

Year 10

In addition to the list of topics below you will also need to apply your numeracy skills and problem solving techniques.

7 Transformations, constructions and loci	Demonstrate that two triangles are congruent
	Find the order of rotational symmetry for a 2D shape
	Recognise shapes with rotational symmetry.
	Translate, reflect, rotate and enlarge a 2D shape.
	Combine transformations
	Construct the bisectors of lines and angles
	Construct angles of 60° and 90° .
	Draw a locus for a given rule
	Solve practical problems using loci
	Construct and interpret plans and elevations of 3D shapes.
8 Algebraic manipulation	Recognise expressions, equations, formulae and identities.
	Substitute into, manipulate and simplify algebraic expressions.
	Factorise an algebraic expression.
	Expand two binomials to obtain a quadratic expression.
	Expand the square of a binomial.
	Expand more than two binomials.
	Factorise a quadratic expression of the form $x^2 + ax + b$ into two linear brackets.
	Factorise a quadratic expression of the form $ax^2 + bx + c$ into two linear brackets.
	Change the subject of a formula.
9 Length, area and volume	Calculate the circumference and area of a circle.
	Calculate the area of a parallelogram.
	Calculate the area of a trapezium.
	Calculate the length of an arc.
	Calculate the area and angle of a sector.
	Calculate the volume of a prism.
	Calculate the volume and surface area of a cylinder.
	Calculate the volume of a pyramid.
	Calculate the volume and surface area of a cone.
	Calculate the volume and surface area of a sphere.
10 Linear graphs	Draw linear graphs by finding points.
	Find the gradient of a straight line.
	Draw a line with a certain gradient.
	Draw graphs using the gradient-intercept method.
	Draw graphs using the cover-up method.
	Find the equation of a line, using its gradient and intercept.
	Find the equation of a line given two points on the line.
	Convert from one unit to another unit by using a conversion graph.
	Use straight-line graphs to find formulae.
	Solve simultaneous linear equations using graphs.
11 Right-angled triangles	Draw linear graphs parallel or perpendicular to other lines and passing through a specific point.
	Calculate the length of the hypotenuse in a right angled triangle.
	Calculate the length of a shorter side in a right angled triangle.
	Solve practical problems involving Pythagoras' theorem.
	Use Pythagoras' Theorem and isosceles triangles
	Use Pythagoras' theorem to solve problems involving three dimensions.
	Use the three trigonometric ratios.
	Use the trigonometric ratios to calculate an angle.
	Find lengths of sides and angles in right-angled triangles using the sine and cosine functions.
	Find lengths of sides and angles in right-angled triangles using the tangent function.
	Decide which trigonometric ratio to use in a right-angled triangle.
	Solve practical problems using trigonometry.
	Solve problems using an angle of elevation or an angle of depression.
	Solve bearing problems using trigonometry.
Find the missing angle in an isosceles triangle.	
Calculate the area of an isosceles triangle.	
12 Similarity	Show two triangles are similar.
	Work out the scale factor between similar triangles.
	Solve problems involving the area and volume of similar shapes.

13 Exploring and applying probability	Calculate experimental probabilities and relative frequencies.
	Estimate probabilities from experiments.
	Use different methods to estimate probabilities.
	Recognise mutually exclusive, complementary and exhaustive events.
	Predict the likely number of successful events, given the number of trials and the probability of any one outcome.
	Read two-way tables and use them to work out probabilities.
	Use Venn diagrams to solve probability questions.
14 Powers and standard form	Use powers (also known as indices).
	Multiply and divide by powers of 10.
	Use rules for multiplying and dividing powers.
	Change a number into standard form.
	Calculate using numbers in standard form.
15 Equations and inequalities	Solve equations in which the variable (the letter) appears as part of the numerator of a fraction.
	Solve equations where you have to expand brackets first.
	Solve equations where the variable appears on both sides of the equals sign.
	Set up equations from given information and then solve them.
	Solve simultaneous linear equations in two variables using the elimination method.
	Solve simultaneous linear equations in two variables using the substitution method.