge Report.

Cause	Details
Role of the individual- Beveridge 	Sir William Beveridge wrote a report about the state of Britain. It stated everyone in the country had the right to be free of the 'five giants' that could negatively affect their lives. The 'five giants' were: disease, want (need), ignorance, idleness and squalor. The report became a best-seller with over 100,000 copies being sold in in its first month of being published.

6. Year 7: 1918-present

The Welfare State

The Labour Government, led by Clement Attlee, kept their promise and introduced several changes which linked to the Beveridge Report of 1942.

Date	Event	Details
1944	The Education Act	Secondary education a free right for all. The age of school leavers was increased to 15.
1945	Family Allowance Act	Families were given a weekly allowance payment to help with childcare costs.
1946	National Insurance Act	Benefits were given to any worker who was became unemployed, injured or sick.
1948	National Health Service Act	The NHS was set up in 1948 and gave free healthcare to all.
1947	Town and Country Planning Act	Slums and bomb-damaged housing was cleared. Many of the poorest people in Britain were relocated to new cities and towns.

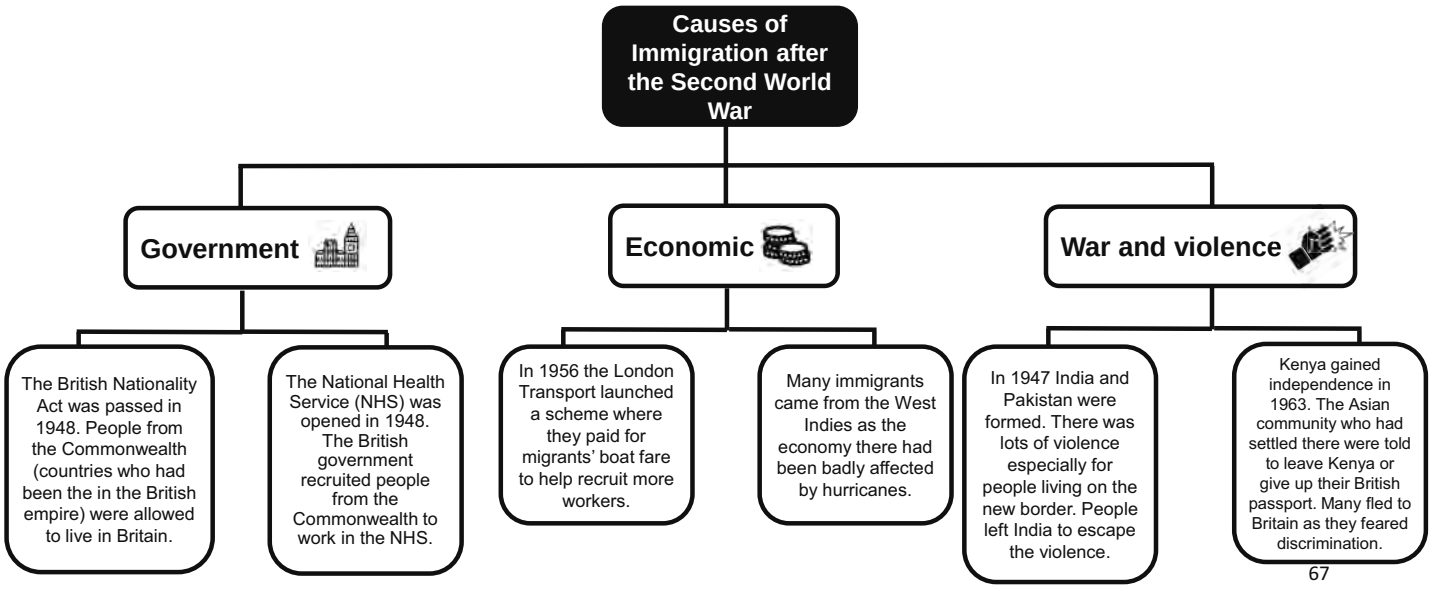
7. Year 7: 1918-present

The Welfare State

Key Individuals	Details
William Beveridge	He wrote a report about the '5 giants' which negatively affect people's lives and urged the government to help people overcome these issues.
Winston Churchill	Prime Minister of Britain from, 1940-45 during WW2.
Clement Attlee	Prime Minister of Britain from, 1945-51. He introduced several laws which created a Welfare State in Britain.

Keyword	Meaning
Evacuee	Many children were evacuated from the cities during WW2 due to the bombings. Many of the people in countryside were appalled by the poor health of the evacuated children.
Idleness	When someone does nothing or has nothing to do.
Squalor	Living in extremely dirty conditions due to poverty.

