Calculations in chemistry

Name ……

Boxes to be ticked and dated **only** when an **Expert group** agrees:

Type of calculation	Tick	Date	Signed
I can calculate the relative formula mass of a compound			
I can find the percentage of an element from a given formula			
I can calculate the mass of reactant and product from balanced equations			

Relative atomic masses

Element	Symbol	Relative atomic mass	Element	Symbol	Relative atomic mass
Hydrogen	H	1	Potassium	K	39
Carbon	C	12	Calcium	Ca	40
Nitrogen	N	14	Iron	Fe	56
Oxygen	O	16	Copper	Cu	63.5
Sodium	Na	23	Zinc	Zn	65
Magnesium	Mg	24	Bromine	Br	80
Aluminium	Al	27	Silver	Ag	108
Sulfur	S	32	Iodine	I	127
Chlorine	Cl	35.5	Lead	Pb	207

Practice questions

Calculating relative formula masses

What is the relative formula mass of:

1. methane CH_4
2. sodium hydroxide NaOH
3. sulfuric acid H_2SO_4
4. zinc nitrate $Zn(NO_3)_2$

Calculating the percentage of an element in a compound from a given formula

What is the percentage of:

1. carbon in methane CH_4
2. calcium in calcium carbonate $CaCO_3$
3. oxygen in sulfur dioxide SO_2
4. nitrogen in ammonium sulfate $(NH_4)_2SO_4$

Calculating the mass of reactants and products from balanced equations

1. What mass of calcium oxide is formed when 10 g of calcium carbonate is completely decomposed?

$$CaCO_3 \rightarrow CaO + CO_2$$

2. What mass of sulfur dioxide is produced when 2.4 g of sulfur is burnt?

$$S + O_2 \rightarrow SO_2$$

3. What mass of carbon is needed to react with 8 g of copper(II) oxide?

$$2CuO + C \rightarrow 2Cu + CO_2$$

4. What mass of iron(III) oxide is needed to react with carbon monoxide to produce 112 g of iron?

$$Fe_20_3 + 3CO \rightarrow 2Fe + 3CO_2$$