

CHEMISTRY

Learning objectives I can:	I can do this very well	I can do this quite well	I need to do more work on this
2.1 Calculate the concentration of solutions in g dm^{-3}			
2.2 Demonstrate an understanding that some areas of the country have dissolved calcium or magnesium ions in their tap water and that the presence of these ions makes water hard			
2.3 Describe problems caused by hard water including a it does not easily form a lather with soap b it reacts with soap to form a precipitate ('scum'), which causes soap to be wasted			
HSW 11 Present information using scientific conventions and symbols			
2.4 Describe hard water as either temporary or permanent; and describe how boiling removes temporary hardness but not permanent hardness			
2.5 Explain how hard water can be softened by removing dissolved calcium and / or magnesium ions and that this can be done by a boiling (for temporary hard water only) b using an ion exchange resin			
HSW 12 Describe the benefits, drawbacks and risks of using new scientific and technological developments			
2.6 Evaporate a solution to dryness to determine the mass of solute in a given mass of solution			
H 2.7 Demonstrate an understanding that the amount of a substance can be measured in grams, numbers of particles or number of moles of particles			
H 2.8 Convert masses of a substance into moles of particles of the substance and vice versa			
H 2.9 Convert concentration in g dm^{-3} into mol dm^{-3} and vice versa			
2.10 Demonstrate an understanding that if soluble salts are prepared from an acid and an insoluble reactant: a excess of the reactant can be added to ensure that all the acid is used up b the excess reactant can be removed by filtration c the solution remaining is only salt and water.			
HSW 5 Plan to test a scientific idea, answer a scientific question or solve a scientific problem by choosing appropriate resources			
2.11 Demonstrate an understanding that if soluble salts are prepared from an acid and a soluble reactant: a titration must be used to determine the exact amount of the soluble reactant that reacts with an acid b the acid and the soluble reactant can then be mixed in the correct proportions c the solution remaining after reaction is only salt and water			
2.12 Describe an acid–base titration as a neutralisation reaction where hydrogen ions (H^+) from the acid react with hydroxide ions (OH^-) from the base			
2.13 Describe how to carry out simple acid-base titrations using burette, pipette and suitable acid-base indicators			
2.14 Carry out an acid-base titration to prepare a salt from a soluble base			
H 2.15 Carry out simple calculations using the results of titrations to calculate an unknown concentration of solution or an unknown volume of solution required			