MORE CALCULATIONS- SEPARATES

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ATOMS ECONOMY AND YIELD (HT)		
Even though no atoms are gained or lost in a chemical reaction, it isn't always possible to obtain the calculated amount of a product because: • **the reaction may not go to completion because it is reversible** • **some of the product may be lost when it is separated from the reaction mixture** • **some of the reactants may react in ways different to the expected reaction.** **The amount of a product obtained is known as the yield. When compared with the maximum theoretical amount as a percentage, it is called the percentage yield.** $$\%\,\boldsymbol{Yield} = \frac{\boldsymbol{Mass\ of\ product\ actually\ made}}{\boldsymbol{Maximum\ theoretical\ mass\ of\ product}}\ \boldsymbol{x\ 100}$$	49	1
The atom economy (atom utilisation) is a measure of the amount of starting materials that end up as useful products. It is important for sustainable development and for economic reasons to use reactions with high atom economy. **The percentage atom economy of a reaction is calculated using the balanced equation for the reaction as follows:** $$\frac{\boldsymbol{Relative\ formula\ mass\ of\ desired\ product\ from\ equation}}{\boldsymbol{Sum\ of\ relative\ formula\ masses\ of\ all\ reactants\ from\ equation}}\ \boldsymbol{x\ 100}\%$$	48	1

Using concentrations of solutions in mol/dm^3 (HT)		
The concentration of a solution can be measured in mol/dm^3. **The amount in moles of solute or the mass in grams of solute in a given volume of solution can be calculated from its concentration in mol/dm^3.** **If the volumes of two solutions that react completely are known and the concentration of one solution is known, the concentration of the other solution can be calculated.**	46-47	1
Use amount of substance in relation to volume of gases (HT)		
Equal amounts in moles of gases occupy the same volume under the same conditions of temperature and pressure. **The volume of one mole of any gas at room temperature and pressure (20 °C and 1 atmosphere pressure) is 24 dm^3.** **The volumes of gaseous reactants and products can be calculated from the balanced equation for the reaction.**	46-47	1