AQA GCSE Combined Science - Trilogy | 8464

SPECIFICATION POINT 5.1.2.1

The periodic table

Past-paper questions

Tier	**Foundation**
Question groups	**14**
Available paper years	**2018–2025**

Using this booklet

1. Answer the questions in order and show your working.
2. Original question numbers and marks are retained.
3. Print at actual size (100%) for measuring questions.
4. Use the companion answer booklet to check your work.

Name: _____ **Date:** _____

Whole questions are retained for context, so some parts assess other specification points. Current and legacy sources are labelled. Continue on extra paper if needed.

5.1.2.1 The periodic table

Question 01

June 2018 | 8464/C/1F | Original Q2

0 2 This question is about the halogens.

0 2 . 1 Which group in the periodic table is known as the halogens?

[1 mark]

Tick **one** box.

Group 1 ☐

Group 2 ☐

Group 7 ☐

Group 0 ☐

0 2 . 2 A fluorine atom has 7 electrons in the outer shell.

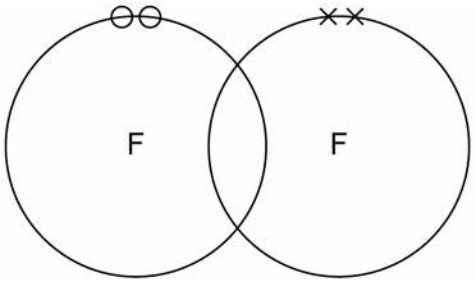
Figure 8 shows part of a dot and cross diagram to represent a molecule of fluorine (F_2).

Complete the dot and cross diagram.

You should show only the electrons in the outer shells.

[2 marks]

Figure 8



0 2 . 3 Chlorine reacts with potassium bromide solution.

Complete the word equation.

[2 marks]

chlorine + potassium bromide → _____ + _____

5.1.2.1 The periodic table

Question 01 · continued

0 2 . 4 What type of reaction happens when chlorine reacts with potassium bromide solution?

[1 mark]

Tick **one** box.

decomposition ☐

displacement ☐

neutralisation ☐

precipitation ☐

0 2 . 5 Complete the sentence.

Choose the answer from the box.

[1 mark]

an atom	**an electron**	**a neutron**	**a proton**

Chlorine is more reactive than bromine.

This is because chlorine gains _____ more easily.

0 2 . 6 How does the size of a chlorine atom compare with the size of a bromine atom?

Complete the sentence.

Choose the answer from the box.

[1 mark]

bigger than	**the same size as**	**smaller than**

A chlorine atom is _____ a bromine atom.

5.1.2.1 The periodic table

Question 01 · continued

0 2 . 7 Give a reason for your answer to question **02.6**

[1 mark]

Reason _____

_____

0 2 . 8 Fluorine reacts with chlorine to produce ClF_3

Balance the chemical equation for the reaction.

[1 mark]

$Cl_2 +$ _____ $F_2 \rightarrow 2\ ClF_3$

0 2 . 9 Explain why fluorine is a gas at room temperature.

Use the following words in your answer:

energy **forces** **molecules** **weak**

[3 marks]

13

5.1.2.1 The periodic table

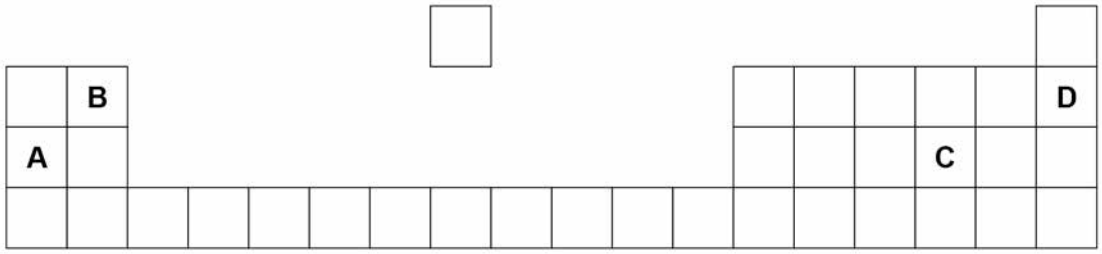
Question 02

June 2018 | 8464/C/1F | Original Q4

0 4 This question is about the elements in Group 2 of the periodic table.

0 4 . 1 **Figure 9** shows the positions of four elements, **A**, **B**, **C**, and **D**, in the periodic table.

Figure 9



Which element is in Group 2?

[1 mark]

Tick **one** box.

A ☐ **B** ☐ **C** ☐ **D** ☐

Question 4 continues on the next page

Question 02 · continued

Group 2 metal carbonates break down when heated to produce a metal oxide and a gas.

metal carbonate → metal oxide + gas

0 4 . 2 Name the two products when calcium carbonate ($CaCO_3$) is heated.

[2 marks]

_____ and _____

0 4 . 3 What type of reaction happens when a compound breaks down?

[1 mark]

Tick **one** box.

- burning ☐
- decomposition ☐
- neutralisation ☐
- reduction ☐

0 4 . 4 The metal carbonate takes in energy from the surroundings to break down.

What type of reaction takes in energy from the surroundings?

[1 mark]

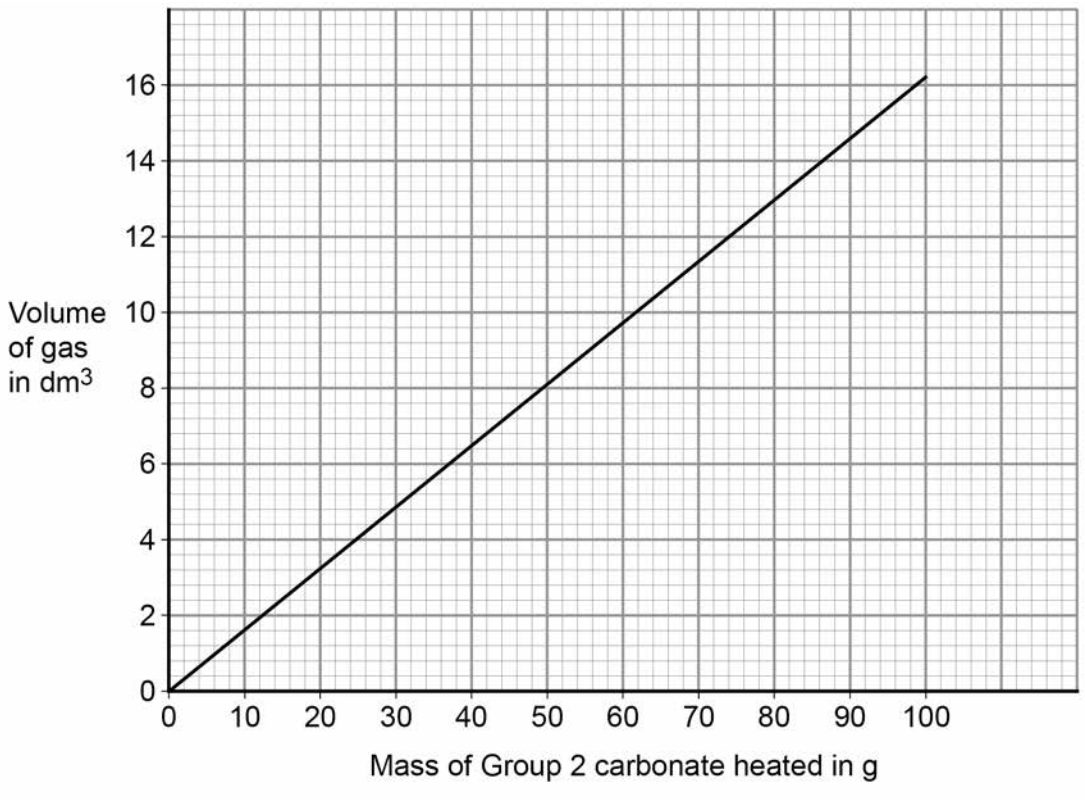
Tick **one** box.

