



AQA GCSE Combined Science: Trilogy

Topic Checklists

5.3 Quantitative Chemistry

5.3.1 Chemical Measurements, Conservation of Mass and the Quantitative Interpretation of Chemical Equations

Topic	Success Criteria	Progress		
Conservation of Mass and Balanced Chemical Equations	I can explain what is meant by 'conservation of mass' in chemical reactions.			
	I can balance symbol equations in terms of the numbers of atoms of each element involved on both sides of the equations.			
	I can explain the use of multipliers in equations in normal script before a formula and in subscript within a formula.			
Relative Formula Mass	I can explain how to calculate the relative formula mass (M_r) of a compound.			
	I can describe how the sum of the relative formula masses of the reactants relates to the sum of the relative formula masses of the products in a balanced chemical equation.			
	I can calculate the percentage by mass of an element in a compound given the relative formula mass and the relative atomic masses.			
Mass Changes when a Reactant or Product is a Gas	I can explain why some reactions may appear to involve a change in mass.			
	I can give some examples of chemical reactions that result in an apparent change in mass.			
	I can explain any observed changes in mass in non-enclosed systems during a chemical reaction given the balanced symbol equation for the reaction and explain these changes in terms of the particle model.			
Chemical Measurements	I can represent the distribution of results and make estimations of uncertainty.			
	I can use the range of a set of measurements about the mean as a measure of uncertainty.			

**5.3.2 Use of Amount of Substance in Relation to Masses of Pure Substances**

Topic	Success Criteria	Progress		
Moles (HT Only)	I can give a definition for the term 'mole'.			
	I can give the symbol for the unit mole.			
	I can describe how the mass of one mole of a substance in grams relates to its relative formula mass.			
	I can recall the value of the Avogadro constant.			
	I can use the relative formula mass of a substance to calculate the number of moles in a given mass of that substance and vice versa.			
Amounts of Substances in Equations (HT Only)	I can interpret chemical equations in terms of moles.			
	I can calculate the masses of reactants and products from balanced symbol equations.			
	I can calculate the masses of reactants and products from the balanced symbol equation and the mass of a given reactant or product.			
Using Moles to Balance Equations (HT Only)	I can balance a symbol equation given the masses of reactants and products.			
	I can change the subject of a mathematical equation.			
Limiting Reactants (HT Only)	I can explain why it is common to use an excess of one of the reactants in a chemical reaction.			
	I can explain what is meant by the term 'limiting reactant'.			
	I can explain how limiting the quantity of a reactant affects the amount of product it is possible to obtain.			
	I can calculate the number of moles or mass of product formed given the mass of the limiting reactant.			
Concentration of Solutions	I can calculate the concentration of a solution in grams per dm^3 (g/dm^3).			
	I can calculate the mass of solute in a given volume of solution of known concentration.			
	(HT only) I can explain how the mass of a solute and the volume of a solution is related to the concentration of the solution.			