Solutions Calculations - practice

1 Determine the number of moles present in each of the following:

(a) 0.1 dm^3 of 0.2 mol/dm^3 sodium hydroxide

(b) 0.5 dm^3 of 0.1 mol/dm^3 copper sulphate

(c) 100 cm^3 of 0.1 mol/dm^3 hydrochloric acid

(d) 25 cm^3 of 1 mol/dm^3 nitric acid

(e) 50 cm^3 of 0.25 mol/dm^3 silver nitrate

(f) 150 cm^3 of 2 mol/dm^3 potassium hydroxide

2 Work out the concentration of the following solutions in mol/dm^3

(a) 0.1 mol of NaOH in 0.25 dm^3 of solution.

(b) 0.5 mol of HCl in 0.5 dm^3 of solution.

(c) 0.1 mol of HNO_3 in 100 cm^3 of solution.

(d) 2 mol of sulphuric acid in 500 cm^3 of solution.

3 (a) What mass of H_2 gas is produced when 2.4 g of Mg reacts with excess HCl according to the following equation:

$$Mg_{(s)} + 2HCl_{(aq)} \rightarrow MgCl_{2(aq)} + H_{2(g)}$$

Number of moles of Mg:

Number of moles of H_2:

Mass of H_2:

(b) What mass of sodium carbonate reacts with 50 cm^3 of 0.1 mol/dm^3 HCl?

$$Na_2CO_{3(s)} + 2HCl_{(aq)} \rightarrow 2NaCl_{(aq)} + H_2O_{(l)} + CO_{2(g)}$$

Number of moles of HCl:

Number of moles of Na_2CO_3:

Mass of Na_2CO_3: