C3 Quantitative Chemistry

Can you…?	☺	😐	☹
3.1.1 Conservation of mass and balanced chemical equations			
Recall that the law of conservation of mass states that no atoms are lost or made during a chemical reaction so the mass of the products equals the mass of the reactants.			
Interpret symbol equations representing chemical reactions.			
3.1.2 Relative formula mass			
Calculate the relative formula mass of a compound.			
Recall that in a balanced chemical equation, the sum of the relative formula masses of the reactants in the quantities shown equals the sum of the relative formula masses of the products in the quantities shown.			
3.1.3 Mass changes when a reactant or product is a gas			
Give examples of reactions that appear to involve a change in mass.			
Explain why some reactions appear to involve a change in mass.			
3.1.4 Chemical measurements			
Explain what is meant by measurement uncertainty.			
Represent the distribution of results and estimate uncertainty.			
Use the range of a set of measures about the mean as a measure of uncertainty.			
3.2.1 Moles (HT only)			
Recall that chemical amounts are measured in moles. The symbol for the unit mole is mol.			
Recall that the number of atoms, molecules or ions in a mole of a given substance is the Avogadro constant. The value of the Avogadro constant is 6.02×10^{23} per mole.			
Recall that the mass of one mole of a substance in grams is equal to its relative formula mass.			
Use the relative formula mass of a substance to calculate the number of moles in a given mass of that substance and vice versa.			
3.2.2 Amounts of substances in equations (HT only)			
Interpret chemical equations in terms of moles.			
Calculate the masses of substances shown in a balanced symbol equation.			
Calculate the masses of reactants and products from the balanced symbol equation and the mass of a given reactant or product.			
3.2.3 Using moles to balance equations (HT only)			
Recall that the balancing numbers in a symbol equation can be calculated from the masses of reactants and products by converting the masses in grams to amounts in moles and converting the numbers of moles to simple whole number ratios.			

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Balance an equation given the masses of reactants and products.			
3.2.4 Limiting reactants (HT only)			
State what it means if a reactant is the limiting reactant.			
State what it means if a reactant is in excess.			
Explain the effect of a limiting quantity of a reactant on the amount of products it is possible to obtain in terms of amounts in moles or masses in grams.			
3.2.5 Concentration of solutions			
Recall that the concentration of a solution can be measured in mass per given volume of solution, eg grams per dm^3 (g/dm^3).			
Calculate the mass of solute in a given volume of solution of known concentration in terms of mass per given volume of solution.			
Explain how the mass of a solute and the volume of a solution is related to the concentration of the solution. (HT only)			