- combustion ☐
- electrolysis ☐
- endothermic ☐
- exothermic ☐

Question 02 · continued

0 4 . 5 **Figure 10** shows the volume of gas produced when a Group 2 metal carbonate is heated.

Figure 10



The student collected 5.2 dm^3 of gas.

What mass of the Group 2 metal carbonate is heated?

[1 mark]

Mass = _____ g

0 4 . 6 Calculate the mass of the Group 2 carbonate needed to produce 24 dm^3 of gas.

Use your answer from question **04.5** to help you.

[2 marks]

_____

_____

_____

_____

Mass = _____ g

Question 02 · continued

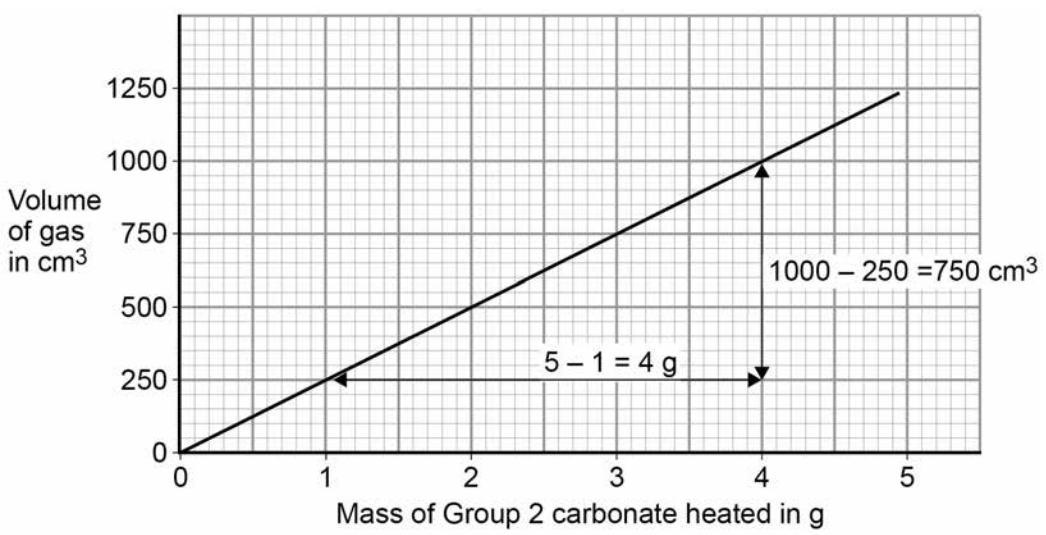
0 4 . 7 A student heated different masses of a Group 2 carbonate. The student measured the volume of gas produced.

Figure 11 shows a graph of the student's results.

The student calculates the gradient of the line in **Figure 11**

The student makes **two** mistakes.

Figure 11



Correct formula for gradient = $\frac{\text{Increase in volume of gas}}{\text{Increase in mass of Group 2 metal carbonate heated}}$

Student's calculation = $\frac{4}{750}$ = 0.00533 cm^3 per g

Identify the **two** mistakes the student makes.

Calculate the correct gradient of the line.

[4 marks]

Mistake 1 _____

_____

Mistake 2 _____

_____

Calculation _____

_____

Gradient = _____ cm^3 per g

5.1.2.1 The periodic table

Question 02 · continued

0 4 . 8 A student repeated the experiment with a different Group 2 metal carbonate (**X**CO_3).

The relative formula mass (M_r) of **X**CO_3 is 84

Relative atomic masses (A_r): C = 12 O = 16

Calculate the relative atomic mass (A_r) of **X**.

Name metal **X**.

Use the periodic table.

[4 marks]

Relative atomic mass (A_r) = _____

Metal **X** is _____

16

5.1.2.1 The periodic table

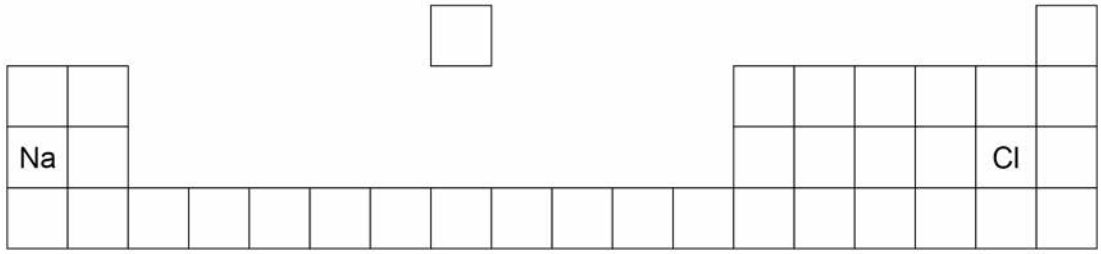
Question 03

June 2018 | 8464/C/1F | Original Q6

0 6 This question is about sodium and chlorine.

Figure 13 shows the positions of sodium and chlorine in the periodic table.

Figure 13



0 6 . 1 State **one** difference and **one** similarity in the electronic structure of sodium and of chlorine.

[2 marks]

Difference _____

_____

Similarity _____

_____

0 6 . 2 Sodium atoms react with chlorine atoms to produce sodium chloride (NaCl).

Describe what happens when a sodium atom reacts with a chlorine atom.

Write about electron transfer in your answer.

[4 marks]

_____

_____

_____

_____

_____

_____

_____

_____

5.1.2.1 The periodic table

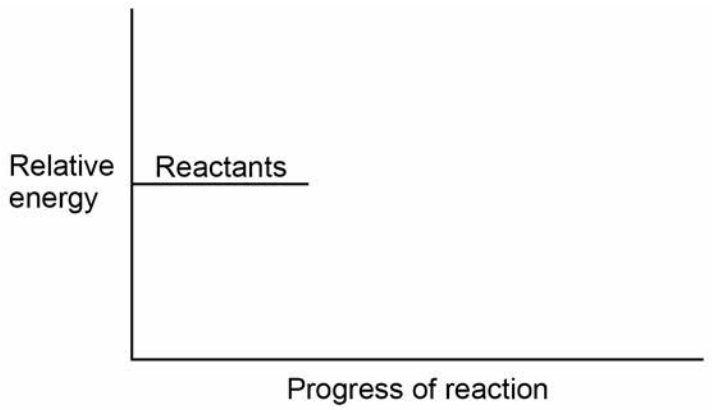
Question 03 · continued

0 6 . 3 The reaction between sodium and chlorine is an exothermic reaction.

Complete the reaction profile for the reaction between sodium and chlorine.

[2 marks]

Figure 14



8

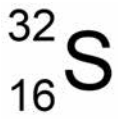
5.1.2.1 The periodic table

Question 04

June 2018 | 8464/C/2F | Original Q1

0 1 **Figure 1** represents an atom of sulfur.

