

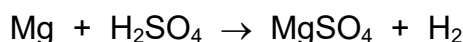
- 9** Aqueous barium hydroxide, $\text{Ba}(\text{OH})_2$, reacts with dilute nitric acid, HNO_3 . The products are aqueous barium nitrate, $\text{Ba}(\text{NO}_3)_2$, and water.

In a titration, 15.2 cm^3 of 0.75 mol/dm^3 aqueous barium hydroxide is required to neutralise 20.0 cm^3 of dilute nitric acid.

What is the concentration of the nitric acid?

- A** 0.29 mol/dm^3
B 0.57 mol/dm^3
C 1.14 mol/dm^3
D 2.03 mol/dm^3

- 10** The equation for the reaction of magnesium with dilute sulfuric acid is shown.

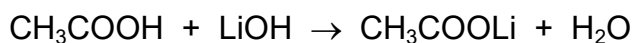


[M_r : MgSO_4 , 120]

Which mass of magnesium sulfate is formed when 12 g of magnesium completely reacts with dilute sulfuric acid?

- A** 5 g **B** 10 g **C** 60 g **D** 120 g

- 8** The equation for the reaction between dilute ethanoic acid and aqueous lithium hydroxide is shown.



In an experiment, 20.0 cm^3 of 0.050 mol/dm^3 aqueous lithium hydroxide is exactly neutralised by 12.5 cm^3 of dilute ethanoic acid.

Which statement is correct?

- A** The amount of lithium hydroxide is equal to $0.050 \times \frac{1000}{20} \text{ mol}$.
B The amount of ethanoic acid reacted is 0.0010 mol .
C The concentration of the dilute ethanoic acid is 0.16 mol/dm^3 .
D The volume of aqueous lithium hydroxide used is 0.20 dm^3 .

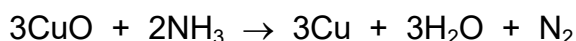
9 The molecular formulae of four compounds are listed.

- 1 CH₄
- 2 C₂H₆
- 3 C₃H₈
- 4 C₃H₆

Which molecular formulae are also the empirical formulae for the compounds?

- A** 1 and 2 **B** 1 and 3 **C** 2 and 4 **D** 3 and 4

10 The equation for the reaction between copper(II) oxide, CuO, and ammonia is given.



[*M_r*: CuO, 80; NH₃, 17; H₂O, 18; N₂, 28]

[*A_r*: Cu, 64]

Which statements about this reaction are correct?

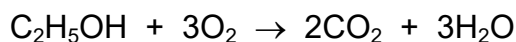
- 1 80.0 g of copper(II) oxide reacts exactly with 17.0 g of ammonia.
- 2 4.0 g of copper(II) oxide reacts with excess ammonia to produce 3.2 g of copper.
- 3 The mass of water produced in this reaction is greater than the mass of nitrogen.

- A** 1, 2 and 3 **B** 1 and 2 only **C** 1 and 3 only **D** 2 and 3 only

11 How many atoms are present in 1.00 mol of argon?

- A** 2.06×10^{23} **B** 3.02×10^{26} **C** 6.02×10^{23} **D** 6.32×10^{20}

10 The equation for the combustion of ethanol is shown.



The relative molecular mass, *M_r*, of ethanol is 46.

Which statement about the reaction is correct?

- A** 4.6 g of ethanol produces 4.4 g of carbon dioxide.
- B** 92 g of ethanol produces 88 g of carbon dioxide and 108 g of water.
- C** 138 g of ethanol reacts with 32 g of oxygen.
- D** 184 g of ethanol produces 216 g of water.

11 A compound contains 40.0% carbon, 6.7% hydrogen and 53.3% oxygen only.

The relative molecular mass, M_r , of the compound is 60.

Which row shows the empirical formula and the molecular formula of the compound?

	empirical formula	molecular formula
A	CH ₂ O	CH ₂ O
B	CH ₂ O	C ₂ H ₄ O ₂
C	C ₃ H ₇ O ₃	C ₃ H ₇ O ₃
D	C ₃ H ₈ O	C ₃ H ₈ O

9 Which compound has an empirical formula that is the same as its molecular formula?

- A** butane
- B** but-1-ene
- C** butanoic acid
- D** butan-1-ol

10 Which row identifies the charge on the chromium ion and on the sulfate ion in Cr₂(SO₄)₃?

	Cr	SO ₄
A	2+	3–
B	2–	3+
C	3+	2–
D	3–	2+