8. Year 7: 1918-present
Causes of Immigration after the Second World War



9. Year 7: 1918-present
Experience of Immigrants after the Second World War

Positives
Many people left their countries to come to Britain for better job opportunities.
People from the Caribbean were able to take pride in helping the 'Mother country' once again by helping to build it up after the war.

Negatives
Educated people who migrated to Britain had to accept jobs they were overqualified for- e.g. teachers/lawyers became cleaners in Britain.
It was difficult to find good housing- many landlords put up signs which said, 'Rooms for rent, no black need apply'.
There was violence and racism against the new migrants after the Second World War.
The National Front, a group which believes Britain should only be for white people, increased in popularity.

10. Year 7: 1918-present

UK Black Rights since the Brixton Riots

Date	Event	Details
1981	The Scarman Report	Investigated why the Brixton Riots happened and found the police were using the stop and search laws too much in black communities.
1987	First black MPs	Bernie Grant, Paul Boateng and Diane Abbott became the first black Members of Parliament in England.
1988	First British Black Supermodel	Naomi Campbell became the first black model to be on the cover of French Vogue (a fashion magazine).

Date	Event	Details
1990	First black family on EastEnders	EastEnders, a British soap television programme, introduced its first black family.
1993	Stephen Lawrence murder	Stephen Lawrence, a black 18-year old was killed and it was found the police did not investigate the murder properly because the victim was black.
1999	The Macpherson Report	The report found that the Metropolitan Police was institutionally racist.

11. Year 7: 1918-present

UK Black Rights since the Brixton Riots

Date	Event	Details
2000	Race Relations Act Amendment	The Race Relations Act was passed meaning all public institutions, including colleges and universities, to take action to promote ethnic equality.
2011	Mark Duggan and the England Riots	Riots broke out all over England, starting in London after the shooting and death of Mark Duggan (a 29-year old black man) by police.

Date	Event	Details
2012	John Terry fined by the FA	John Terry was accused of using racist language against Anton Ferdinand during a football match.
2019	Stormzy headlines Glastonbury	Stormzy became the first black solo British artist to headline and perform at the Glastonbury festival.

12. Year 7: 1918-present

Women's experiences from 1939 to 1976

Date	Law	Details
1939-45	The Second World War	Women were recruited into working during the Second World War to replace the men who left to fight.
1967	Abortion Act	Abortions made legal
1967	Family Planning Act	Married women allowed the contraceptive pill for free from the NHS.
1969	Divorce Reform Act	This law made it easier for women to get a divorce.
1970	Matrimonial Property Act	This law meant that women kept some of the property if she divorced.
1970	Equal Pay Act	This law granted equal wages for women and men doing the job. This law was not enforced until 1975 and did not deal with the issue of women being passed over for promotion or training.
1975	Sex Discrimination Act	This outlawed sexual discrimination in the workplace meaning employers could not discriminate against a person due to their gender.
1976	Domestic Violence Act	This allowed women who were married or living with their partner to get a court order to help remove violent partners /husbands from the home.

12. Year 7: 1918-present

Women's experiences from 1939 to 1976

Women's experiences in the home	
Technology	Technology such as the refrigerator and vacuum cleaner led to women spending less time food shopping and cleaning.
Choice	Most women were able to choose to spend their spare time on leisure activities, socialising and shopping.
Expectations	Women were torn between caring for their children and wanting to work

Keyword	Meaning
Matrimonial	Referring to marriage or married people.
Discrimination	Unfair treatment of someone or a group based on their gender, sexuality, ethnicity, skin colour, religion etc.
Domestic violence	Violent, aggressive behaviour, neglect, mental abuse within the home involving one partner abusing another.

13. Year 7: 1918-present

Britain 1950s-2000s

Decade	Key changes	Britain population (millions)	World population (billions)
1950s	1952 – First jet aircraft took holiday makers abroad. 1955 – over 3 million car owners in Britain and ITV was launched. 1957- USSR launched the first satellite.	50	2.5
1960s	1961 – 2.6 million people went on holiday abroad. First man on the moon (Yuri Gagarin). 1965 – First PC went on sale. 1969 – Concorde made its first flight.	53	3
1970s	1971 – Britain currency went decimal (no more shillings or half pennies) 1973 – Britain joined the European Economic Community (now the EU). 1979 – Margaret Thatcher became the first female Prime Minister of the UK. Unemployment was 1.5 million.	54	3.7