Figure 1



0 1 . 1 Complete **Table 1**

[1 mark]

Table 1

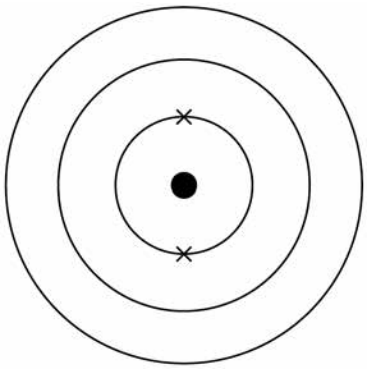
Particle	Number of particles in a sulfur atom
Electron	16
Neutron	
Proton	16

0 1 . 2 Sulfur is in Group 6 of the periodic table.

Complete the electronic structure of the sulfur atom represented in **Figure 2**

[1 mark]

Figure 2



5.1.2.1 The periodic table

Question 04 · continued

0 1 . 3 Sulfur reacts with oxygen to produce sulfur dioxide.

Complete the word equation for this reaction.

[1 mark]

sulfur + _____

0 1 . 4 What effect is caused by sulfur dioxide?

[1 mark]

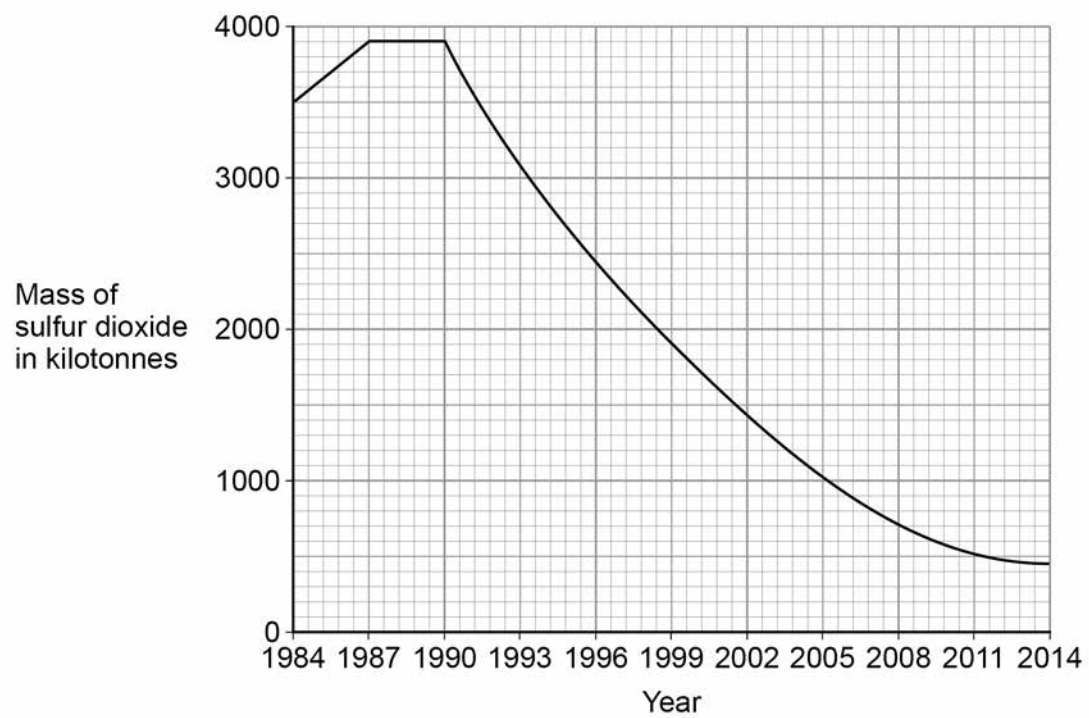
Tick **one** box.

- Acid rain ☐
- Global dimming ☐
- Global warming ☐
- Sea levels rising ☐

Question 1 continues on the next page

0 1 . 5 **Figure 3** shows the mass of sulfur dioxide in the Earth's atmosphere between 1984 and 2014

Figure 3



A student said:

'the mass of sulfur dioxide in the atmosphere decreased every year between 1984 and 2014'

Is the student correct?

Use data from **Figure 3** to justify your answer.

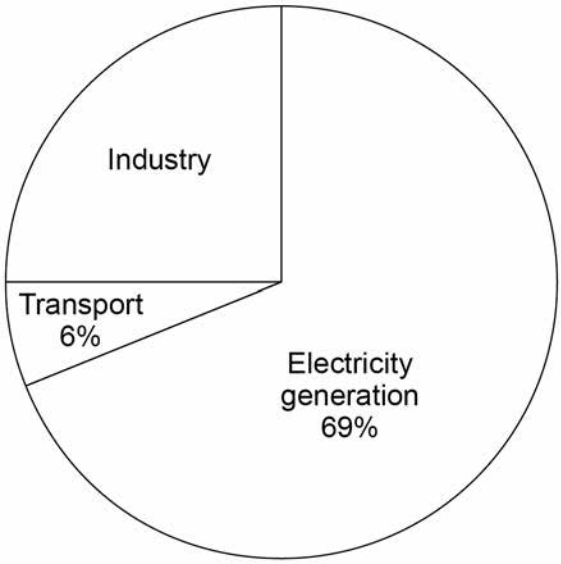
[3 marks]

5.1.2.1 The periodic table

Question 04 · continued

0 1 . 6 **Figure 4** shows the percentage of sulfur dioxide released by human activities.

Figure 4



Calculate the percentage of sulfur dioxide released by industry.

[2 marks]

Percentage = _____ %

9

5.1.2.1 The periodic table

Question 05

June 2019 | 8464/C/1F | Original Q3

0 3 This question is about the periodic table and argon.

0 3 . 1 What order did scientists use to arrange elements in early periodic tables?

[1 mark]

Tick (✓) **one** box.

- Atomic weight of element ☐
- Number of neutrons in an atom of element ☐
- Size of atoms of element ☐
- Year element was discovered ☐

0 3 . 2 In early periodic tables some elements were placed in the wrong groups.

Mendeleev overcame some of these problems in his periodic table.

Complete the sentence.

[1 mark]

Mendeleev did this by leaving _____ for elements that had not been discovered.

Question 3 continues on the next page

5.1.2.1 The periodic table

Question 05 · continued

0 3 . 3 What is the name of the group that contains argon?

[1 mark]

Tick (✓) **one** box.

- Alkali metals ☐
- Halogens ☐
- Noble gases ☐

0 3 . 4 An atom of argon is represented as $^{40}_{18}Ar$

Determine the number of protons and the number of neutrons in one atom of argon.

[2 marks]

Number of protons _____

Number of neutrons _____

0 3 . 5 Different atoms of argon are, $^{39}_{18}Ar$ and $^{38}_{18}Ar$

What is the name given to these different atoms of argon?

[1 mark]

Tick (✓) **one** box.

- Fullerenes ☐
- Ions ☐
- Isotopes ☐
- Molecules ☐

5.1.2.1 The periodic table

Question 05 · continued

0 3 . 6 What is the electronic structure of an argon atom, $^{40}_{18}Ar$?

[1 mark]

Tick (✓) **one** box.

2 ☐ 2, 8 ☐ 2, 8, 2 ☐ 2, 8, 8 ☐

0 3 . 7 Why is argon unreactive?

