

GCSE Chemistry

Worksheet: Group 1

TIME 35 min	TOTAL 31 marks	CALCULATOR Allowed	DIFFICULTY Easy, Medium
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Topics: Group 1

NAME	CLASS	DATE
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- Use black ink or black ball-point pen. Pencil should only be used for drawing.
- Answer all questions in the spaces provided.
- In all calculations, show clearly how you work out your answer.
- The marks for questions are shown in brackets.

0 1

Sodium is a Group 1 element.

0 1 . 1

What name is given to the elements in Group 1?

.....

.....

.....

.....
[1 mark]

0 1 . 2

Group 1 metals are stored under oil.
Suggest why.

.....

.....

.....
[1 mark]

0 1 . 3

Complete the word equation for the reaction of sodium with water.

sodium + water → +

.....

.....

.....

.....

[2 marks]

0 1 . 4

Universal indicator was added to the solution formed.

What is the pH of the solution?

Tick (✓) **one** box.

1

☐

5

☐

7

☐

13

☐

[1 mark]

0 2

Lithium, sodium and potassium are Group 1 metals. Caesium is below potassium in Group 1.

0 2 . 1

Predict how caesium reacts with water, compared with potassium.

Tick (✓) **one** box.

Less vigorously than potassium

☐

About the same as potassium

☐

More vigorously than potassium

☐

It does not react at all

☐

[1 mark]

0 2 . 2

Name the gas produced when a Group 1 metal reacts with water.

.....

.....

.....

.....

[1 mark]

0 3

A teacher added small pieces of lithium, sodium and potassium to separate troughs of water.

0 3 . 1

Which metal fizzed and moved slowly on the surface of the water but did **not** melt?

Tick (✓) **one** box.

Lithium

☐

Sodium

☐

Potassium

☐

[1 mark]

0 3 . 2

Potassium burned with a coloured flame.

What colour was the flame?

.....

.....

.....

.....

[1 mark]

0 3 . 3

Give **one** observation that shows a gas was produced.

.....

.....

[1 mark]

0 3 . 4

All three metals floated on the water.
Explain why.

.....

.....

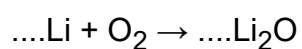
[1 mark]

0 4

Group 1 metals react with oxygen and with chlorine.

0 4 . 1

Lithium burns in oxygen to form lithium oxide, Li_2O .
Balance the equation.



.....

.....

[1 mark]

0 4 . 2

Write a balanced symbol equation for the reaction of potassium with chlorine.

.....

.....

.....

.....

[2 marks]

0 4 . 3

Describe the appearance of the product of the reaction between potassium and chlorine.

.....

.....

[1 mark]

0 4 . 4

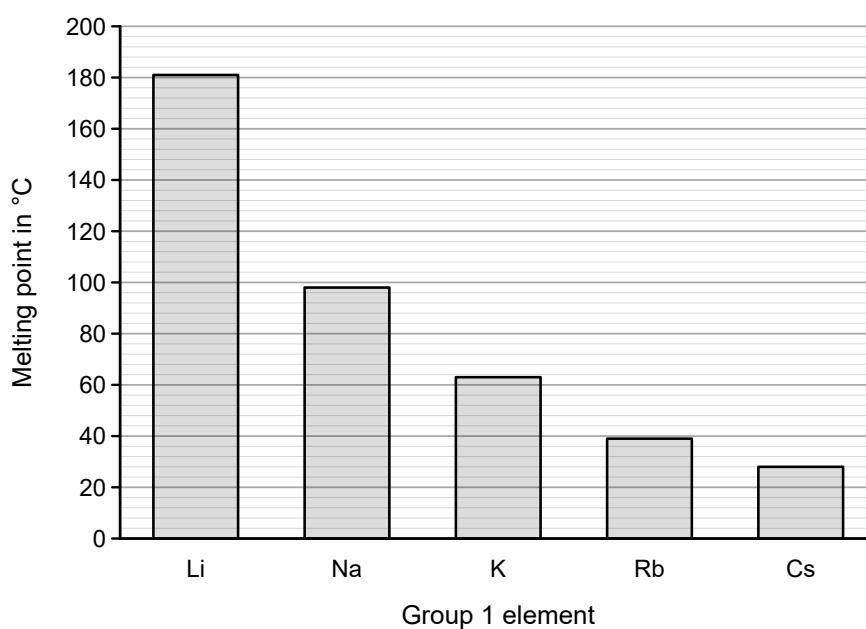
A freshly cut surface of sodium is shiny, but it quickly becomes dull.
Explain why.

[2 marks]

0 5

Figure 1 shows the melting points of the Group 1 elements lithium to caesium.

Figure 1



0 5 . 1

Describe the trend in melting point down Group 1.

[1 mark]

0 5 . 2

Francium is below caesium in Group 1.
Use Figure 1 to predict the melting point of francium.

.....
.....
.....

Melting point = °C

[1 mark]

0 5 . 3

A sample of rubidium is warmed to 35 °C.
Is the rubidium solid or liquid at 35 °C? Give a reason for your answer.

.....
.....
.....
.....

[2 marks]

0 5 . 4

Potassium reacts with water to form potassium hydroxide solution and hydrogen.
Write a balanced symbol equation for this reaction. Include state symbols.

