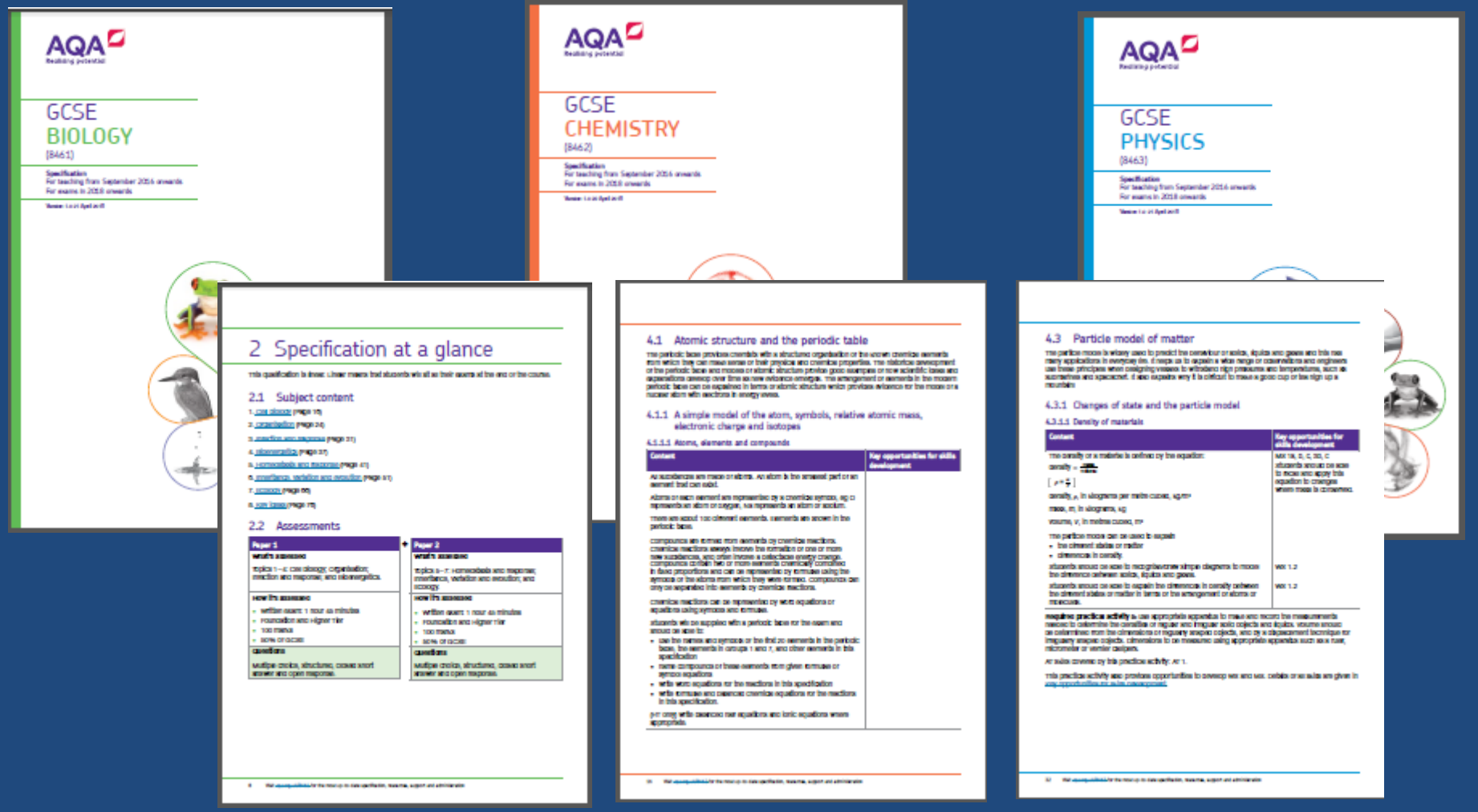
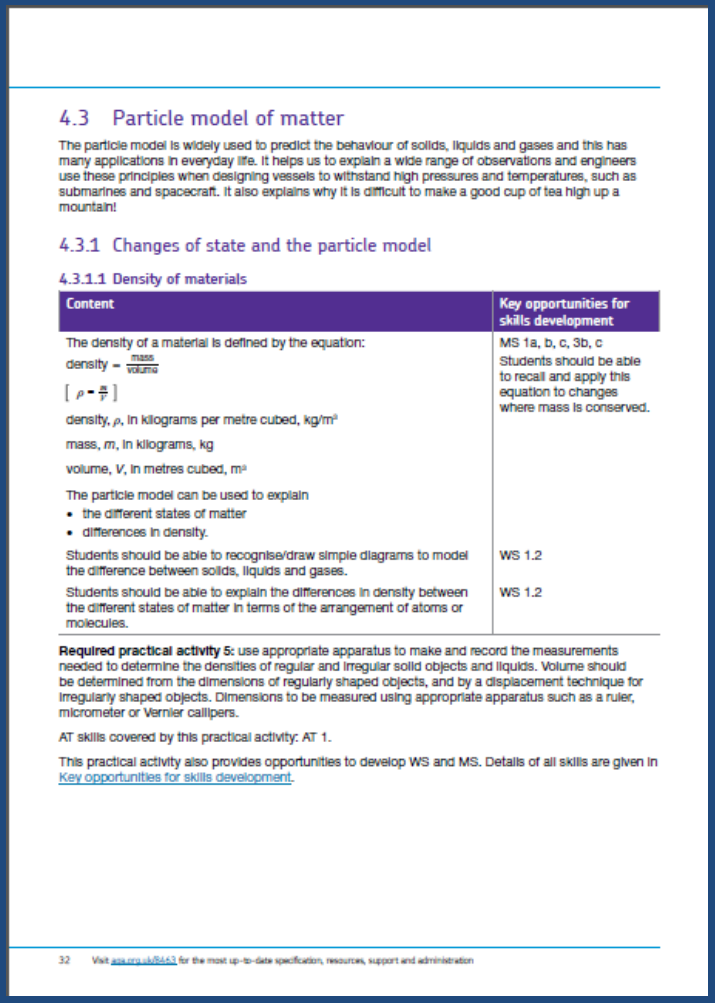
GCSE Sciences