[1 mark]

_____

_____

8

Turn over for the next question

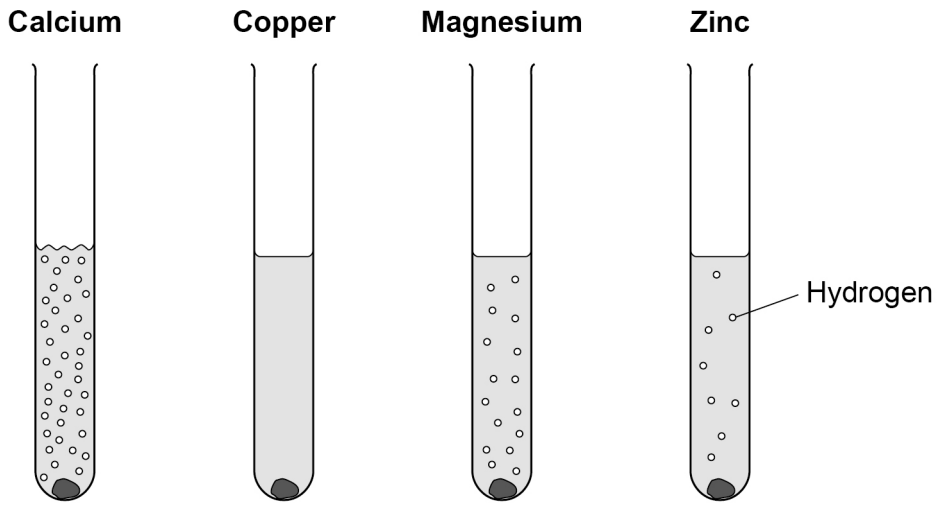
5.1.2.1 The periodic table

Question 06

0 6 This question is about reactions of metals.

Figure 7 shows what happens when calcium, copper, magnesium and zinc are added to hydrochloric acid.

Figure 7



0 6 . 1 What is the order of decreasing reactivity of these four metals?

[1 mark]

Tick (✓) **one** box.

Zn Ca Cu Mg ☐

Ca Cu Mg Zn ☐

Cu Zn Ca Mg ☐

Ca Mg Zn Cu ☐

5.1.2.1 The periodic table

Question 06 · continued

A student wants to make a fair comparison of the reactivity of the metals with hydrochloric acid.

0 6 . 2 Name **two** variables that must be kept constant.

[2 marks]

1 _____

_____

2 _____

_____

0 6 . 3 What is the independent variable in this reaction?

[1 mark]

_____

_____

0 6 . 4 Predict the reactivity of beryllium compared with magnesium.

Give a reason for your answer.

Use the periodic table.

[2 marks]

_____

Reason _____

_____

_____

0 6 . 5 A solution of hydrochloric acid contains 3.2 g of hydrogen chloride in 50 cm^3

Calculate the concentration of hydrogen chloride in g per dm^3

[3 marks]

_____

_____

_____

_____

Concentration = _____ g per dm^3

9

5.1.2.1 The periodic table

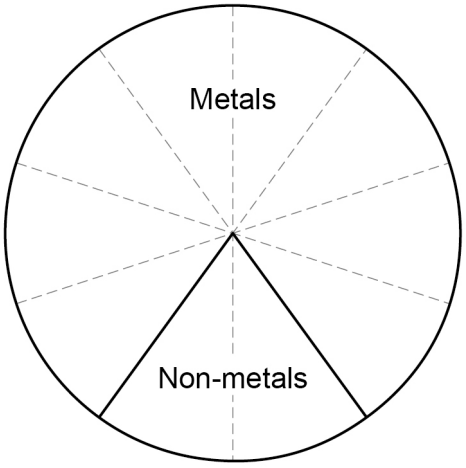
Question 07

November 2020 | 8464/C/1F | Original Q4

0 4 This question is about elements and compounds.

0 4 . 1 **Figure 5** shows the proportion of elements in the periodic table that are metals and non-metals.

Figure 5



Determine the percentage of the elements in **Figure 5** that are metals.

[2 marks]

Percentage = _____ %

0 4 . 2 Give **two** physical properties of metals.

[2 marks]

1 _____

2 _____

0 4 . 3 Sodium reacts with chlorine to produce sodium chloride.

Balance the equation for the reaction.

[1 mark]

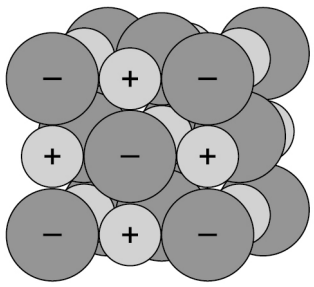
_____ $Na + Cl_2 \rightarrow$ _____ $NaCl$

5.1.2.1 The periodic table

Question 07 · continued

Figure 6 shows part of the structure of sodium chloride (NaCl).

Figure 6



Sodium chloride

0 4 . 4 What holds the particles together in sodium chloride?

Use **Figure 6**.

[1 mark]

Tick (✓) **one** box.

Electrostatic attractions ☐

Intermolecular forces ☐

Metallic bonds ☐

0 4 . 5 Solid sodium chloride does not conduct electricity.

Give **two** ways in which sodium chloride can be made to conduct electricity.

[2 marks]

1 _____

_____

2 _____

_____

8

5.1.2.1 The periodic table

Question 08

November 2020 | 8464/C/1F | Original Q5

0 5 This question is about elements in the periodic table.

0 5 . 1 What property was used to arrange elements in early periodic tables?

[1 mark]

Tick (✓) **one** box.

Atomic number ☐

Atomic weight ☐

Mass number ☐

0 5 . 2 In early periodic tables, iodine (I) was placed before tellurium (Te).

Mendeleev placed iodine after tellurium.

Figure 7 shows part of Mendeleev's periodic table.

Figure 7

16 **O**	19 **F**
32 **S**	35.5 **Cl**
79 **Se**	80 **Br**
128 **Te**	127 **I**

Suggest **one** reason why Mendeleev placed iodine in the column shown in **Figure 7**.

[1 mark]

5.1.2.1 The periodic table

Question 08 · continued

Table 3 shows the melting points of three Group 1 metals.

Table 3

Metal	Melting point in °C
Lithium	180
Sodium	98
Potassium	63

0 5 . 3 What state is lithium at 100 °C?

Use **Table 3**.

[1 mark]

Tick (✓) **one** box.

Gas ☐ Liquid ☐ Solid ☐

0 5 . 4 Complete the graph in **Figure 8**.

Use **Table 3**.

