

Y9 Atomic Structure Homework Grids

Name: _____

Science Teacher: _____

	Comment
Grid 1.1	
Grid 1.2	
Grid 1.3	
Grid 1.4	
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Grid 1.6	
Grid 1.7	
Grid 1.8	

What is the relative charge of a proton?

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What is that is the relative charge of a neutron?

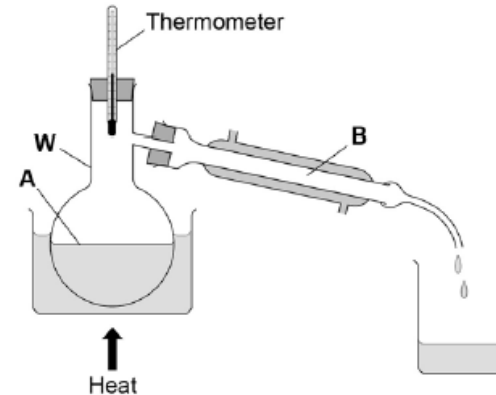
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What is the relative charge of an electron?

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Why are atoms neutral?

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In the diagram above:

Name the changes of state taking place at **A** and **B** in the figure above.

A.....

B.....

What is the name of this method of separation?

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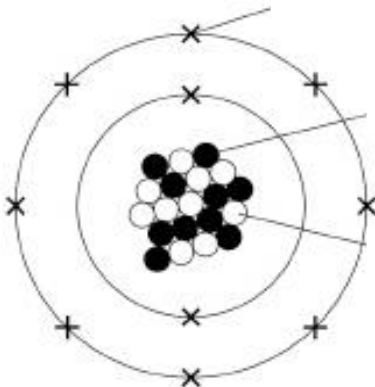
The student measure the boiling point of the liquid 3 times and got the following results.

102	99	89	101
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Calculate the mean, leaving out any anomalous results.

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Label the atom below.



What is the name of the element?

Grid 1.2: Use KO 23-25

Due: _____

HIGHER

Explain how paper chromatography separates the dyes in a food colouring.

Do **not** give details of how to do the experiment.

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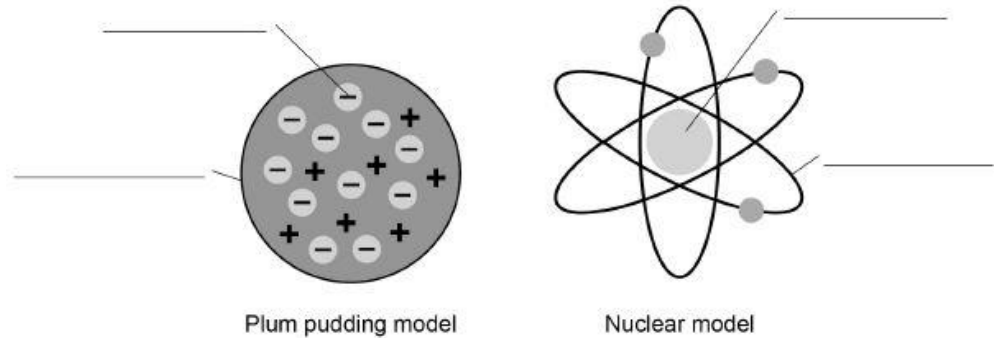
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Figure 1 shows two models of the atom.

Figure 1



Write the labels on **Figure 1**

What did each of the following scientists do regarding the history of the atom?

Thomson.....

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Rutherford

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Bohr

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Chadwick

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Why do substances separate during distillation?

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Why do substances separate during filtration?

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Give an example of a substance that can be separated by distillation.

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Give an example of a substance that can be separated by chromatography.

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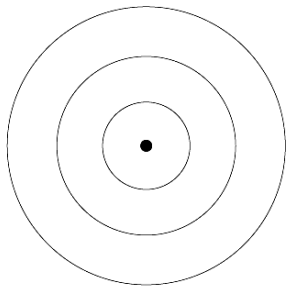
Grid 1.3: Use KO 26-28

Due: _____

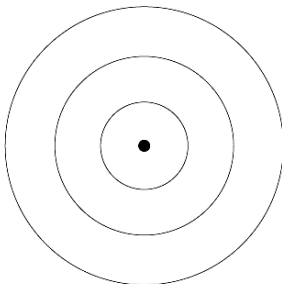
How many of each sub-atomic particle are in the element Neon shown below.