14. Year 7: 1918-present

Britain 1950s-2000s

Decade	Key changes	Britain population (millions)	World population (billions)
1980s	1982 – Channel 4 launched. 1984 – Miners' strike in Britain. 1989 – Sky launched, and the World Wide Web was invented by Tim Berners Lee.	56	4.5
1990s	1990 – 20 million cars in Britain and around 20 million people took holidays abroad. 1994 – PlayStation One was launched. 1997 – Harry Potter and Philosopher's Stone was published.	59	5.5
2000s	2001 – Apple launched the iPod, followed in 2007 by the iPhone. 2001 – Terrorists flew planes into the Twin Towers in New York, in 2005 terrorists bombed buses and trains in London. 2008 – 70% of adults owned a mobile phone	61	6

15. Year 7: 1918-present

Student Protests in the 1960s

Key Dates	Description
1965	US sends troops into Vietnam for the first time.
1968	Protests broke out across Europe and America.
May-July 1968	Protests spread throughout the UK. Students occupied the university at Hornsey Art College.
13th February 1970	Garden House Riot: Protestors at Cambridge University were protesting events in Greece.

Year 7 History

Assessment question structures

4 marks = 5 minutes = 1 paragraph

1. Year 7 History: Assessment questions structures

PEEL- How to explain

Point What is your opinion?	**E**vidence Which examples link to your opinion?	**E**xplain What does your evidence show?	**L**ink How does your opinion link or compare to others?
• I think... • One way... • A consequence was... • The importance of... • The main cause was...	• For example… • This can be seen through • This is demonstrated by…. • A prime example of this is… • We can see evidence of this when we look at the… • This is reflected in… • This links to the fact...	• This shows us that… • This demonstrates how… • From this we can assume that… • This is significant because… • This embodies/ epitomises/reflects the importance of… • As a result of this… • If this did not happen then… • Therefore, this shows... • This suggests...	• In contrast… • Although this was important, it was less important than… because… • However… • Alternatively… • Even though… • This links to...

2. Year 7 History: Assessment questions structures

Source Analysis

How to analyse a source	**Sentence starters**
1. What can you see?/What does it say? • Describe what you can see if it is an image based source. • Pick out words/phrases from the source which help you work out what it says	In the source I can see… In the source it says…
2. What does it mean? • Explain the main message/meaning of the source. • If it is an image based source, explain what the imagery in the source means/symbolises.	This means… Therefore, this suggests…
3. What do I know? • Explain how the message/meaning of the source links to your own knowledge.	This links to the fact… I know this to be true because…

3. Year 7 History: Assessment questions structures

Interpretation Analysis

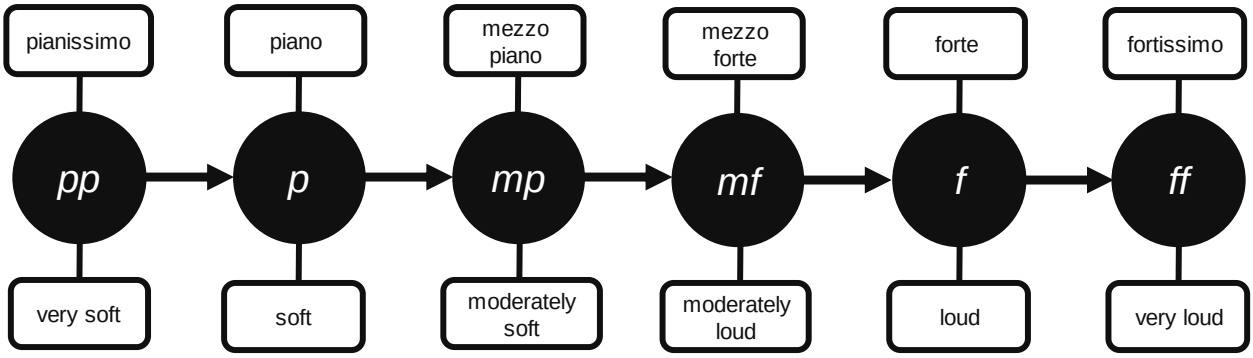
How to analyse an interpretation	Sentence starters
1. Summarise the interpretation into 1 sentence of your own words.	The interpretation says…
2. Link back to your own knowledge	This links to the fact… I know this to be true because…