You should:

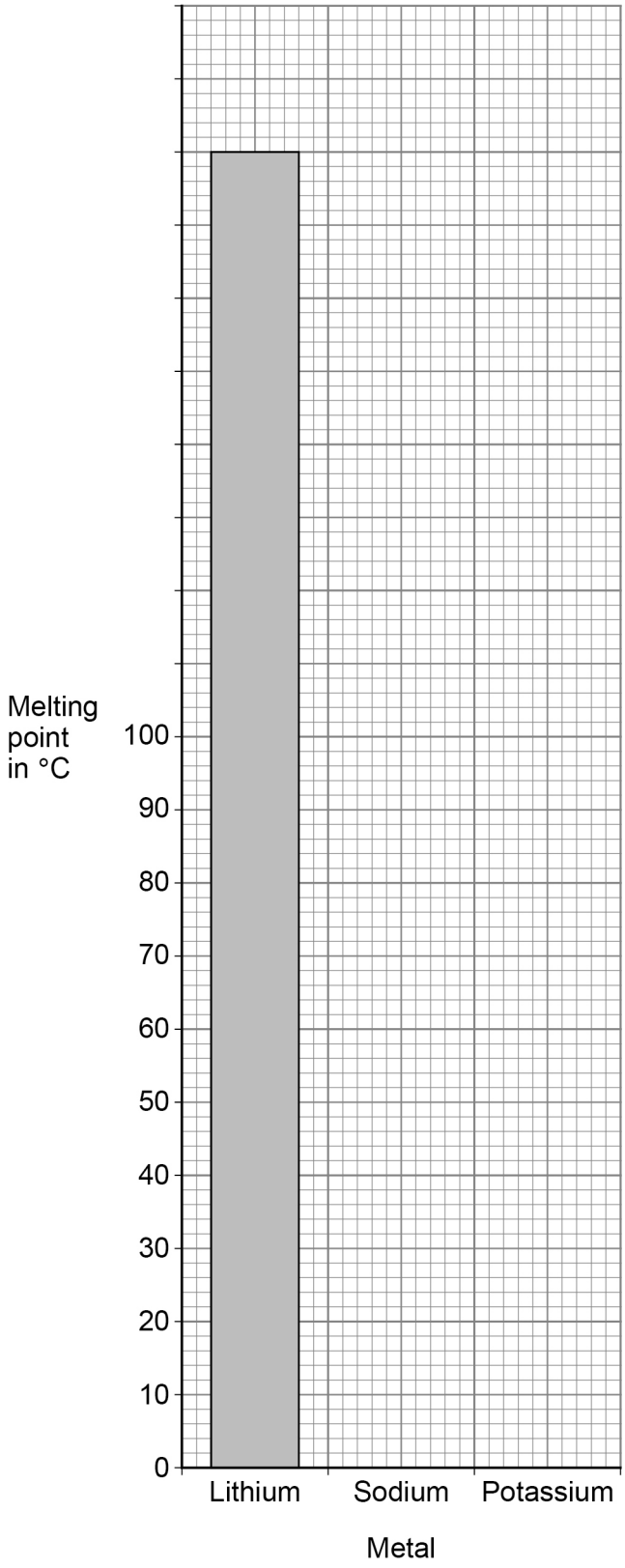
- complete the scale on the y-axis
- draw bars to show the melting points of sodium and potassium.

[3 marks]

5.1.2.1 The periodic table

Question 08 · continued

Figure 8



5.1.2.1 The periodic table

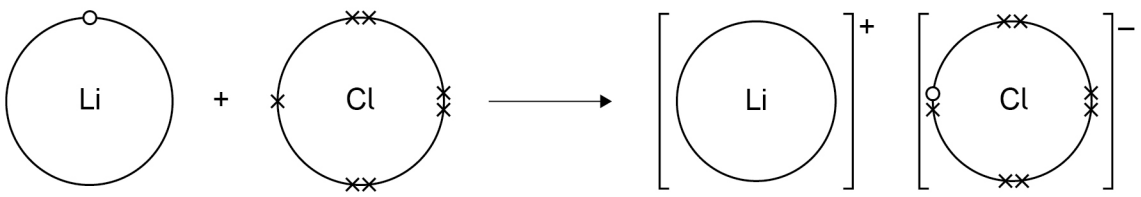
Question 08 · continued

0 5 . 5 Lithium reacts with chlorine to produce lithium chloride.

Figure 9 shows what happens to the electrons in the outer shells when a lithium atom reacts with a chlorine atom.

The dots (o) and crosses (x) represent electrons.

Figure 9



Describe what happens to a lithium atom and to a chlorine atom when they react.

Use **Figure 9** to answer in terms of electrons.

[3 marks]

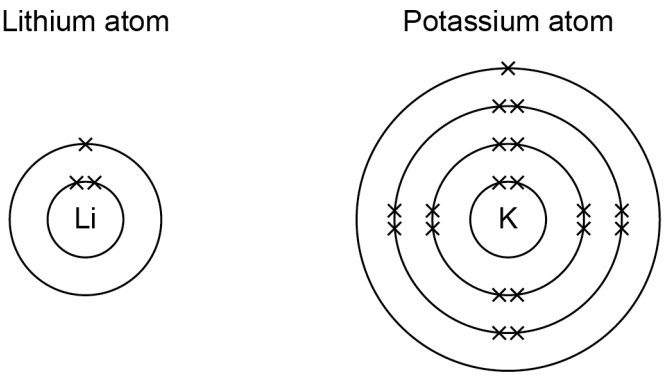
5.1.2.1 The periodic table

Question 08 · continued

0 5 . 6 Lithium and potassium are in the same group of the periodic table.

Figure 10 represents the electronic structures of a lithium atom and of a potassium atom.

Figure 10



Give **two** reasons why potassium is more reactive than lithium.

[2 marks]

1 _____

_____

2 _____

_____

11

5.1.2.1 The periodic table

Question 09

November 2021 | 8464/C/1F | Original Q1

0 1 Magnesium is in Group 2 of the periodic table.

1.0 g of magnesium reacted with chlorine to produce magnesium chloride.

0 1 . 1 Which types of element react when magnesium reacted with chlorine?

[1 mark]

Tick (✓) **one** box.

- A metal and a metal ☐
- A metal and a non-metal ☐
- A non-metal and a non-metal ☐

0 1 . 2 Write the word equation for the reaction when magnesium reacts with chlorine.

[1 mark]

_____ + _____ → _____

0 1 . 3 What apparatus was used to measure the mass of 1.0 g of magnesium?

[1 mark]

Tick (✓) **one** box.

- Balance ☐
- Beaker ☐
- Ruler ☐

5.1.2.1 The periodic table

Question 09 · continued

0 1 . 4 What mass of magnesium chloride was produced?

[1 mark]

Tick (✓) **one** box.

Less than 1.0 g ☐

1.0 g ☐

More than 1.0 g ☐

0 1 . 5 Magnesium reacts with oxygen to produce magnesium oxide.

Calculate the percentage mass of magnesium in magnesium oxide (MgO).

Relative atomic mass (A_r): Mg = 24

Relative formula mass (M_r): MgO = 40

[2 marks]

Percentage mass of magnesium = _____ %

Question 1 continues on the next page

Question 09 · continued

Magnesium carbonate decomposes to produce magnesium oxide and carbon dioxide.

The word equation for the reaction is:

magnesium carbonate → magnesium oxide + carbon dioxide

Four students heated 2.00 g of magnesium carbonate for 10 minutes.

Table 1 shows the results.

Table 1

Mass of carbon dioxide produced in g				
Student 1	**Student 2**	**Student 3**	**Student 4**	**Mean**
0.97	0.91	0.50	0.95	**X**

0 1 . 6 What is the most likely reason for **Student 3**'s anomalous result?

[1 mark]

Tick (✓) **one** box.

The student heated more than 2.00 g of magnesium carbonate. ☐

The student heated the magnesium carbonate for less than 10 minutes. ☐

The student used a higher temperature. ☐

0 1 . 7 Calculate value **X** in **Table 1**.

Do **not** use the anomalous result.

Give your answer to 2 significant figures.

[3 marks]

X (2 significant figures) = _____ g

10

5.1.2.1 The periodic table

Question 10

November 2021 | 8464/C/1F | Original Q6

0 6 This question is about the periodic table.