How to support your child.

Use the specifications on AQA.org.uk
These have plenty of information about students need to know and be able to do.



Students will be completing the Required Practicals, they should be able to describe and explain these!



4.3 Particle model of matter

The particle model is widely used to predict the behaviour of solids, liquids and gases and this has many applications in everyday life. It helps us to explain a wide range of observations and engineers use these principles when designing vessels to withstand high pressures and temperatures, such as submarines and spacecraft. It also explains why it is difficult to make a good cup of tea high up a mountain!

4.3.1 Changes of state and the particle model

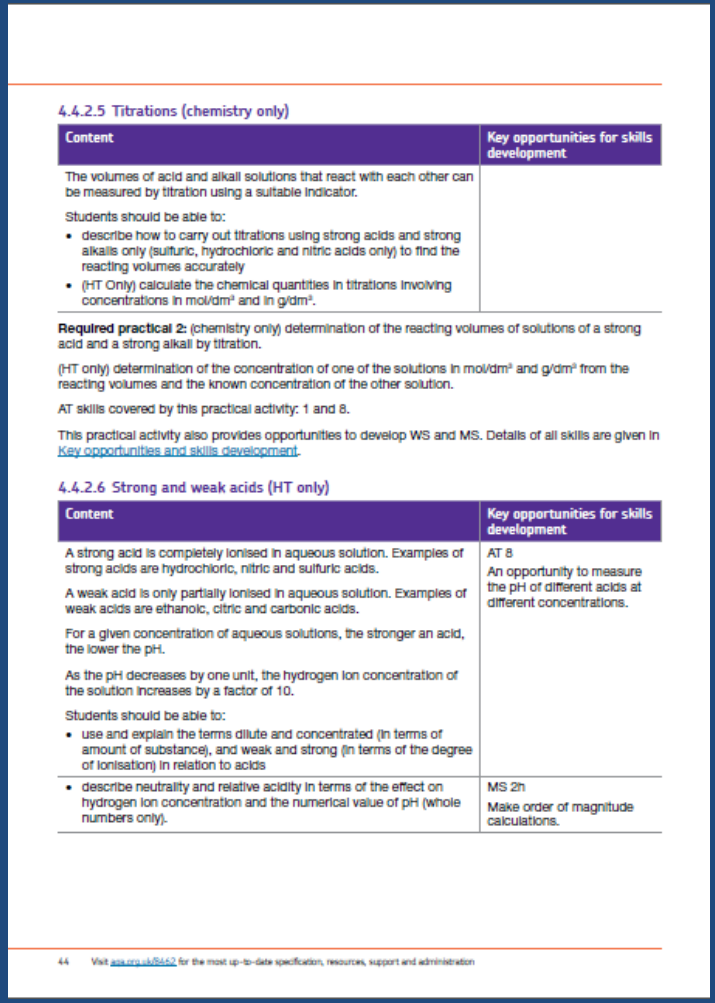
4.3.1.1 Density of materials

Content	Key opportunities for skills development
The density of a material is defined by the equation: density = $\frac{\text{mass}}{\text{volume}}$ [$\rho = \frac{m}{V}$] density, ρ, in kilograms per metre cubed, kg/m^3 mass, m, in kilograms, kg volume, V, in metres cubed, m^3	MS 1a, b, c, 3b, c Students should be able to recall and apply this equation to changes where mass is conserved.
The particle model can be used to explain • the different states of matter • differences in density.	
Students should be able to recognise/draw simple diagrams to model the difference between solids, liquids and gases.	WS 1.2
Students should be able to explain the differences in density between the different states of matter in terms of the arrangement of atoms or molecules.	WS 1.2

Required practical activity 5: use appropriate apparatus to make and record the measurements needed to determine the densities of regular and irregular solid objects and liquids. Volume should be determined from the dimensions of regularly shaped objects, and by a displacement technique for irregularly shaped objects. Dimensions to be measured using appropriate apparatus such as a ruler, micrometer or Vernier callipers.

AT skills covered by this practical activity: AT 1.

This practical activity also provides opportunities to develop WS and MS. Details of all skills are given in Key opportunities for skills development.