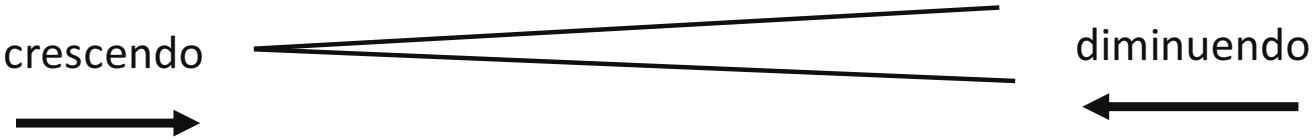
Year 7 Music Knowledge Organiser

Musical Elements

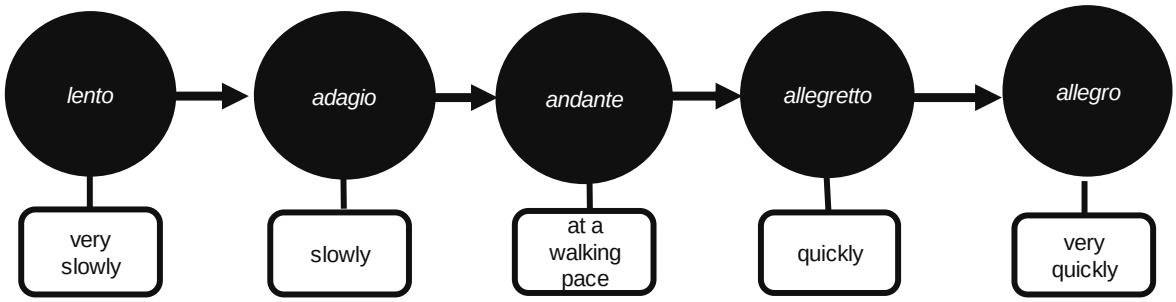
Keyword	Definition	Example
Pulse	The beat of the music. Every piece of music has a heartbeat. It doesn't need to be played by drums - you can 'feel' the beat.	"the pulse of the music is steady"
Tempo	The speed of the music. Music can change tempo within a piece. We often describe it using Italian words	"the tempo is fast"
Pitch	How high or how low a sound is.	"the music is high"
Dynamics	The Volume of the Music. Music can change dynamics within a piece. We often describe it using Italian words	"the music is quiet and then gets louder"
Structure	Music is divided into sections. The order of these sections create structure. For example verse and chorus/ Binary/Ternary	"the music starts with an 'A' section"
Texture	How the different musical layers combine. A single melody creates a thin sound. Adding more parts/layers creates a thicker sound.	"there are lots of instruments playing lots of different melodies"
Timbre	Each instrument has a unique sound – this individual sound is its timbre. When describing sound first try to describe the instrument and then how it is played	" the flute has a warm timbre when played low down"
Rhythm	Each note can have a long or short duration. Putting different notes together creates a rhythm	"there are lots of crotchet rhythms in this piece"
Melody	The 'tune' of the music – the part we sing along to	" the melody of this song is made up of lots of repeated sections"

Dynamics - volume





Tempo - speed

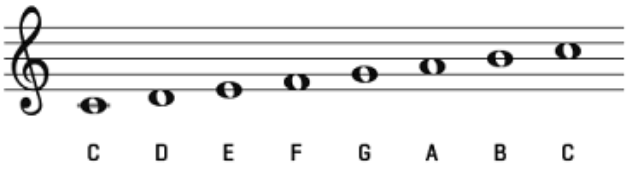


accelerando : getting faster

rallentando: getting slower

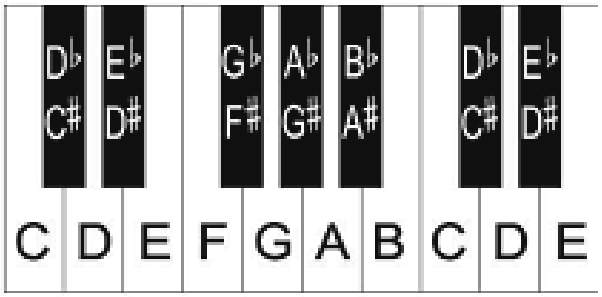
Pitch

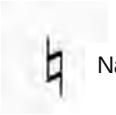
Treble Clef Notes



Notes on the line: Every Green Bus Drives Fast

Notes in the space: FACE




Natural


Sharp


Flat

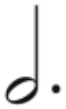
Rhythm

Rhythms


Crotchet: 1 Beat


Minim: 2 Beats


Semibreve: 4 Beats


Dotted Minim: 3 Beats


Quaver: Half Beat


2 Quavers Joined together: ½ beat each


Bar line – this divides up the music: You are allowed so many beats in each bar.