0 6 . 1 **Figure 11** shows part of Mendeleev's version of the periodic table.

Figure 11

H							
Li	Be	B	C	N	O	F	
Na	Mg	Al	Si	P	S	Cl	
K Cu	Ca Zn		Ti	V As	Cr Se	Mn Br	Fe Co Ni
Rb Ag	Sr Cd	Y In	Zr Sn	Nb Sb	Mo Te	I	Ru Rh Pd

Which group of elements had **not** been discovered when Mendeleev's version of the periodic table was published?

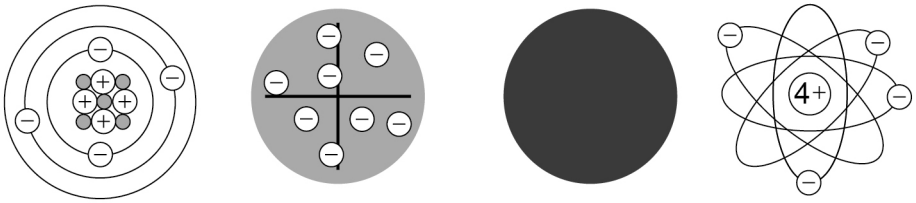
[1 mark]

5.1.2.1 The periodic table

Question 10 · continued

Figure 12 represents different models of the atom.

Figure 12



A **B** **C** **D**

0 6 . 2 Which model represents the plum pudding model?

[1 mark]

Tick (✓) **one** box.

A ☐ **B** ☐ **C** ☐ **D** ☐

0 6 . 3 Which model resulted from Chadwick's experimental work?

[1 mark]

Tick (✓) **one** box.

A ☐ **B** ☐ **C** ☐ **D** ☐

Question 6 continues on the next page

Question 10 · continued

Potassium has different isotopes.

0 6 . 4 What is meant by 'isotopes'?

You should refer to subatomic particles.

[2 marks]

0 6 . 5 **Table 2** shows the mass numbers and the percentage abundance of two isotopes of potassium.

Table 2

Mass number	Percentage abundance
39	93.1
41	6.9

Calculate the relative atomic mass (A_r) of potassium.

Give your answer to 1 decimal place.

[3 marks]

Relative atomic mass (1 decimal place) = _____

8

5.1.2.1 The periodic table

Question 11

June 2024 | 8464/C/1F | Original Q1

0 1 Potassium is in Group 1 of the periodic table.

0 1 . 1 What name is given to Group 1 elements?

[1 mark]

Tick (✓) **one** box.

Alkali metals ☐

Halogens ☐

Noble gases ☐

0 1 . 2 A potassium atom is very small.

What is the radius of a potassium atom?

[1 mark]

Tick (✓) **one** box.

0.2 cm ☐

0.2 mm ☐

0.2 nm ☐

0 1 . 3 What name is given to the number of protons in an atom?

[1 mark]

Tick (✓) **one** box.

Atomic number ☐

Group number ☐

Mass number ☐

Question 11 · continued

0 1 . 4 **Table 1** shows the name and the relative charge of the particles in a potassium atom.

Table 1

Name of particle	Relative charge
Proton	
	0
Electron	–1

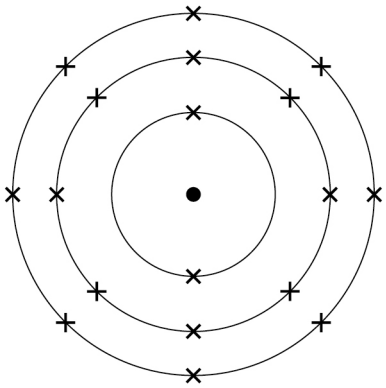
Complete **Table 1**.

[2 marks]

0 1 . 5 The electronic structure of a potassium atom is 2,8,8,1

Figure 1 represents the electronic structure of a potassium **ion**.

Figure 1



What is the charge on a potassium **ion**?

[1 mark]

Tick (✓) **one** box.

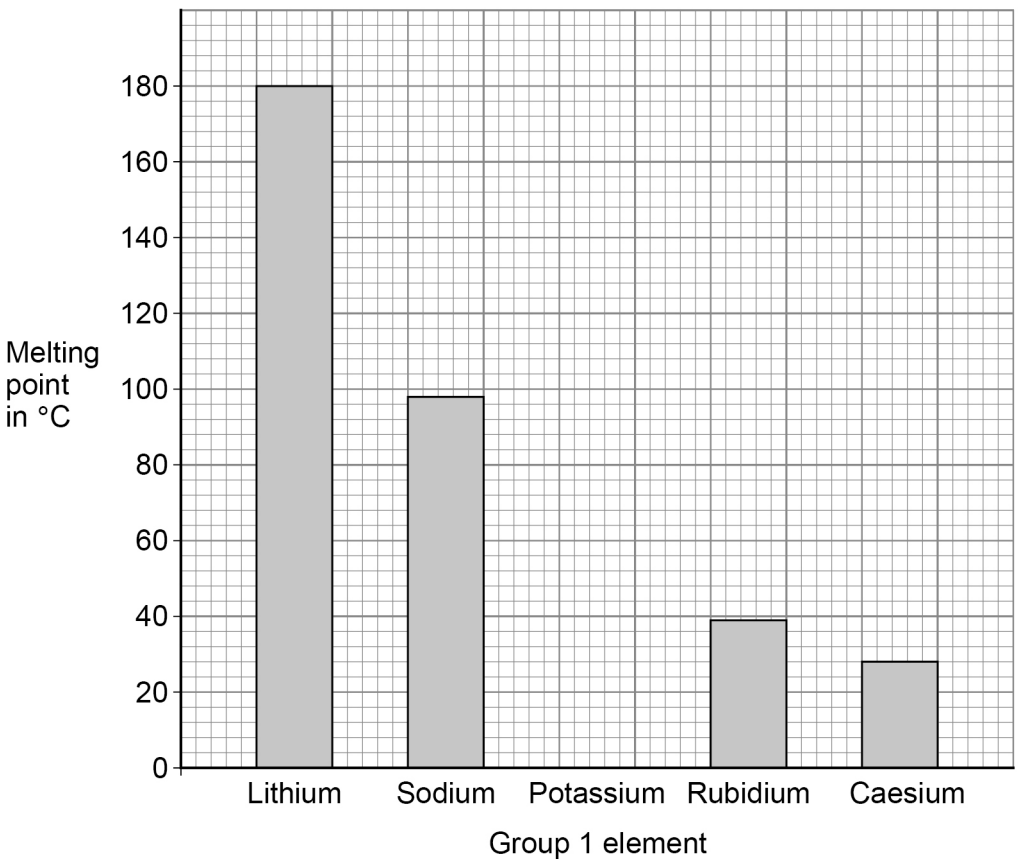
–1 ☐ 0 ☐ +1 ☐

5.1.2.1 The periodic table

Question 11 · continued

0 1 . 6 **Figure 2** shows the melting points of some Group 1 elements.

Figure 2



Predict the melting point of potassium.

[1 mark]

Melting point = _____ °C

5.1.2.1 The periodic table

Question 11 · continued

0 1 . 7 Potassium has two isotopes.

Table 2 shows the percentage (%) abundance of the two isotopes.

Table 2

Isotope	Percentage (%) abundance
$^{39}_{19}K$	93
$^{41}_{19}K$	7

How is the relative atomic mass (A_r) of potassium calculated?

