

Answers to questions in **A neutral solution** unit:

Session 2

Focus	answers need to be equivalent to the ratios of 1:1, 2:3, 1:4
Building	0.1 mol, 0.1 mol, 0.1 mol
Reinforcing	0.05 mol, 0.1 mol, 0.025 mol, 0.05 mol
Extending	5.844277 = 5.8 g (1d.p.) 14.6 gL ⁻¹ , 11.7 gL ⁻¹ , 5.8 gL ⁻¹ concentration in gL ⁻¹ , = concentration in molL ⁻¹ , x mass in g mol ⁻¹

Session 3

Focus	0.1 mL, 0.5 mL, 0.4 mL
Building	0.1 mol, 0.02 mol, 0.001 mol
Reinforcing	0.0002 mol, 0.0004 mol, 0.002 mol 10 L, 1 L, 0.5 L
Extending	0.0002 mol, 0.001 mol, 0.0005 mol concentration in molL ⁻¹ x volume in L = number of mol (volume in mL ÷ 1000) = volume in L 1 L, 2 L, 1.25 L yes, volume = number of moles ÷ concentration

Session 4

Focus	linear - It takes half the volume of HCl to neutralise the NaOH, so the HCl must have twice the concentration of the NaOH. The concentration of the HCl is 0.2 molL ⁻¹ .
Building	20 mL, 0.002 mL, 0.002 mL, 0.002 mL, 0.2 molL ⁻¹
Reinforcing	the gradient will be half, the gradient will be double, the gradient will be double, the gradient will be half
Extending	V _a = 0.5V _b (volume of the acid solution = half the volume of the solution of the base) V _a = 0.25V _b , V _a = V _b , V _a = V _b , V _a = 0.25V _b

Session 5

Focus	linear, 0.1 molL ⁻¹
Building	20 mL, 0.002 mL, 0.001 mL, 0.1 mol, 0.1 molL ⁻¹
Reinforcing	the gradient will be half, the gradient will be double, the gradient will be double, the gradient will be half
Extending	V _a = 0.5V _b (volume of the acid solution = half the volume of the solution of the base) V _a = 0.25V _b , V _a = V _b , V _a = V _b , V _a = 0.25V _b

Session 6

Focus	2 mL, 4 mL, 4 mL, 8 mL
Building	1 mL, 2 mL, 0.5 mL, 1 mL
Reinforcing	2.5 mL, 5 mL, 5 mL, 10 mL
Extending	5 mL, 1.25 mL, 12.5 mL, 0.5 mL 2/3 as much since there are (approximately) 3/2 as many OH ⁻ ions available in a solution of the same concentration.