

Curriculum Overview

Maths Year 9

	<u>HT1</u>	<u>HT2</u>	<u>HT3</u>	<u>HT4</u>	<u>HT5</u>	<u>HT6</u>
<u>Topics</u>	<ul style="list-style-type: none"> • Straight line graphs • Forming and solving equations • Testing conjectures 	<ul style="list-style-type: none"> • 3 dimensional shapes • Constructions and congruency 	<ul style="list-style-type: none"> • Numbers • Using percentages • Maths and money 	<ul style="list-style-type: none"> • Deduction • Rotation and translation • Pythagoras' theorem 	<ul style="list-style-type: none"> • Enlargement and similarity • Solving ratio and proportion problems • Rates 	<ul style="list-style-type: none"> • Probability • Algebraic representation • Revision • Assessments

<p><u>Key Objectives</u></p>	<p><u>Straight line graphs</u> Draw lines parallel to x and y axes Use table of values Compare gradients and intercepts Understand and use $y=mx+c$ Find the equation of a line from a graph. Interpret real life graphs</p> <p><u>Forming and solving equations</u> Solve one and two step equations (with and without brackets) Solve inequalities with negative numbers. Solve equations and inequalities with unknowns on both sides. Substitute into formulae Rearrange formulae (one and two step)</p> <p><u>Testing conjectures</u> Learn factors, multiples and primes. Learn about and apply the terms: true or false, always, sometimes, never true, show that.. Expand a pair of binomials (touching brackets) Perform conjectures with algebra. Explore the 100 grid.</p>	<p><u>3 dimensional shapes</u> Know the names of 2-D and 3-D shapes. Recognise prisms. Draw accurate nets of 3-D shapes Draw plans and elevations. Find the area of 2-D shapes Find the surface area of cubes, cuboids, triangular prisms and cylinders. Find the volume of cubes, cuboids, prisms and cylinders</p> <p><u>Constructions and congruency</u> Draw and measure angles.. Construct and interpret scale drawings. Draw loci from: a point, from a straight line/shape, equidistant from 2 points. Construct: a perpendicular bisector, a perpendicular from a point, a perpendicular to a point. Draw an angle bisector. Construct triangles. Identify congruent shapes. Explore and identify congruent triangles</p>	<p><u>Numbers</u> Learn about integers, real and rational numbers Work with directed (negative) numbers Solve problems with integers and decimals. Calculate HCF and LCM Add, subtract, multiply and divide fractions. Solve fraction problems. Study numbers in standard form.</p> <p><u>Using percentages</u> Use equivalence of fractions, decimals and percentages. Calculate percentage increase/decrease. Express a change as a percentage. Solve percentage problems including reverse percentage, both with and without a calculator.</p> <p><u>Maths and Money</u> Solve problems with bills and bank statements. Calculate interest, both simple and compound. Solve problems with VAT. Calculate wages and tax. Solve exchange rate problems. Solve unit price problems.</p>	<p><u>Deduction</u> Recap angles in parallel lines. Solve angle problems. Make conjectures with angles and shapes.</p> <p><u>Rotation and translation</u> Identify rotational symmetry. Compare rotational symmetry with lines of symmetry. Rotate a shape about a point on the shape and also about a point not on the shape. Translate points and shapes by a vector. Compare rotation and reflection.</p> <p><u>Pythagoras' theorem</u> Recap on squares and square roots. Identify the hypotenuse on a right-angled triangle. Calculate the length of the hypotenuse and missing sides in right-angled triangles. Explore proofs of Pythagoras' theorem.</p>	<p><u>Enlargement and similarity</u> Recognise enlargement and similarity. Enlarge a shape by a positive integer scale factor on its own and from a point Enlarge a shape by a positive fractional scale factor. Work out missing sides and angles by a pair of similar shapes..</p> <p><u>Ratio and Proportion</u> Solve problems with direct proportion. Use direct proportion and conversion graphs. Solve problems with inverse proportion. Solve ratio problems.</p> <p><u>Rates</u> Solve speed, distance and time problems without and with a calculator. Use distance-time graphs. Solve density, Mass and volume problems. Solve flow problems and their graphs. Calculate rates of change and their units.</p>	<p><u>Probability</u> Recap on single event probability. Calculate relative frequency. Calculate expected outcomes. Explore independent events. Use diagrams to work out probabilities.</p> <p><u>Algebraic representation</u> Draw and interpret quadratic graphs. Interpret other graphs, eg reciprocal and piece-wise. Represent inequalities.</p>
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<u>Assessment Opportunities (F&S)</u>	In class work and problem solving.	In class work and problem solving . Formal written assessment.	In class work and problem solving.	In class work and problem solving . Formal written assessment.	In class work and problem solving.	In class work and problem solving . Formal written assessment.
<u>CEIAG</u>	<p>Finance and cost control - running your own business.</p> <p>Equations used in fuel calculations with engine design.</p> <p>Climate scientists use graphs to predict future global temperatures.</p>	<p>Designing houses, packaging for food, Toy designer - shapes.</p> <p>Carpet shop calculates the areas of floor spaces to sell carpet and floor coverings.</p> <p>Tilers calculate the areas of walls.</p>	<p>Businesses use % for tax calculations . Businesses need to work out wages. Percentage reductions in retail.</p>	<p>Surveyors accurately measure angles to give precise calculations about the places surveyed. Designers may rotate and translate shapes to incorporate into patterns for design.</p>	<p>Architects use scale drawings and scale models when planning developments Chefs use proportion to work out ingredient measures Pharmacist calculate medication in proportion to body mass. Speed cameras - rates of speed.</p>	<p>Financial analyst use probability to make predictions.</p> <p>Pensions - probability used to calculate premiums.</p> <p>Nuclear engineers working with nuclear materials use algebra to calculate various quantities.</p>
<u>Cultural Capital</u>	<p>Take part in the green Power club project - graphs used to calculate battery range and optimum sprocket size on the wheel. Plotting graphs in real life contexts such as mobile phone costs. Interpret real life graphs such as exchange rates</p>	<p>Design you own house and calculate the volume of rooms. Investigate the volume of packaging including cylindrical.</p> <p>Blackpool Pleasure beach trip - angles of roller coasters</p>	<p>Visit a bank to investigate interest rates.</p> <p>Watch the film The bank of Dave</p>	<p>Develop the ability to follow a step by step logical problem-solving process by solving missing angle problems.</p> <p>Visit a building site to look at angles in construction. Build a bird box.</p> <p>Consider percentages in finance such as interest rates and profit/loss calculations</p>	<p>Develop logical problem-solving skills with the use of algebra Form and solve equations from real life contexts. Pupils to investigate the link between circumference and diameter and discover the concept of pi</p>	<p>Pupils to conduct experiments to compare theoretical and experimental probabilities Discuss gambling and the probability of winning Interpret data such as heart rate and discuss healthy lifestyles/ fitness Discuss what data we share and how companies use our data. Consider what data we have access to and why we might be interested in it.</p>

<u>Cross- Curricular Links</u>	Motor vehicle - green power club. Interpreting graphs - Link to science .	Construction	PSHE - money management	Design and make task - Links to Construction	Cooking - scaling recipes.	Displaying data / findings after an experiment - Links to science
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