[1 mark]

Tick (✓) **one** box.

$A_r = \dfrac{(39 \times 7) + (41 \times 93)}{100}$ ☐

$A_r = \dfrac{(39 \times 93) + (41 \times 7)}{100}$ ☐

$A_r = \dfrac{(39 \times 41) + (93 \times 7)}{100}$ ☐

8

5.1.2.1 The periodic table

Question 12

June 2024 | 8464/C/1F | Original Q2

0 2 Carbon is in Group 4 of the periodic table.

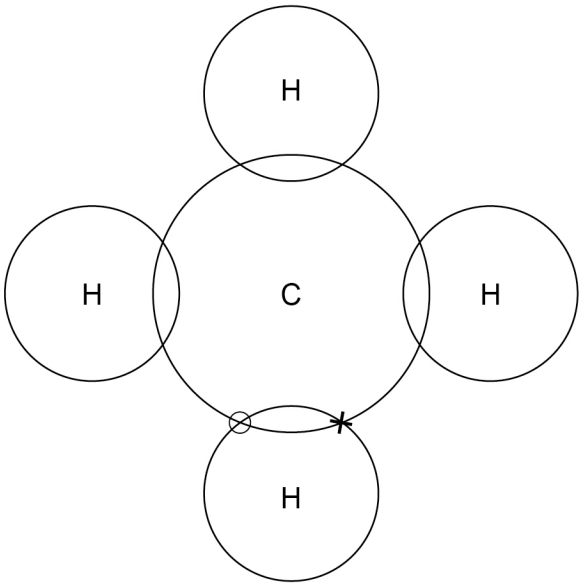
0 2 . 1 Methane contains carbon and hydrogen atoms.

A carbon atom has 4 electrons in the outer shell.

A hydrogen atom has 1 electron in the outer shell.

Complete the dot and cross diagram for a methane molecule.

[2 marks]



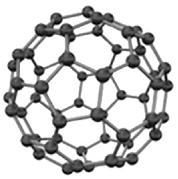
5.1.2.1 The periodic table

Question 12 · continued

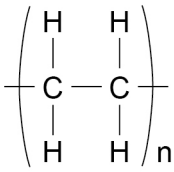
0 2 . 2 Which diagram represents the structure of diamond?

[1 mark]

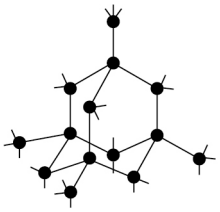
Tick (✓) **one** box.



☐



☐



☐

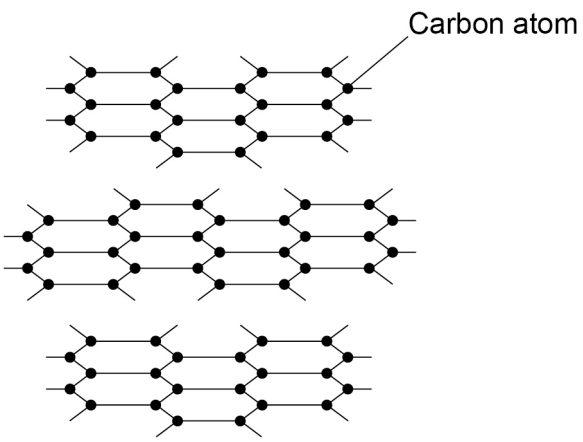
Question 2 continues on the next page

5.1.2.1 The periodic table

Question 12 · continued

Figure 3 represents part of the structure of graphite.

Figure 3



0 2 . 3 In graphite each carbon atom forms covalent bonds.

How many covalent bonds does each carbon atom form in graphite?

[1 mark]

Tick (✓) **one** box.

1 ☐ 2 ☐ 3 ☐ 4 ☐

0 2 . 4 Graphite conducts electricity.

Which particles carry electrical charge through graphite?

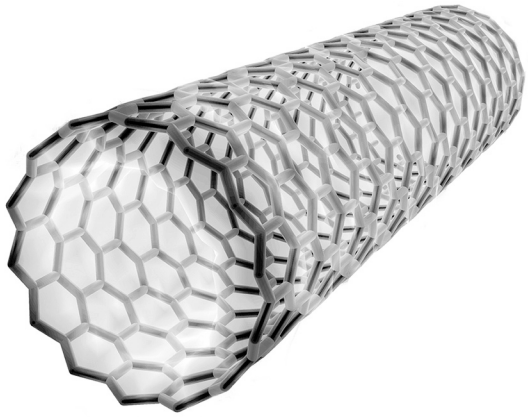
[1 mark]

5.1.2.1 The periodic table

Question 12 · continued

Figure 4 represents the structure of a fullerene.

Figure 4



0 2 . 5 Where are fullerenes used?

[1 mark]

Tick (✓) **one** box.

In electronic components ☐

In self-heating cans ☐

In sports injury packs ☐

0 2 . 6 Describe the structure of the fullerene shown in **Figure 4**.

[2 marks]

8

5.1.2.1 The periodic table

Question 13

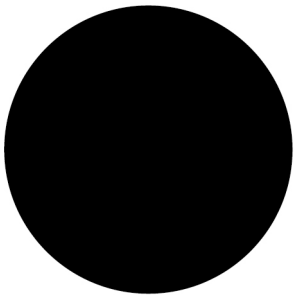
0 1 This question is about atoms and ions.

The model of the atom has changed over time.

0 1 . 1 In an early model, scientists thought the atom was a tiny sphere that could **not** be divided.

Figure 1 represents this early model of the atom.

Figure 1



The discovery of a subatomic particle led to a change in the model in **Figure 1**.

Which was the first subatomic particle to be discovered?

[1 mark]

Tick (✓) **one** box.

Electron ☐

Neutron ☐

Proton ☐

5.1.2.1 The periodic table

Question 13 · continued

0 1 . 2 In a later model of the atom, most of the mass was concentrated in the centre of the atom.

What is the name of the centre of an atom?

[1 mark]

0 1 . 3 Atoms contain three types of subatomic particle.

Draw **one** line from each subatomic particle to the relative charge of the particle.

[2 marks]

Subatomic particle	Relative charge of the particle
Electron	+1
Neutron	0
Proton	–1

0 1 . 4 What is meant by the 'atomic number of an atom'?

[1 mark]

Tick (✓) **one** box.

- The number of neutrons only ☐
- The number of protons only ☐
- The number of neutrons + the number of protons ☐

Question 1 continues on the next page

5.1.2.1 The periodic table

Question 13 · continued

0 1 . 5 **Table 1** shows information about two isotopes of an element.

Table 1

	Mass number	Percentage (%) abundance
Isotope **A**	10	19.7
Isotope **B**	11	80.3

Calculate the relative atomic mass (A_r) of the element.

Use the equation:

$$A_r = \frac{\text{(mass number} \times \text{percentage) of isotope A + (mass number} \times \text{percentage) of isotope B}}{100}$$

Give your answer to 1 decimal place.

[3 marks]

A_r (1 decimal place) = _____

5.1.2.1 The periodic table

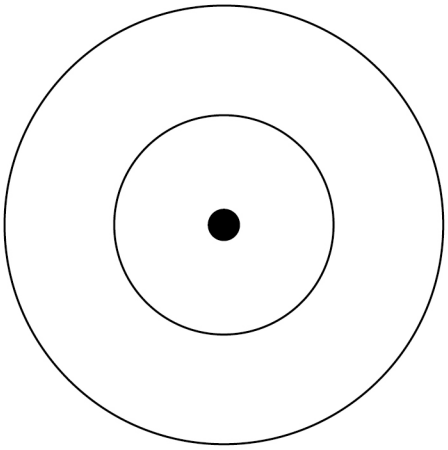
Question 13 · continued

0 1 . 6 An oxygen atom has eight electrons.

