The reactivity of the group 2 metals

Introduction
Students react magnesium and calcium with hydrochloric acid to find out which is the most reactive

Equipment
Apparatus
- Eye protection
- Test tube rack
- Test tube x 2
- Splint

Chemicals
- Hydrochloric acid 1 mol dm\(^{-3}\)
- Magnesium
- Fresh calcium

Health, safety and technical notes
- Read our standard health and safety guidance here [https://rsc.li/3EWrFLG](https://rsc.li/3EWrFLG)
- Always wear eye protection.
- Hydrochloric acid is of low hazard, see CLEAPSS Hazcard HC047a.
- Magnesium is pyrophoric and water reactive, see CLEAPSS Hazcard HC059b.
- Calcium is water reactive, see CLEAPSS Hazcard HC019c.

Notes
- Discussion about how to judge the speed of the reaction is advisable.
- Remind students about the test for hydrogen.
- Calcium can be distributed on pieces of filter paper.
- Group 1 is the most reactive group of metals. The Group 1 metals get more reactive the lower they are in the group. Group 2 metals are also reactive.

Answers
1. Calcium.
2. Magnesium + hydrochloric acid → magnesium chloride + hydrogen
   Calcium + hydrochloric acid → calcium chloride + hydrogen
3. Mg + 2HCl → MgCl\(_2\) + H\(_2\)
   Ca + 2HCl → CaCl\(_2\) + H\(_2\)