

Zoom In Physical Sciences Grade 11

Worksheets 3

1 Basic stoichiometric calculations

- 1.1 The number of hydrogen atoms in 9 g of water is:
- A $3,01 \times 10^{23}$
 - B $6,02 \times 10^{23}$
 - C $1,2 \times 10^{24}$
 - D $5,42 \times 10^{24}$
- 1.2 The molar mass of silver sulfate is:
- A $312 \text{ g}\cdot\text{mol}^{-1}$
 - B $204 \text{ g}\cdot\text{mol}^{-1}$
 - C $172 \text{ g}\cdot\text{mol}^{-1}$
 - D $140 \text{ g}\cdot\text{mol}^{-1}$
- 1.3 The percentage water in pink cobalt chloride ($\text{CoCl}_2 \cdot 6\text{H}_2\text{O}$) is:
- A 11,8%
 - B 24,8%
 - C 45,4%
 - D 54,6%
- 1.4 A compound consists of 40% carbon, 53,3% oxygen and 6,7% hydrogen. Its empirical formula is:
- A $\text{C}_4\text{O}_5\text{H}_6$
 - B $\text{C}_{10}\text{O}_5\text{H}_1$
 - C $\text{C}_2\text{O}_2\text{H}_4$
 - D COH_2
- 1.5 The same mass of sodium hydroxide (NaOH) is dissolved in different volumes of water. Which solution has the highest concentration?
- A 40 g NaOH dissolved in 1 dm^3 water
 - B 40 g NaOH dissolved in 1 L water
 - C 40 g NaOH dissolved in 500 cm^3 water
 - D 40 g NaOH dissolved in 250 mL water
- 1.6 The following balanced equation represents a chemical reaction:
 $4\text{NH}_3(\text{g}) + 6\text{NO}(\text{g}) \rightarrow 5\text{N}_2(\text{g}) + 6\text{H}_2\text{O}(\text{g})$
Calculate the number of moles ammonia needed to produce 25 mol water.
- 1.7 56 g of magnesium metal reacts with excess oxygen gas. Calculate the number of moles magnesium oxide that forms.
- 1.8 The following balanced equation represents a decomposition reaction:
 $2\text{NaClO}_3(\text{s}) \rightarrow 2\text{NaCl}(\text{s}) + 3\text{O}_2(\text{g})$
Calculate the mass of NaClO_3 that must decompose to form 55 g O_2 gas.