

3 Which of the following describes a group 1 element?

- A a very reactive metal
- B a very unreactive metal
- C a very reactive non-metal
- D a very unreactive non-metal

4 The elements are arranged in the periodic table in order of increasing:

- A density.
- B reactivity.
- C melting point.
- D atomic number.

8Fd

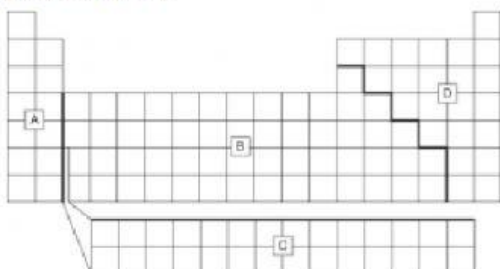
1 The melting point of a substance is:

- A higher than its boiling point.
- B lower than its freezing point.
- C higher than its freezing point.
- D the same temperature as its freezing point.

2 Which of the following substances will be a liquid at 350 °C?

Substance	Melting point (°C)	Boiling point (°C)
A	50	280
B	100	340
C	320	600
D	400	650

3 Where are most non-metals found in the periodic table?



4 Some information about group 0 elements is given below.

Element	He	Ne	Ar	Kr
Density (g/cm ³ × 1000)	0.2	0.9	1.8	3.7

The density of group 0 elements:

- A does not change down the group.
- B increases down the group.
- C decreases down the group.
- D shows no pattern within the group.

8Fe

1 When lithium reacts with water, one product is:

- A carbon dioxide.
- B lithium dioxide.
- C dihydrogen oxide.
- D lithium hydroxide.

2 Compared to sulfur dioxide, lithium oxide is likely to have:

- A a lower melting point and higher pH.
- B a higher melting point and higher pH.
- C a higher melting point and lower pH.
- D a lower melting point and lower pH.

3 In which of the following pairs of elements is the second element more reactive than the first element?

- A sodium and potassium
- B sodium and lithium
- C chlorine and bromine
- D fluorine and chlorine

4 Francium is a very rare element found at the bottom of group 1. Francium is likely to be:

- A a metal that reacts violently with water.
- B a metal that does not react easily.
- C a non-metal that reacts with metals.
- D a non-metal gas that is very unreactive.

Dalton's atomic model:

Read the chemical formulae below to find out how many atoms are in them, then decide whether they're an element or a compound.

Chemical formula	Number of atoms	Element or compound?
NO_2		
CH_4		
Cl_2		
Al_2O_3		
H_2		
O_2		
MgCl_2		

Choose the chemical formula the represents the description provided.

Two atoms of hydrogen and one atom of water (Water).



One atom of zinc and two atoms of iodine (Zinc iodide).



Two atoms of sodium and one atom of oxygen (Sodium oxide).



One atom of nitrogen and three atoms of hydrogen (Ammonia).



One atom of carbon and one atom of oxygen (Carbon monoxide).



Writing chemical formulae:

Complete the table by filling out the valency of each group on the periodic table.

Group	1	2	3	4	5	6	7	8
Valency								

Use the crossover technique to choose the chemical formula for each compound.

Compound: Lithium chloride

Symbol: Li Cl

Group: Group 1 Group 7

Valency: _____

Chemical formula: LiCl Li₂Cl LiCl₂

Compound: Phosphorous hydride

Symbol: P H

Group: Group 5 Group 1

Valency: _____

Chemical formula: PH P₃H PH₃

Compound: Aluminium nitride

Symbol: Al N

Group: Group 3 Group 5

Valency: _____

Chemical formula: AlN Al₃N AlN₃

Chemical trends:

G#1: Alkali metals are highly reactive with water.

Alkali metal + Water \longrightarrow Metal hydroxide + Hydrogen gas

Lithium + Water \longrightarrow _____ + _____

Sodium + Water \longrightarrow _____ + _____

Potassium + Water \longrightarrow _____ + _____

Reactivity (**increases/decreases**) as you go down the group. This is because the number of (**electrons/shells**) increases, causing the bond between the nucleus and the electron to (**strengthen/weaken**).

G#2: Alkali Earth metals produce acidic metal oxides with oxygen.

Alkali Earth metal + Oxygen \longrightarrow Metal oxide

Magnesium + Oxygen \longrightarrow _____

Calcium + Oxygen \longrightarrow _____

Barium + Oxygen \longrightarrow _____

G#7: Halogens are highly reactive.

Metal + Halogen \longrightarrow Salt

Sodium + Chlorine \longrightarrow Sodium chloride

Magnesium + Fluorine \longrightarrow _____

Potassium + Bromine \longrightarrow _____

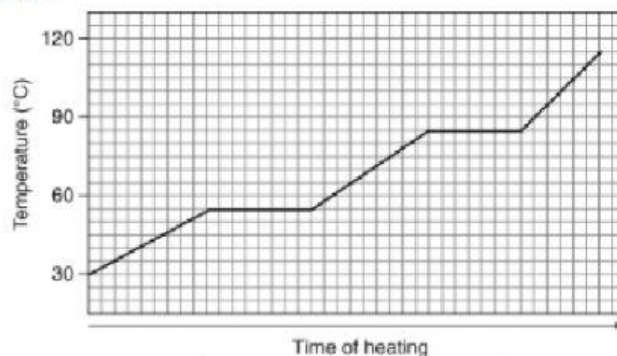
Calcium + Iodine \longrightarrow _____

G#8: Noble gases are highly unreactive as they have a valency of _____ so, they _____.

Property	Metal	Non-metal
Malleable		
Ductile		
Good conductor		
Insulator		
Shiny when polished		
On the left side of the periodic table		
On the right side of the periodic table		
Produces acidic oxides		
Produces alkaline oxides		

Use the suggested phrases to label the graph.

Temperature time graph



melting point	boiling point	liquid	solid	gas
energy being used to change state from solid to liquid	energy being used to change state from liquid to gas	energy being used to raise temperature of solid	energy being used to raise temperature of liquid	energy being used to raise temperature of gas

Anomalous results:

The maximum rise in temperature obtained by each group in the class is shown in the table opposite. Group 5's result is anomalous.

- a Calculate the mean maximum temperature rise

- b Explain what you did with the anomalous result.

Group number	Maximum rise in temperature (°C)
1	8
2	7
3	8.5
4	6
5	48
6	7
7	7.5
8	8