

10 Group 2 – Part 1

Name: _____ Class: _____ Date: _____

Vocabulary

Write each word three times.

English

Write it 3 times (English)

Group

more reactive

Recall

At IGCSE you learned that **Group** elements share similar reactions, and that reactivity changes down a group. Now we look at **Group 2** – the metals magnesium, calcium, strontium and barium.

- They all have **two** outer electrons, lost to form **2+ ions**.
- Reactivity changes in a clear pattern down the group.

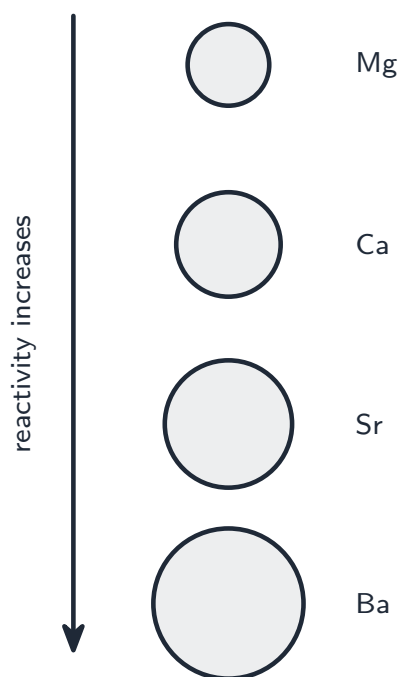
Nothing here is harder than IGCSE – it just lines up one group.

New ideas

Read these first, then do the Practice.

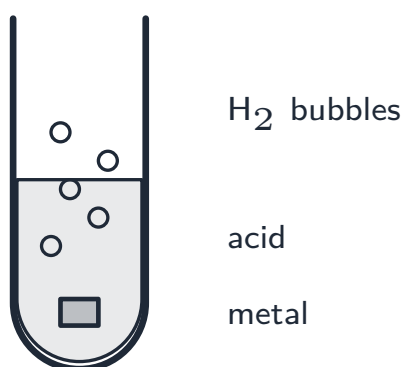
■ 1 Reactivity increases down the group

Going **down** Group 2, the atoms get **larger**, so the two outer electrons are held less tightly and are lost more easily. So the metals become **more reactive**.



■ 2 Reactions of the metals

- with **oxygen** → an **oxide**: $2\text{Mg} + \text{O}_2 \rightarrow 2\text{MgO}$.
- with **water** → a **hydroxide** + hydrogen: $\text{Ca} + 2\text{H}_2\text{O} \rightarrow \text{Ca}(\text{OH})_2 + \text{H}_2$.
- with **dilute acid** → a **salt** + hydrogen: $\text{Mg} + 2\text{HCl} \rightarrow \text{MgCl}_2 + \text{H}_2$.



The reaction with water gets **faster** down the group (more reactive metal).

Watch out: down Group 2 the reactivity *increases* (larger atoms lose their outer electrons more easily). This is the *opposite* of the halogens (Group 17), where reactivity *decreases* down the group.

Practice

Try these in order.

10.1 How many outer electrons does a Group 2 atom have, and what ion does it form? [2]

10.2 Describe and explain the trend in reactivity down Group 2. [3]

10.3 Write the equation for magnesium reacting with oxygen. [1]

10.4 Calcium reacts with water. Name the two products. [2]

10.5 Complete: $\text{Mg} + 2\text{HCl} \rightarrow \text{_____} + \text{_____}$. [2]

10.6 Challenge. Barium reacts with water much faster than magnesium. Explain why, in terms of atomic size and the outer electrons. [2]
