SC14 Quantitative Analysis

SC14a Yields

Step	Learning outcome	Had a look	Nearly there	Nailed it!
5th	State what is meant by the theoretical yield of a reaction.	☐	☐	☐
5th	State what is meant by the actual yield of a reaction.	☐	☐	☐
8th	Calculate the percentage yield of a reaction.	☐	☐	☐
6th	Understand that the actual yield is always less than the theoretical yield of a reaction.	☐	☐	☐
6th	Describe some reasons why the actual yield is less than the theoretical yield of a reaction.	☐	☐	☐

SC14b Atom economy

Step	Learning outcome	Had a look	Nearly there	Nailed it!
5th	Recall the formula for calculating atom economy.	☐	☐	☐
9th	Calculate the atom economy for forming a desired product in a reaction.	☐	☐	☐
7th	H Explain how atom economy and yield determine the choice of reaction pathway.	☐	☐	☐
7th	H Explain how the usefulness of by-products determines the choice of reaction pathway.	☐	☐	☐

SC14c Concentrations

Step	Learning outcome	Had a look	Nearly there	Nailed it!
4th	H State the meaning of the term concentration.	☐	☐	☐
6th	H Calculate concentration in $g\,dm^{-3}$.	☐	☐	☐
6th	H Calculate concentration in $mol\,dm^{-3}$.	☐	☐	☐
8th	H Convert concentration in $g\,dm^{-3}$ into concentration in $mol\,dm^{-3}$.	☐	☐	☐
9th	H Convert concentration in $mol\,dm^{-3}$ into concentration in $g\,dm^{-3}$.	☐	☐	☐

SC14d Titrations and calculations

Step	Learning outcome	Had a look	Nearly there	Nailed it!
5th	Describe the steps in carrying out an acid-alkali titration.	☐	☐	☐
7th	**H** Calculate the number of moles of solute in a given volume of solution.	☐	☐	☐
9th	**H** Deduce the mole ratio of acid to alkali from a balanced equation.	☐	☐	☐
9th	**H** Calculate the concentration of a solution using the results of an acid-alkali titration.	☐	☐	☐
9th	**H** Calculate the volume of solution required in an acid-alkali titration, given the concentrations of both the acid and the alkali.	☐	☐	☐

SC14e Molar volume of gases

Step	Learning outcome	Had a look	Nearly there	Nailed it!
6th	**H** Describe what is meant by the molar volume of a gas.	☐	☐	☐
8th	**H** Use the molar volume in calculations involving solids and gases in reactions.	☐	☐	☐
6th	**H** Recall Avogadro's law.	☐	☐	☐
9th	**H** Use Avogadro's law to calculate the volumes of reacting gases.	☐	☐	☐

SC15 Dynamic Equilibria, Calculations Involving Volumes of Gases

SC15a Fertilisers and the Haber process

Step	Learning outcome	Had a look	Nearly there	Nailed it!
5th	Recall some compounds found in fertilisers.	☐	☐	☐
7th	Describe and compare small-scale and large-scale production of ammonium sulfate.	☐	☐	☐
6th	Describe how ammonium nitrate is made using ammonia produced by the Haber process.	☐	☐	☐

SC15b Factors affecting equilibrium

Step	Learning outcome	Had a look	Nearly there	Nailed it!
7th	Describe how changing the reaction conditions affects the relative amount of substances in an equilibrium mixture.	☐	☐	☐
8th	Predict how different conditions affect how quickly equilibrium is reached.	☐	☐	☐
8th	Explain how the conditions are chosen for industrial reactions.	☐	☐	☐
9th	Explain how the rate of reaction and equilibrium position determine the choice of reaction pathway.	☐	☐	☐

SC16 Chemical Cells and Fuel Cells

SC16a Chemical cells and fuel cells

Step	Learning outcome	Had a look	Nearly there	Nailed it!
5th	Recall why a chemical cell eventually stops producing a voltage.	☐	☐	☐
4th	Recall the main features of a hydrogen–oxygen fuel cell.	☐	☐	☐
8th	Evaluate the use of fuel cells for different purposes.	☐	☐	☐