



Teaching guide: Algebra skills

Mathematics for GCSE Science

This resource helps you to deliver the mathematical requirements that students are required to demonstrate in the new GCSE Science specifications. It consists of a teaching guide and PowerPoint presentation.

	<p>non-standard functions in real contexts, to find approximate solutions to problems such as simple kinematic problems involving distance, speed and acceleration</p> <ul style="list-style-type: none"> • {calculate or estimate gradients of graphs and areas under graphs (including quadratic and other non-linear graphs), and interpret results in cases such as distance-time graphs, velocity-time graphs and graphs in financial contexts}
3. Maths introduction and development	<p>The skills in b, c, and d are the building blocks for GCSE Maths and students will have been using them since KS3.</p> <p>Typically students will have first learnt how to simplify algebraic expressions, before moving on to solving, substituting and finally rearranging.</p>
<p>4. Ref AQA All About Maths</p> <p>AQA All About Maths Basic algebra</p> <p>AQA All About Maths Algebra and graphs</p> <p>AQA All About Maths Algebra recap and extension</p> <p>AQA All About Maths Algebra: quadratics, rearranging formulae and identities</p>	<p>Lesson 1 – This lesson revises and builds on the knowledge that students should have of basic powers, roots, reciprocals and using BIDMAS.</p> <p>Lesson 2 – focusses on students becoming confident with correct algebraic notation and the best way of writing simple expressions. It will also challenge frequent misconceptions such as $a^2 = a \times 2$.</p> <p>Solving linear equations activity</p> <p>Standards unit A6; Algebra Match and Algebra Sort activity</p> <p>Lesson 1 – introductory session, recapping main skills of algebraic manipulation. A shift from linear to quadratic functions. Surds are considered.</p> <p>Lesson 6 – substitution into formulae of different nature, including worded formulae and worded problems. Includes negative and fractional substitution. Formulae used in Science are considered. Function notation, input and output language are used in the starter.</p> <p>Lesson 7 – rearranging formulae of different nature to change the subject of the formula.</p>
5. Misconceptions	<p>Confusing the multiply sign (\times) with the variable (x).</p> <p>Not using the balance method correctly when solving equations.</p>
6. Some examples of where it is applied in science	<p>Biology</p> <ul style="list-style-type: none"> Microscopy Rate of photosynthesis Genetic inheritance

	Chemistry Moles Percentage yield Using concentrations of solutions in mol/dm ³ (chemistry only) (HT only)
	Physics Changes in energy Efficiency Series and parallel circuits