4.4.2.5 Titrations (chemistry only)

Content	Key opportunities for skills development
The volumes of acid and alkali solutions that react with each other can be measured by titration using a suitable indicator. Students should be able to: • describe how to carry out titrations using strong acids and strong alkalis only (sulfuric, hydrochloric and nitric acids only) to find the reacting volumes accurately • (HT Only) calculate the chemical quantities in titrations involving concentrations in mol/dm^3 and in g/dm^3.	

Required practical 2: (chemistry only) determination of the reacting volumes of solutions of a strong acid and a strong alkali by titration.

(HT only) determination of the concentration of one of the solutions in mol/dm^3 and g/dm^3 from the reacting volumes and the known concentration of the other solution.

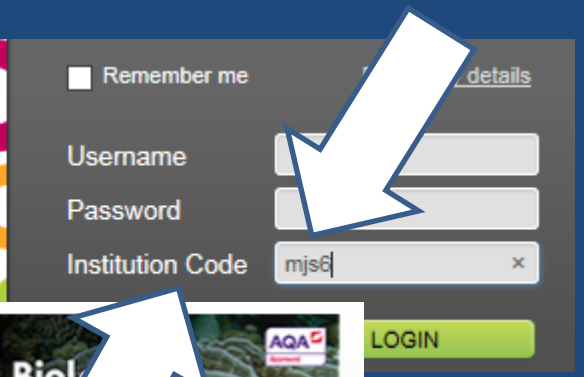
AT skills covered by this practical activity: 1 and 8.

This practical activity also provides opportunities to develop WS and MS. Details of all skills are given in Key opportunities and skills development.

4.4.2.6 Strong and weak acids (HT only)

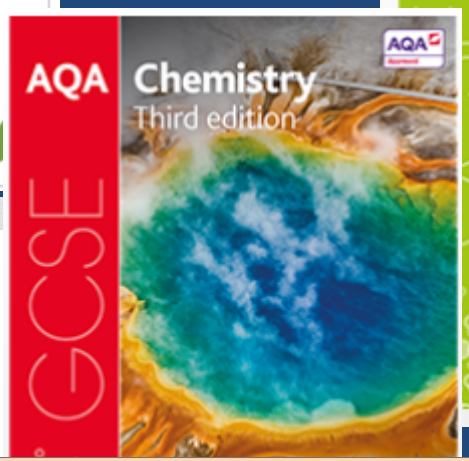
Content	Key opportunities for skills development
A strong acid is completely ionised in aqueous solution. Examples of strong acids are hydrochloric, nitric and sulfuric acids. A weak acid is only partially ionised in aqueous solution. Examples of weak acids are ethanoic, citric and carbonic acids. For a given concentration of aqueous solutions, the stronger an acid, the lower the pH. As the pH decreases by one unit, the hydrogen ion concentration of the solution increases by a factor of 10. Students should be able to: • use and explain the terms dilute and concentrated (in terms of amount of substance), and weak and strong (in terms of the degree of ionisation) in relation to acids	AT 8 An opportunity to measure the pH of different acids at different concentrations.
• describe neutrality and relative acidity in terms of the effect on hydrogen ion concentration and the numerical value of pH (whole numbers only).	MS 2h Make order of magnitude calculations.