.....
.....
.....
.....
.....
.....

[3 marks]

.....

0 6

The melting points and the reactivity of the Group 1 metals both change down the group.

0 6 . 1

Describe how the melting point and the reactivity of the Group 1 metals change down the group.

Explain the change in reactivity, in terms of electrons.

.....

.....

.....

.....

.....

.....

.....

.....

[4 marks]

0 7

Lithium and sodium are both in Group 1. Sodium reacts more vigorously with water than lithium does.

0 7 . 1

Explain why sodium is more reactive than lithium.

.....

.....

.....

.....

.....

.....

.....

[3 marks]

END OF QUESTIONS

Original practice questions written to match the specification. Not produced by, affiliated with or endorsed by AQA.

Mark scheme

GCSE Chemistry · Worksheet: Group 1 · 31 marks

Question 1 (5 marks)

01.1 [1 mark]

Answer: the alkali metals

- alkali metals (1)
-

01.2 [1 mark]

Answer: To stop them reacting with oxygen and water vapour in the air.

- to stop them reacting with oxygen / water (vapour) / air (1)
-

01.3 [2 marks]

Answer: sodium hydroxide + hydrogen

- sodium hydroxide (1)
- hydrogen (1)

Notes: Either order.

01.4 [1 mark]

Correct: 13

Question 2 (2 marks)

02.1 [1 mark]

Correct: More vigorously than potassium

02.2 [1 mark]

Answer: hydrogen

- hydrogen (1)

Notes: Allow H₂.

Question 3 (4 marks)

03.1 [1 mark]

Correct: Lithium

03.2 [1 mark]

Answer: lilac

- lilac (1)

Notes: Allow purple / violet / mauve.

03.3 [1 mark]

Answer: fizzing / bubbles

- fizzing / bubbles / effervescence (1)
-

03.4 [1 mark]

Answer: They are less dense than water.

- (they are) less dense than water / have a low density (1)
-

Question 4 (6 marks)

04.1 [1 mark]

Answer: $4\text{Li} + \text{O}_2 \rightarrow 2\text{Li}_2\text{O}$

- $4\text{Li} + \text{O}_2 \rightarrow 2\text{Li}_2\text{O}$ (1)

04.2 [2 marks]

Answer: $2\text{K} + \text{Cl}_2 \rightarrow 2\text{KCl}$

- correct formulae: $\text{K} + \text{Cl}_2 \rightarrow \text{KCl}$ (1)
- balanced: $2\text{K} + \text{Cl}_2 \rightarrow 2\text{KCl}$ (1)

Notes: Allow multiples. Do not accept Cl in place of Cl_2 .

04.3 [1 mark]

Answer: white solid

- white solid (1)

Notes: Allow white crystals / white powder.

04.4 [2 marks]

Answer: Sodium reacts with oxygen in the air, forming a layer of sodium oxide.

- sodium reacts with oxygen (in the air) (1)
- forming (a layer of) sodium oxide (1)

Notes: Allow 'oxidises' for the first mark.

Question 5 (7 marks)

05.1 [1 mark]

Answer: The melting point decreases down the group.

- decreases (down the group) (1)
-

05.2 [1 mark]

Answer: any value from 10 °C to 27 °C

- any value from 10 to 27 (°C) (1)
-

05.3 [2 marks]

Answer: Solid, because 35 °C is below its melting point (about 39 °C).

- solid (1)
- 35 °C is below its melting point (of about 39 °C) (1)

Notes: Allow a melting point read from the graph in the range 36–42 °C.

05.4 [3 marks]

Answer: $2\text{K(s)} + 2\text{H}_2\text{O(l)} \rightarrow 2\text{KOH(aq)} + \text{H}_2\text{(g)}$

- correct formulae: $\text{K} + \text{H}_2\text{O} \rightarrow \text{KOH} + \text{H}_2$ (1)
- balanced: $2\text{K} + 2\text{H}_2\text{O} \rightarrow 2\text{KOH} + \text{H}_2$ (1)
- state symbols: (s), (l), (aq), (g) (1)

Notes: The state symbol mark can be awarded for an unbalanced equation with correct formulae.

Question 6 (4 marks)

06.1 [4 marks]

Answer: Melting point decreases and reactivity increases down the group. The outer electron is further from the nucleus, so it is less strongly attracted and lost more easily.

Levels of response

- **Level 2 (3–4)** A clear, logically linked answer covering the key points accurately.
- **Level 1 (1–2)** One or two relevant points with little linking.
- **No marks (0)** Nothing relevant or worthy of credit.

Indicative content

- melting point decreases down Group 1
 - reactivity increases down Group 1
 - the outer electron is in a shell further from the nucleus / there are more shells down the group
 - so the outer electron is less strongly attracted to the nucleus and is lost more easily
-

Question 7 (3 marks)

07.1 [3 marks]

Answer: Sodium's outer electron is in a shell further from the nucleus, so it is less strongly attracted and is lost more easily.

- sodium's outer electron is in a shell further from the nucleus / sodium atoms have more shells (1)
- so the outer electron is less strongly attracted to the nucleus (1)
- so sodium loses its outer electron more easily (1)

Notes: Allow 'more shielding' for the second mark.
