



Topic	Learning Objectives	Key Vocabulary	Learning Sequence	Linked Learning	Home Learning
Investigating properties of shapes	<p>Know and use the exact values of trigonometric functions for 0°, 30°, 45°, 60° and 90°</p> <p>Know and use the trigonometric ratios to find angles and lengths in right-angled triangles</p>	<p>Opposite Adjacent Hypotenuse Function Ratio Sine Cosine Tangent Angle of elevation, angle of depression</p>	<p>Establish the exact values of $\sin\theta$ and $\cos\theta$ for $\theta = 0^\circ, 30^\circ, 45^\circ, 60^\circ$ and 90°</p> <p>Establish the exact value of $\tan\theta$ for $\theta = 0^\circ, 30^\circ, 45^\circ$ and 60°</p> <p>Learn the trigonometric ratios, $\sin\theta = o/h$, $\cos\theta = a/h$, $\tan\theta = o/a$</p> <p>Solve a trigonometric equation to find a missing side or angle in a right-angled triangle</p> <p>Use trigonometry to solve problems involving bearings and angles of elevation and depression</p>	<p>Solve linear equations, including those with the unknown in the denominator of a fraction</p> <p>Understand and use Pythagoras' theorem</p>	<p>There will be a written piece of homework each week to reinforce key concepts.</p>
Calculating	<p>Be able to calculate with integer and fractional indices</p> <p>Be able to calculate exactly with surds Be able to apply and interpret limits of accuracy, including upper and lower bounds</p>	<p>Power, Root Index, Indices Surd Inequality Truncate, Round Significant figure</p>	<p>Know and use the fact that $a^{-n} = 1/a^n$</p> <p>Know and use the fact that $a^{1/n} = \sqrt[n]{a}$ Use $\sqrt{a \times b} = \sqrt{a} \times \sqrt{b}$</p> <p>Simplify surds Identify error bounds</p> <p>Calculate the upper and lower bounds in a given situation</p>	<p>Know the multiplication and division laws of indices</p> <p>Know square numbers</p> <p>Round to a given number of decimal places or significant figures</p>	<p>There will be a written piece of homework each week to reinforce key concepts.</p>



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Solving equations	Be able to find approximate solutions to equations numerically using iteration Be able to solve two linear simultaneous equations in two variables algebraically	Interval Decimal search Iteration Substitution Elimination	Use decimal search to solve a complex equation Use an iterative formula to find approximate solutions to equations Solve two linear simultaneous equations in two variables by substitution Solve two linear simultaneous equations in two variables by elimination	Solve a linear equation Substitution into expressions	There will be a written piece of homework each week to reinforce key concepts.



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Mathematical movement Enlargement	Be able to describe and construct similar shapes by enlargement, including on coordinate axes	Scale Factor Enlarge Similar Congruent	Find the centre and fractional scale factor of an enlargement Use the centre and scale factor to carry out an enlargement with a fractional scale factor Solve problems involving similarity	Use the centre and scale factor to carry out an enlargement of a 2D shape with a positive integer scale factor	There will be a written piece of homework each week to reinforce key concepts.
Mathematical movement Changes and Invariance	Be able to describe the changes and invariance achieved by combinations of rotations, reflections and translations	Transformation Rotation Reflection Translation	Perform a sequence of transformations on a 2D shape Find and describe a single transformation given two congruent 2D shapes	Carry out reflection, rotations and translations of 2D shapes	There will be a written piece of homework each week to reinforce key concepts.
Algebraic proficiency Algebraic fractions in expressions	Be able to manipulate algebraic expressions involving algebraic fractions	Equation Expression Simplify	Add, subtract, multiply and divide algebraic fractions Simplify an algebraic fraction	Add, subtract, multiply and divide proper fractions	There will be a written piece of homework each week to reinforce key concepts.



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Algebraic proficiency Factorise quadratic expressions	Be able to expand products of more than two binomials and factorise quadratic expressions of the form $x^2 + bx + c$	Expand Linear Quadratic Difference of two squares Binomial Factorise	Expand the product of three binomials Factorise an expression involving the difference of two squares Factorise a quadratic expression of the form $ax^2 + bx + c$ (a is prime or composite)	Multiply two linear expressions of the form $(x \pm a)(x \pm b)$ Factorise a quadratic expression of the form $x^2 + bx + c$	There will be a written piece of homework each week to reinforce key concepts.
Algebraic proficiency Changing subject of a formulae	Be able to change the subject of formulae		Change the subject when more than two steps are required Change the subject when the required subject appears twice	Change the subject of a formula when two steps are required	There will be a written piece of homework each week to reinforce key concepts.
Proportional reasoning	Be able to recognise and interpret graphs that illustrate direct and inverse proportion Be able to interpret equations that describe direct and inverse proportion	Direct proportion Inverse proportion Multiplier	Recognise and interpret graphs that illustrate direct and inverse proportion Interpret equations that describe direct and inverse proportion Solve problems which include finding the multiplier in a situation involving direct and inverse proportion	Know the difference between direct and inverse proportion Understand the connection between the multiplier, the expression and the graph	There will be a written piece of homework each week to reinforce key concepts.