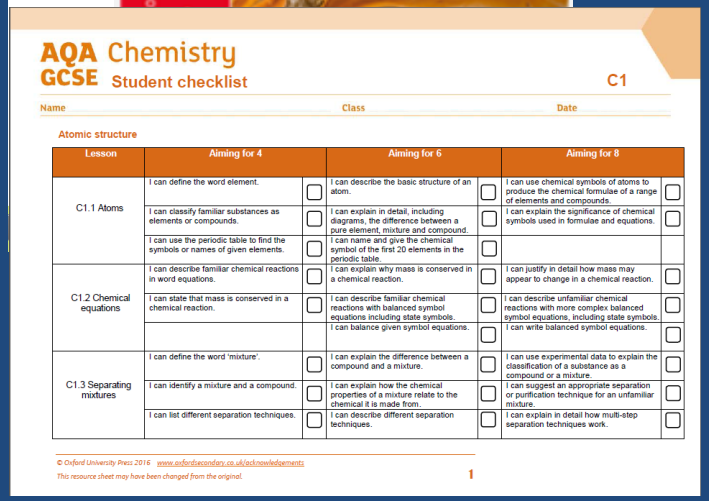
kerboodle



P8.2 Interactive: Forces between objects

Kerboodle allows the students to access the textbooks as well as animations and further resources to support them with their work.



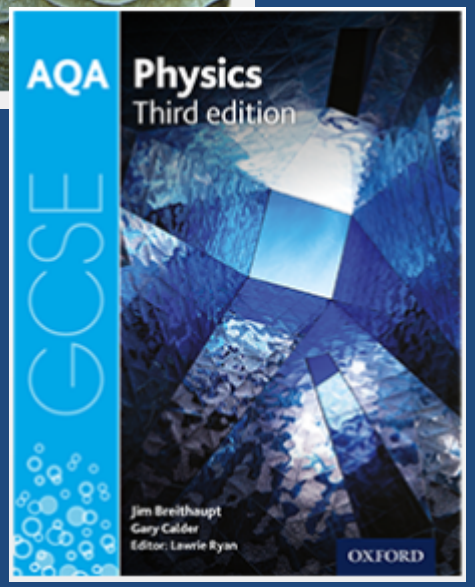


AQA Chemistry
GCSE Student checklist
C1

Name | Class | Date

Atomic structure

Lesson	Aiming for 4		Aiming for 6		Aiming for 8	
C1.1 Atoms	I can define the word element.	☐	I can describe the basic structure of an atom.	☐	I can use chemical symbols of atoms to produce the chemical formulae of a range of elements and compounds.	☐
	I can classify familiar substances as elements or compounds.	☐	I can explain in detail, including diagrams, the difference between a pure element, mixture and compound.	☐	I can explain the significance of chemical symbols used in formulae and equations.	☐
	I can use the periodic table to find the symbols or names of given elements.	☐	I can name and give the chemical symbol of the first 20 elements in the periodic table.	☐		
C1.2 Chemical equations	I can describe familiar chemical reactions in word equations.	☐	I can explain why mass is conserved in a chemical reaction.	☐	I can justify in detail how mass may appear to change in a chemical reaction.	☐
	I can state that mass is conserved in a chemical reaction.	☐	I can describe familiar chemical reactions with balanced symbol equations including state symbols.	☐	I can describe unfamiliar chemical reactions with more complex balanced symbol equations, including state symbols.	☐
			I can balance given symbol equations.	☐	I can write balanced symbol equations.	☐
C1.3 Separating mixtures	I can define the word 'mixture'.	☐	I can explain the difference between a compound and a mixture.	☐	I can use experimental data to explain the classification of a substance as a compound or a mixture.	☐
	I can identify a mixture and a compound.	☐	I can explain how the chemical properties of a mixture relate to the chemical it is made from.	☐	I can suggest an appropriate separation or purification technique for an unfamiliar mixture.	☐
	I can list different separation techniques.	☐	I can describe different separation techniques.	☐	I can explain in detail how multi-step separation techniques work.	☐



Make use of FROG…

We have resources on here to support students with their work and their revision.

This will migrate to TEAMs during the year!