Complete **Figure 2** to show the electronic structure of an oxygen atom.

[1 mark]

Figure 2



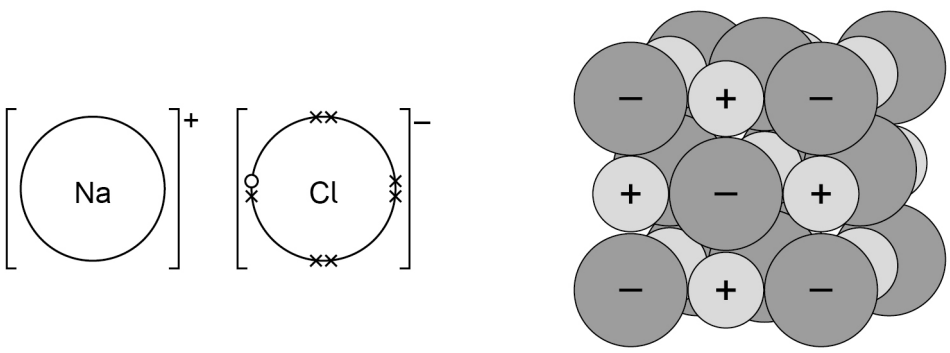
Question 1 continues on the next page

5.1.2.1 The periodic table

Question 13 · continued

0 1 . 7 **Figure 3** represents two models of sodium chloride.

Figure 3



Model **A**

Model **B**

What are **two** advantages of model **B** compared with model **A**?

[2 marks]

Tick (✓) **two** boxes.

Model **B** shows the 3D arrangement of the ions. ☐

Model **B** shows the charges on the ions. ☐

Model **B** shows the electronic structures of the ions. ☐

Model **B** shows the relative sizes of the ions. ☐

Model **B** shows which elements are present. ☐

11

5.1.2.1 The periodic table

Question 14

June 2025 | 8464/C/1F | Original Q2

0 2 Lithium, carbon, nitrogen, fluorine and neon are elements in the same row of the periodic table.

0 2 . 1 What is the chemical symbol of lithium?

Use the periodic table.

[1 mark]

_____

0 2 . 2 Lithium has metallic bonding.

Which electrons are involved in metallic bonding?

[1 mark]

Tick (✓) **one** box.

- Delocalised electrons from the inner shell ☐
- Delocalised electrons from the outer shell ☐
- Fixed electrons in the inner shell ☐
- Fixed electrons in the outer shell ☐

Question 2 continues on the next page

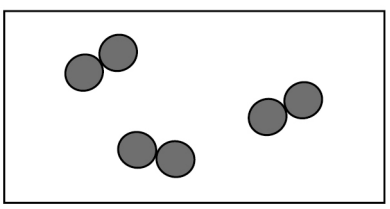
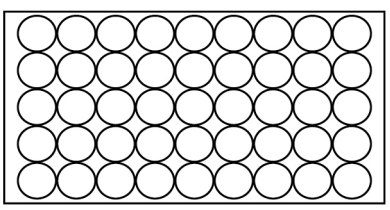
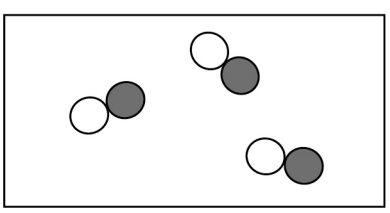
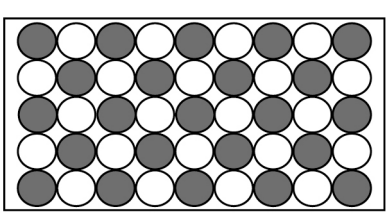
5.1.2.1 The periodic table

Question 14 · continued

0 2 . 3 Lithium reacts with fluorine to produce lithium fluoride.

Draw **one** line from each substance to the particle diagram that represents the substance.

[3 marks]

Substance	Particle diagram
Lithium solid	
Fluorine gas	
Lithium fluoride solid	
	

5.1.2.1 The periodic table

Question 14 · continued

0 2 . 4 **Table 2** shows the electrical conductivity of three substances.

Table 2

Substance	Electrical conductivity when solid	Electrical conductivity when liquid
C	Poor	Poor
D	Poor	Good
E	Good	Good

Lithium fluoride is an ionic compound.

Which substance is lithium fluoride?

[1 mark]

Tick (✓) **one** box.

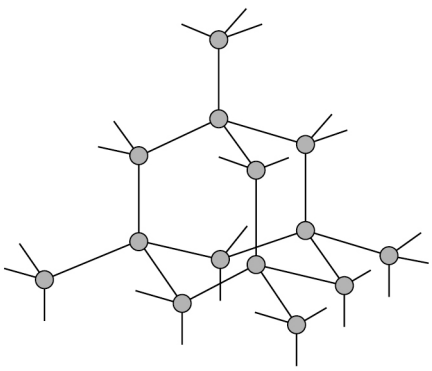
C ☐ **D** ☐ **E** ☐

Question 2 continues on the next page

0 2 . 5 Carbon can exist in different forms.

Figure 4 represents one form of carbon.

Figure 4



What is the name of the form of carbon in **Figure 4**?

[1 mark]

Tick (✓) **one** box.

Buckminsterfullerene ☐

Diamond ☐

Graphite ☐

0 2 . 6 Carbon and fluorine form a compound with the formula CF_4

Calculate the relative formula mass (M_r) of CF_4

Relative atomic masses (A_r): C = 12 F = 19

[2 marks]

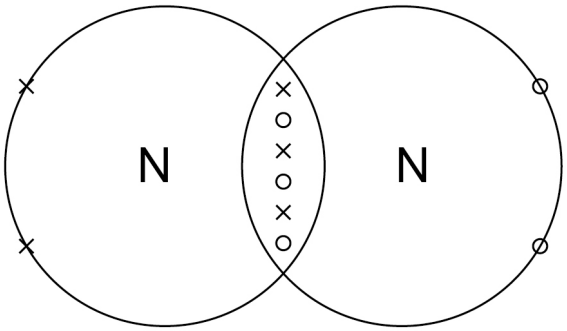
Relative formula mass (M_r) = _____

5.1.2.1 The periodic table

Question 14 · continued

0 2 . 7 **Figure 5** represents a molecule of nitrogen.

Figure 5



What is the total number of shared electrons in the covalent bond shown in **Figure 5**?

[1 mark]

_____

0 2 . 8 Lithium and nitrogen form a compound with the formula Li_3N

Complete the sentence.

Choose the answer from the box.

[1 mark]

nitrate	**nitride**	**nitrogen**

The name of the compound with the formula Li_3N is lithium _____.

Question 2 continues on the next page

5.1.2.1 The periodic table

Question 14 · continued

0 2 . 9 Neon does **not** react with other elements to form compounds.

Why is neon unreactive?

[1 mark]

Tick (✓) **one** box.

Neon has a stable arrangement of electrons. ☐

Neon is a gas at room temperature. ☐

Neon is a non-metallic element. ☐

12