Chapter Summary Worksheet

Chapter 4
Calculations from chemical equations

Print out and complete this worksheet to generate a summary for Chapter 4.

1 When chlorine reacts with 6.075 g of magnesium, the mass of product is

- ☐ **A** 11.5 g
- ☐ **B** 18.95 g
- ☐ **C** 20.45 g
- ☐ **D** 23.825 g

2 The number of ions in 8.55 g of $Al_2(SO_4)_3$ (molar mass 342.3 g mol^{-1}) is

- ☐ **A** 0.025
- ☐ **B** 0.125
- ☐ **C** 1.5×10^{22}
- ☐ **D** 7.5×10^{22}

(Avogadro constant = 6.02×10^{23} mol^{-1})

3 When 8.55 g of rubidium metal was reacted with oxygen, 11.75 g of product was formed. Which equation is supported by these data?

- ☐ **A** $Rb + O_2 \rightarrow RbO_2$
- ☐ **B** $Rb + \frac{1}{2}O_2 \rightarrow RbO$
- ☐ **C** $2Rb + O_2 \rightarrow Rb_2O_2$
- ☐ **D** $2Rb + \frac{1}{2}O \rightarrow Rb_2O$

4 When 7.95 g of copper(II) oxide, CuO, was reacted with sulfuric acid and the resulting solution filtered and allowed to crystallise, 23.0 g of hydrated copper sulfate, $CuSO_4.5H_2O$, were produced. The percentage yield is

- ☐ **A** 109
- ☐ **B** 92
- ☐ **C** 69
- ☐ **D** 34

5 A 1.076 g sample of aluminium was reacted with excess hydrochloric acid. The equation for the reaction is:

$$2Al(s) + 6HCl(aq) \rightarrow 2AlCl_3(aq) + 3H_2(g)$$

(The molar volume of gas at the conditions of the experiment is 24.0 dm^3 mol^{-1}.)

The volume of hydrogen gas evolved is

- ☐ **A** 0.64 dm^3
- ☐ **B** 1.43 dm^3
- ☐ **C** 400 dm^3
- ☐ **D** 900 dm^3

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