

Answers to Problems on concentration

Calculate the concentration in molL⁻¹ of –

1. 3.65g of hydrogen chloride in 2L of solution

$$M(\text{HCl}) = 36.5 \text{ g mol}^{-1}$$

$$n = m/M = 3.65/36.5 = 0.1 \text{ mol}$$

$$c = n/V = 0.1/2 = \underline{\underline{0.050 \text{ molL}^{-1}}}$$

2. 1.00 molL⁻¹

3. 0.250 molL⁻¹

4. 2.00 molL⁻¹

5. 0.100 molL⁻¹

6. 0.125 molL⁻¹

7. 0.250 molL⁻¹

8. 0.200 molL⁻¹

Calculate the amount of moles of solute in –

1. 250mL of sodium hydroxide solution containing 1.00 molL⁻¹

$$c = n/V \text{ so } n = cV$$

$$n = 1.00 \times 0.250 = \underline{\underline{0.250 \text{ mol}}}$$

2. 0.125 mol

3. 0.00500 mol

4. 2.5 mol

5. 0.0500 mol

6. 0.0250 mol

7. 0.360 mol

8. 0.300 mol

What mass of the solute must be used in order to prepare the solutions listed below?

1. 500mL of 0.100 molL⁻¹ NaOH

$$n = cV = 0.100 \times 0.500 = 0.050 \text{ mol}$$

$$M(\text{NaOH}) = 23 + 16 + 1 = 40 \text{ gmol}^{-1}$$

$$n = m/M \text{ so } m = nM = 0.050 \times 40 = \underline{\underline{2.00 \text{ g}}}$$

2. 5.30 g

3. 9.45 g

4. 42.0 g

5. 8.30 g