GCSE Moles 03 © RWGrime 15/09/15

**Moles – Solids calculations**

1) What mass of carbon dioxide is formed when 20 g of calcium carbonate reacts with hydrochloric acid?

 CaCO3 + 2 HCl → CaCl2 + H2O + CO2 (3)

2) What mass of oxygen reacts with 192 g of magnesium?

 2 Mg + O2 → 2 MgO (3)

3) What mass of carbon monoxide is needed to react with 1 kg of iron oxide?

 Fe2O3 + 3 CO → 2 Fe + 3 CO2 (3)

4) What mass of oxygen is needed to react with 184 g of sodium?

 4 Na + O2 → 2 Na2O (3)

5) What mass of sodium carbonate is formed when 8.4 g of sodium hydrogencarbonate (NaHCO3) is decomposed by heat?

 2 NaHCO3  Na2CO3 + H­2O + CO2 (3)

6) What mass of oxygen is needed to react with 4.5 g of ethane (C2H6)?

 2 C2H­6 + 7 O2 → 4 CO2 + 6 H2O (3)

7) What mass of ammonia is made when 5.6 g of nitrogen reacts with excess hydrogen?

 N2 + 3 H2  2 NH3 (3)

8) What mass of sulphur dioxide is formed from 96 g of sulphur trioxide?

 2 SO3 → 2 SO2 + O2 (3)

9) What mass of potassium oxide is formed when 9.75 g of potassium is burned in oxygen?

 4 K + O2 → 2 K2O (3)

10) What mass of hydrogen is formed when 0.2 g of calcium reacts with hydrochloric acid?

 Ca + 2 HCl → CaCl2 + H2 (3)

11) What mass of sodium is needed to reduce 1 kg of titanium chloride?

 TiCl4 + 4 Na → Ti + 4 NaCl (3)

12) What mass of oxygen is needed to burn 110 g of propane (C3H8)?

 C3H­8 + 5 O2 → 3 CO2 + 5 H2O (3)

13) 4.17 g of hydrated barium bromide crystals (BaBr2.*n*H2O) gave 3.72 g of anhydrous barium bromide on heating to constant mass. Work out the relative molecular mass (Mr) of the hydrated barium bromide and the value of *n*.

 BaBr2.*n*H2O  BaBr2 + *n* H2O (3)