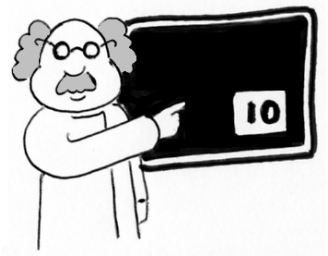


STARTER FOR 10...

1.1.3. Concentration and dilution

Place the answers to calculations **1** - **9** in order from left to right in the grid below to find which two solutions *A* - *P* react together. (1 mark for each correct answer)

Solution A	2	9	1	1	4	0	1	1	*Solution I*			
	2	6	0	4	9	6	2					
Solution B	1	1	5	8	5	8	3	5	*Solution J*			
	6	7	4	3	5	1	1					
Solution C	2	2	1	2	9	0	2	1	*Solution K*			
	3	9	0	5	0	6	2					
Solution D	5	8	6	8	5	1	3	5	*Solution L*			
	0	7	3	7	2	5	3					
Solution E	1	1	4	4	9	7	4	5	*Solution M*			
	2	1	2	9	9	1	2					
Solution F	2	6	5	3	7	1	2	1	*Solution N*			
	4	2	8	9	3	9	8					
Solution G	8	0	3	1	4	3	2	1	*Solution O*			
	2	2	4	3	2	8	2					
Solution H	6	5	9	7	0	9	7	5	*Solution P*			
	1	7	1	4		4	9					

1. How many moles of NaCl must be dissolved in 0.5 dm^3 of water to make a 4 mol dm^{-3} solution.

2. How many moles of NaOH must be dissolved in 25,000 cm^3 of water in order to make a solution with a concentration of 0.8 mol dm^{-3}?

3. What volume of water in dm^3 must 8 moles of $NaHCO_3$ be dissolved in to make a solution with a concentration of 0.25 mol dm^{-3}?

4. What volume of water in cm^3 must 3 moles of $KMnO_4$ be dissolved in, in order to make a solution with a concentration of 4 mol dm^{-3}?

5. A technician found that 2000 cm^3 of a 4 mol dm^{-3} solution of copper sulphate was needed for the reaction to go to completion. How many moles of copper sulphate reacted?

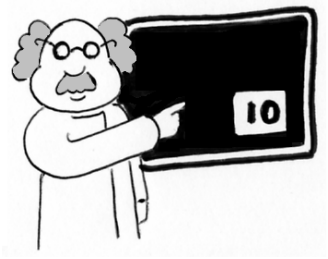
6. A student needs to add 8.75×10^{-3} moles of NaOH to neutralise the acid in his sample. How many cm^3 of a 0.35 mol dm^{-3} solution should he add?

7. A chemist wants to dilute a stock solution of 10 mol dm^{-3} NaOH to make a solution with a concentration of 1 mol dm^{-3}. What volume of water must be added to 100 cm^3 of the 10 mol dm^{-3} solution?

8. Lucy wants to make up a solution with a concentration of 2 mol dm^{-3}. What volume of water in dm^3 must she add to 500 cm^3 of 6 mol dm^{-3} stock solution?

9. Alex must add what volume of water in cm^3 to 45 cm^3 of a 9 mol dm^{-3} solution of H_2SO_4 to make a 1.5 mol dm^{-3} solution?

Which two solutions need to be mixed in order to get a reaction?



STARTER FOR 10...

Chapter 1: Quantitative chemistry answers

1.1. The mole

1.1.1. Moles and maths

1. 43.7

2. 69.8

3. 0.688

4. 0.683

5. 0.25

1.1.2. Moles and concentration

a → 2	6	5	4	9	8	1	7	d ↓ 3
9	4	c → 7	b ↓ 1	3	6	8	2	5
3	1	8	7	2	e ↓ 5	6	4	9
7	8	2	6	1	3	9	5	4
f ↓ 1	5	4	g → 8	7	9	2	3	6
6	3	9	5	4	2	7	8	1
4	7	6	2	5	1	3	9	8
8	2	3	9	h → 6	4	5	1	7
5	9	1	3	8	7	i → 4	6	2

1.1.3. Concentration and dilution