## Chemguide - answers

## **GROUP 2: REACTIONS WITH ACIDS**

- 1. a) You get a vigorous reaction with bubbles of a colourless gas. A colourless solution is formed and, if there is an excess of acid, the magnesium eventually disappears. (Note that you must give a *description* because that is what is asked for. If you simply said that you get hydrogen and magnesium chloride solution, that wouldn't get you the marks in an exam.)
  - b) Mg + 2HCl  $\longrightarrow$  MgCl<sub>2</sub> + H<sub>2</sub>

c) It increases.

- 2. The products (calcium sulphate, strontium sulphate and barium sulphate) become increasingly insoluble. The means that the surface of the metal becomes coated with an insoluble coating of the sulphate, preventing the reaction from continuing.
- 3. a) NO and NO<sub>2</sub>
  - b) hydrogen
  - c) NO
  - d) NO<sub>2</sub>
  - e)  $3Mg + 8HNO_3 \longrightarrow 3Mg(NO_3)_2 + 2NO + 4H_2O$
  - or Mg + 4HNO<sub>3</sub>  $\longrightarrow$  Mg(NO<sub>3</sub>)<sub>2</sub> + 2NO<sub>2</sub> + 2H<sub>2</sub>O

(These equations are best worked out from electron-half-equations, although the second one isn't very difficult to do just by simply balancing it. It is a waste of time learning these equations – the chances of them appearing on an exam paper aren't all that great.

See <u>www.chemguide.co.uk/inorganic/redox/equations.html</u> if you aren't very good at this.)