4 Beats in a bar

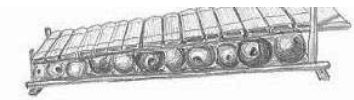
3 Beats in a bar

Vocal Music

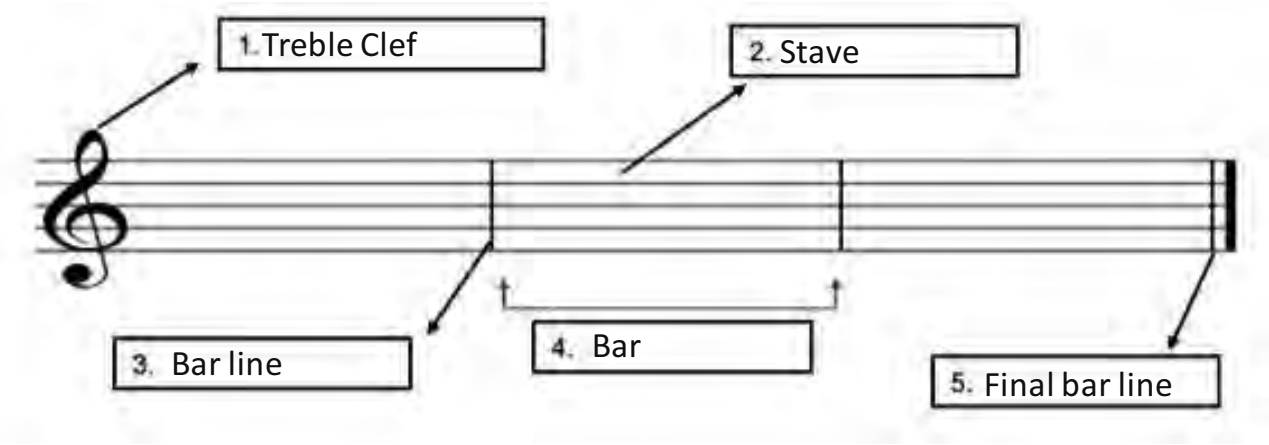
Keyword	Definition
Unison	Singing or playing the same thing as someone else
Soprano	The highest female voice
Alto	The lower female voice
Tenor	The highest male voice
Bass	The lowest male voice
Harmony	Two or more different notes sung/played at the same time
A capella	Singing with no accompaniment
Solo	One person singing or playing with or without an accompaniment
Duet	Two people playing or singing together

African Music

Keyword	Definition
Polyrhythm	More than one rhythm playing at a time
Djembe	An African drum that you hit with your hand (the ones we use in school)
Master Drummer	The experienced drummer who leads the rest of the group
Syncopation	A rhythm where the main accents do not fall on the beat
Improvisation	Making something up on the spot
Ostinato	A short, repeated pattern or rhythm
Call and response	A singer or musician leads with a 'call' and the group responds with a musical answer
Balafon	A musical instrument that is a bit like a xylophone – different lengths of wood lead to different pitches – they hit them with a stick



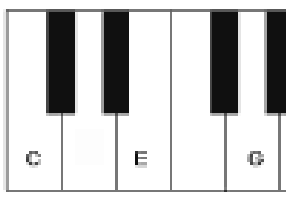
Musical Notation



Musical Structures

Keyword	Definition
Structure	The way different sections of music are put together
Binary	Two contrasting sections of music which are not repeated later on in the piece:
Ternary	Two contrasting sections of music, where the first section is repeated later on:
Conjunct	A melody that moves up and down in step
Disjunct	A melody that moves up and down by large jumps/leaps
Modulate	To change key in a piece
Chord	More than one note played at the same time: play a note, miss a note, play a note, miss a note, play a note on the keyboard
Major	A 'happy' sounding key
Minor	A 'sad' sounding key

Chord example



Instruments of the Orchestra

Keyword	Definition
Instrument	An object that makes a musical sound
String Family	Violin, Viola, Cello, Double Bass, Harp
Woodwind Family	Flute, Clarinet, Oboe, Saxophone, Bassoon
Percussion Family	Anything you hit or shake: Drum, Glockenspiel, Triangle, Tambourine
Brass Family	Trumpet, Trombone, French Horn, Tuba
Conductor	The person in charge of the Orchestra – leading them from the front
Orchestra	A group of musicians playing together – containing woodwind, strings, brass and percussion

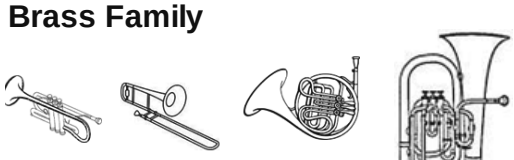
String Family

Violin Viola Cello Double Bass

Woodwind Family

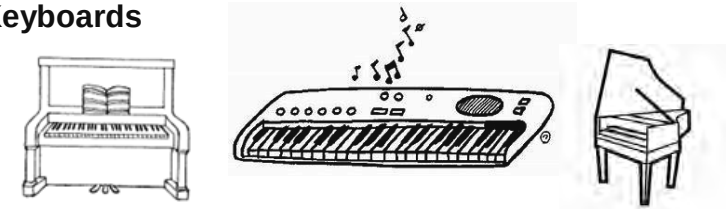
Flute Clarinet Oboe Bassoon Saxophone

Brass Family



Trumpet Trombone French Horn Tuba

Keyboards



Piano Keyboard Harpsichord

Percussion Family

Timpani Glockenspiel (metal) Xylophone (wooden) Triangle Snare Drum Bass Drum Tambourine