21	Ne	Protons
10		Electrons
		Neutrons
16	O	Protons
8		Electrons
		Neutrons
127	I	Protons
53		Electrons
		Neutrons

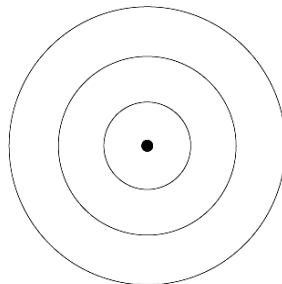
Complete the electronic structure for the atoms below.



Magnesium



Sodium

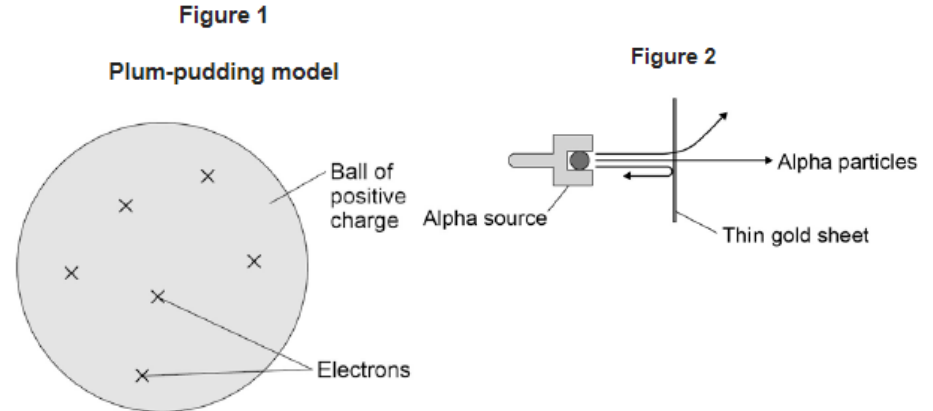


Chlorine

What is the name of the sub-atomic particle found in the shells of the above elements?

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Figure 1 shows the plum pudding model of the atom. This model was used by some scientists after the discovery of electrons in 1897. In 1911 the scientists investigated the effect of firing alpha particles at very thin sheets of gold foil. Their experiment is shown in **Figure 2**. The arrows show the paths taken by alpha particles in the experiment.



(a) Explain why scientists replaced the plum pudding model of the atom with the nuclear model of the atom as a result of the experiment.

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Grid 1.4: Use KO 29

Due: _____

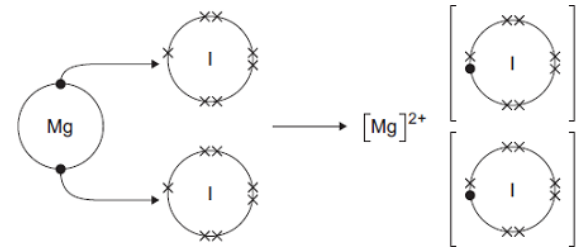
Describe what happens when a lithium atom reacts with a chlorine atom.
Answer in terms of electrons.

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The diagram shows how magnesium and iodine atoms form magnesium iodide.
Only the outer electrons are shown.

The dots (●) and crosses (×) are used to represent electrons.

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Use the diagram to help you to answer this question.

Describe, as fully as you can, what happens when magnesium reacts with iodine to make magnesium iodide.

To gain full marks you should use the words atom, electron and ion in your answer.

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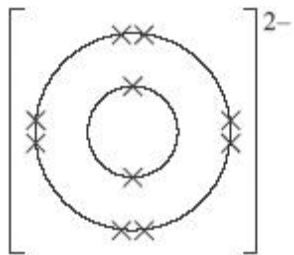
Magnesium ions and oxide ions are formed when magnesium reacts with oxygen.

The diagram shows the electronic structure of an oxide ion.

Draw a similar diagram to show the electronic structure of a magnesium ion.

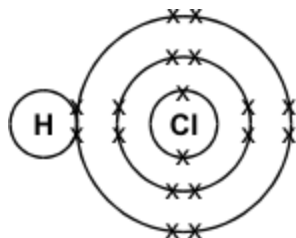
Oxide ion

Magnesium ion



The hydrogen halides (hydrogen fluoride, hydrogen chloride, hydrogen bromide and hydrogen iodide) are important chemicals.

The diagram below represents a molecule of hydrogen chloride.