Baroque era

Keyword	Definition
Baroque Era	1600-1750
Ground Bass	Repeating bass line over which the melody is played
Canon	A bit like a round – each part come in one at a time and plays what the previous part has played (think of Frere Jacques)
Pachelbel	Composer who wrote 'Pachelbel's Canon'
Ornamentation	Where you 'decorate' the melody
Trill	Play two notes next to each other really fast - (form of ornamentation
Conjunct Melody	Melody moves in step
Harpsichord	Keyboard instrument used in the Baroque era (bit like a piano but sounds 'twangy')
Cello	The Bass instrument that plays in a Baroque piece of music
D major	The Key of the music – the music has 2 sharps – F# and C#
Composers in the Baroque Era	Bach, Handel Vivaldi

Physical Education

Year 7

Contents

Year 7

Warm up – 4 Stages

1. Pulse Raiser	Raising the heart rate through running, jogging or swimming
2. Mobility	Moving your joint through a full range of movement (circling arms)
3. Dynamic stretching	Stretching whilst moving e.g. lunges, open the gate or close gate at hip joint
4. Skill Rehearsal	Practise a skill to be used in the activity e.g. passing a ball

Benefits of a warm up

Warm up muscles – makes them ready for exercise

Increase body temperature – helps with oxygen transfer

Increase heart rate – increases blood flow to deliver oxygen

Increase flexibility of muscles and joints – increases range of movement

Increase pliability of ligaments and tendons – increases movement

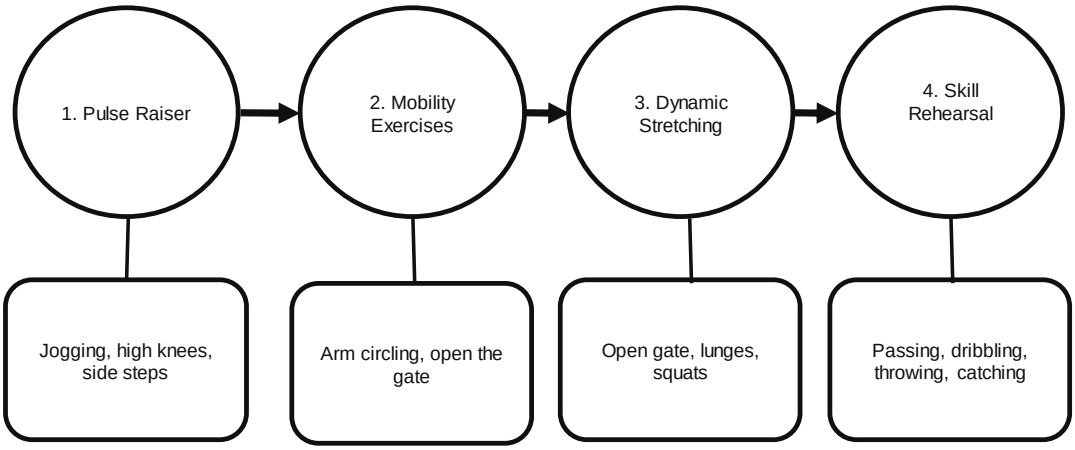
Increase blood flow and oxygen – to help supply working muscles with oxygen

Increase muscle speed contractions – help to improve performance

Year 7

Stages of the warm up with examples

The 4 stages of the warm up showing examples of what you might do at each stage.



Year 7

Components of fitness

1. Strength	Muscles working against a resistance
2. Power	Performing any skill which requires strength at speed Speed x strength
3. Agility	Ability to move and change direction quickly under control
4. Balance	Ability to maintain an upright or stable position

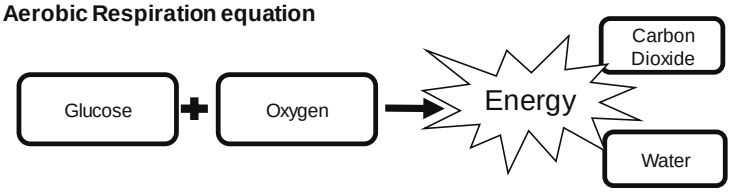
5. Flexibility	Ability to move joints through a range of movement
6. Muscular Endurance	Ability to keep the muscles working repeatedly
7. Cardiovascular Endurance	Ability of the heart, lungs and the blood vessels to get oxygen to the muscles
8. Body Composition	The percentage of muscle, fat and bone within the body.