What type of chemical bond holds the atoms in this molecule together?

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How do you know it is this type of bond?

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What is a double covalent bond?

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When a simple molecular substance melts, is it the bonds between atoms or the forces between molecules that are broken?

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Explain why a carbon atom can form up to four covalent bonds, whilst a hydrogen atom only ever forms one covalent bond.

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Draw the dot cross diagrams for Cl_2 and CH_4

Graphite is soft and slippery, explain why.

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How many covalent bond does each carbon form?

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Why can graphite conduct electricity?

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What is a similarity between diamond and graphite?

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What is a difference between diamond and silicon dioxide?

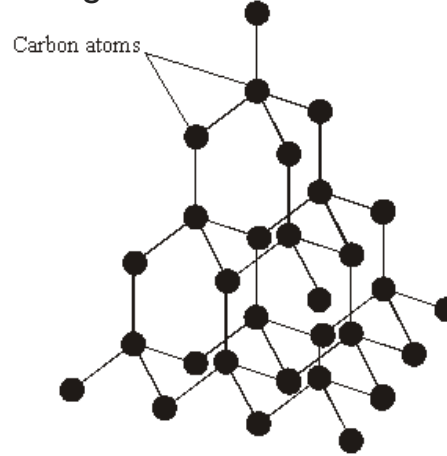
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What are two differences between diamond and graphite?

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HIGHER

The diagram shows the structure of diamond.



Explain, as fully as you can, why diamond has a high melting point.

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Grid 1.7: Use KO 31

Due: _____

Write three sentences to explain what delocalised electrons are in a metal structure.

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Explain how metallic bonds form.

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The table gives some melting points of metals.

Metal	Melting point (°C)
lithium	180
barium	727
potassium	63
calcium	842

Explain why the melting points of barium and calcium are significantly higher than those of lithium and potassium.

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Pure gold is a very soft metal. This makes the jewellery 'bendy' and it wears away too quickly. Jewellers have solved this problem by mixing gold with other metals, such as silver, copper and platinum.

Carat	Parts of gold in the alloy	Parts of other metals in the alloy
24	24	0
18	18	6
14	14	10
12	12	12
9	9	15

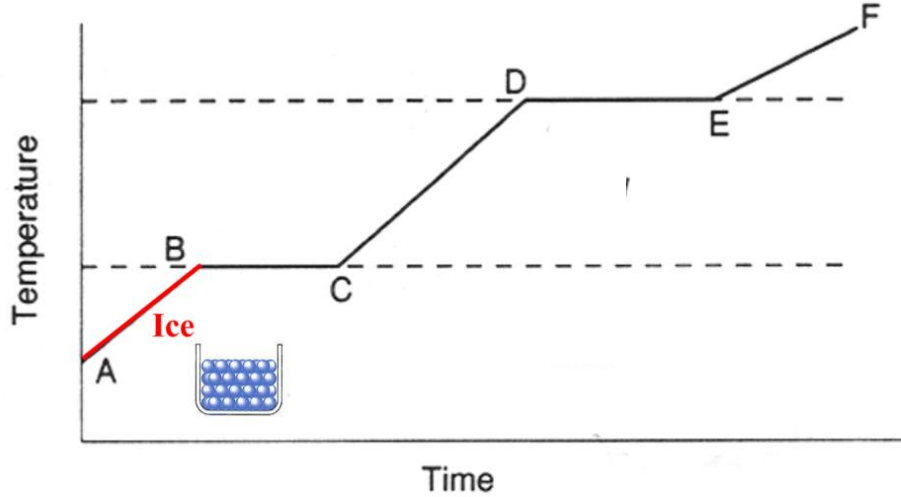
Calculate the percentage of gold in each of the different carats. Show your working out.

24.....
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18.....
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14.....
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12.....
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9.....
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Grid 1.8

Due: _____

Below is a cooling curve.



Describe the way that the particles are arranged and behaving between C and D

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Describe the way that the particles are arranged and behaving between E and F

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Which letter on the diagram represents the following:

1. Where ice starts to melt?

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2. Where ice stops melting?

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3. Between what letters on the graph is evaporation happening

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4. Between what letters on the graph would you find a gas

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What is the name for:

1. A solid turning into a liquid

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2. A liquid turning into a gas

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3. A gas turning into a liquid

4. A liquid turning into a solid

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5. A solid turning into gas

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