Year 7

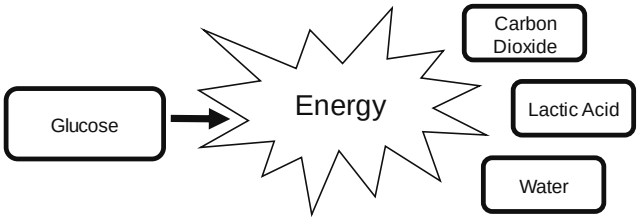
Aerobic and Anaerobic respiration

Aerobic	Using oxygen to perform exercise at a low steady rate For example working at low intensity jogging, cycling, swimming, rowing
Anaerobic	Performing activity without oxygen at a high intensity and usually for less than 60 seconds For example sprinting, lifting heavy weights

Aerobic Respiration equation



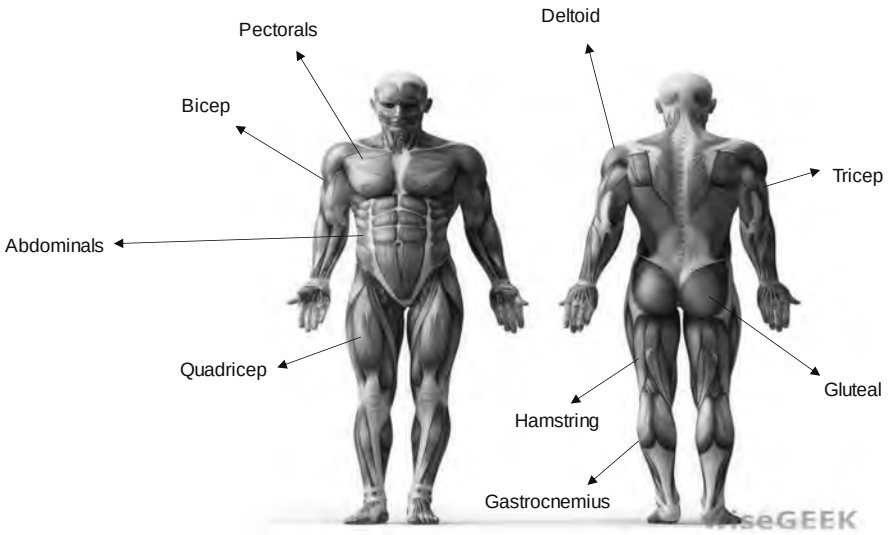
Anaerobic Respiration equation



Year 7

Muscle location and contractions

Muscle Contractions	Muscles contract to pull on bones to create movement.



Year 7

Netball

Rules

1. You can only pivot on your landing foot and you cannot lift it up and put in back down whilst in possession of the ball
2. The centre pass must be caught in the centre third
3. You can only hold the ball for 3 seconds
4. You have to be a meter away from the player when defending the ball
5. No part of your foot should be on or over the line when taking back line and side-line passes

Key Terms

Footwork	The movement of your feet when you receive the ball either landing or pivoting
Man to man marking	Staying with your partner wherever they go when your team does not have the ball
Feint dodge	Changing your body position quickly to make your marker think you are going one way but then you go another way to receive the ball

Year 7

Basketball

Rules

1. Once the ball has gone over the half-way line it can not be returned by the attacking team
2. You cannot dribble the ball pick it up and then dribble the ball again or bounce the ball with two hands (double dribble)
3. You can be as close as you like when you are marking and you can knock the ball out of your opponents' hand.
4. You cannot move with the ball unless you are dribbling (travel)
5. Cannot stand in the key for more 3 seconds

Key Terms

Double Dribble	Dribbling the ball picking it up, then dribbling the ball again or bouncing the ball with two hands
Rebound	When you collect the ball after a shot from the basket
Set Shot	Taking a shot form a two footed stance
Travel	Taking more than two steps with the ball

Year 7

Gymnastics

Key Terms

Extension	Making sure any part of your body is fully stretched out
Tension	Making sure that your position is held using your muscle so that they are tense
Control	Moving your body and knowing exactly what each part of your body is doing
Balance	Holding a position still for 3 -5 seconds

Travel	Moving from one place to another using a variety of different ways e.g. roll, cartwheel
Cannon	Do the same movement at a different time e.g. one after the like a Mexican wave
Unison	Do the same movement at the same time e.g. acting like a mirror

Year 7

Volleyball

Rules

1. Maximum of 3 hits per side
2. You cannot hit it twice in a row
3. You can only score points on your serve
4. Balls may be played off the net , but not on the serve
5. Serve must be played from behind the line

Key Terms

Volley / Set	A shot played above the head using two hands
Dig	A shot played underarm to give the ball height
Serve	A shot played to start the game either underarm or overarm
Smash / spike	A shot played after a set to put the ball hard and fast over the net in a downwards motion

Year 7

Hockey

Rules

1. You cannot use the back of your stick (the rounded part)
2. You cannot touch the ball with your feet
3. You must tackle with you stick on the ground
4. You cannot lift the ball dangerously into someone
5. You must back away 5 yards from the ball when a free pass is taken

Key Terms

Push Pass	Passing the ball using a push so no backward swing
Slap Hit	Hands apart on the stick and hit the ball with a small back swing
Block tackle	Tackling with your stick flat on the ground
Reverse Stick	Stopping or hitting the ball on your left side through turning the stick

Year 7

Football

Rules

1. You cannot use any part of your hand or arm to play the ball
2. When throwing the ball in you must throw the ball with two hands from behind your head and both feet on the floor
3. You must take the ball and not any part of the body when tackling
4. When taking a free kick defenders must be 10 yards away
5. At a goal kick the defenders are allowed in the penalty area, the attackers are not

Key Terms

Instep pass	Using the inside of your foot to make a pass
Jockeying	Defender stays between the player with the ball and the goal in a side on position strongest foot furthest from the ball
Dribbling	Moving with the ball under control using the inside outside and top of the foot
Foul	When the rules are broken and the other team gain possession

Year 7

Outdoor Adventurous Activities

Key Terms

Map	Geographical picture of the surrounding area or location
Key	Information given to be able to read a map which are identified by colour or a symbol
Orientating the map	Moving the map to mirror your surroundings
Landmarks	A feature of a landscape of building to aid in orientating a map
Route	The directions you plan out and take to complete an orienteering course
Compass points	North, South, East and West

Year 7

Fitness

Key Terms

Heart rate	How many times your heart beats per minute (BPM)
Working heart rate	Your heart rate when you are exercising or immediately after exercise
Short term effects of exercise	How the body responds to exercise at the time e.g., raise heart rate and breathing rate
Intensity	How hard you work the body – measured by how fast your heart beats
Circuit training	Exercising at different stations for a specific period of time with rest in-between
Interval training	Periods of work with periods of rest

Year 7

Badminton

Rules

1. When serving you must serve diagonally across the court into the serving box
2. A serve must be hit under arm and below the servers waist
3. If a player touches the net with their racquet or any part of the body it is called a fault
4. The shuttlecock can only be hit once on your side of the net
5. There are no second serves

Key Terms

Serve	Start of game the shuttlecock is hit underarm over the net
Overhead Clear	The shuttlecock is played over the head and hit to the back of the court
Net Shot	A shot played as close to the net as possible
Drop Shot	Played in the same way as an overhead clear except it lands close by the net

Year 7

Rugby League

Rules

1. Pass the ball backwards or flat (inline with you)
2. If your in front of the ball you are offside
3. Can't tackle above shoulder height
4. Cannot jump into contact
5. If your foot touches the line when you are holding the ball you are out of play

Key Terms

Offside	If you are in front of the ball you are offside, If you are not 10 metres back from the tackle area you are offside. If you are not square on at the play the ball you are offside.
Play the ball	After a tackle, the defenders must release the tackle and the attacker must stand up place the ball on the floor and roll the ball backwards with the sole of their foot to a teammate to pick up and carry on the next phase of play.
Try	A score of 4 points when the ball in placed over the try line on the floor under control and with downward pressure
Rugby Tackle	When a player with the ball is brought to the ground or is prevented from moving forwards

Year 7

Rounders

Rules

1. The ball must be bowled above the knee and below the head and must not be wide or at the body
2. ½ a rounder is scored if you hit the ball and make it to the second post
3. 1 rounder is scored if you hit the ball and make it around all bases ensuring you touch fourth post as you pass it
4. ½ rounder is awarded for 2 no balls in a row
5. You must run outside the post otherwise running inside you will be called out

Key Terms

Bowling	Ball is bowled to batter underarm
Batting	The act of hitting the ball in the box
Rounder	When the ball is hit and the player goes around all 4 posts a rounder is scored
Long Barrier	Getting your body low and behind the ball to stop the ball when fielding

Year 7

Athletics

Key Terms

Javelin	Throwing a spear like implement
Shot Putt	Pushing a heavy weighted ball through the air
Discus	Throwing a disc like implement
Long Jump	Jumping as far as you can from a line into a pit of sand

High Jump	Jumping as high as you can over a bar onto a soft mat
Personal Best	Your best possible time, height or distance in an athletic or sporting event
Relay 4x100m	4 participants run 100m and pass a baton around a 400m track.