Curriculum map – Mathematics 2023-2024

YEAR 9	AUTUMN 1	AUTUMN 2	SPRING 1	SPRING 2	SUMMER 1	SUMMER 2
TOPIC(s)	**Unit 1** Straight Line Graphs **Unit 2** Forming and Solving Equations **Unit 3** Testing Conjectures	**Unit 4** Three Dimensional Shapes **Unit 5** Constructions and Congruency	**Unit 6** Numbers **Unit 7** Using Percentages **Unit 8** Maths and Money	**Unit 9** Deduction **Unit 10** Rotation and Translation **Unit 11** Pythagoras' Theorem	**Unit 12** Enlargement and Similarity **Unit 13** Solving Ratio and Proportion Problems **Unit 14** Rates	**Unit 15** Probability **Unit 16** Algebraic Representation
What students will know	**Unit 1** Gradient is a measure of steepness. A straight line graph can be represented by the form y=mx+c. **Unit 2** A linear equation has one solution. The difference between an expression, an equation and a formula. **Unit 3** Conjectures can be proven only with algebraic proof or disproven only with counterexamples.	**Unit 4** The definition of a prism. Volume measures the amount of space a 3D shape takes up. **Unit 5** A locus is a set of points that share a property. Congruent shapes are exactly the same size and shape. Conditions for congruent triangles – SSS, SAS, ASA, RHS.	**Unit 6** The difference between rational and irrational numbers. **Unit 7** Using the power button speeds up the inputting of repeated percentage change. **Unit 8** What credit and debit means.	**Unit 9** Alternate angles are equal. Corresponding angles are equal. Cointerior angles add to 180°. What a conjecture is. **Unit 10** A rotation produces a congruent shape. **Unit 11** The hypotenuse is the longest side in a right-angled triangle. Pythagoras' Theorem.	**Unit 12** An enlargement produces a similar shape. Enlargements can produce shapes which are smaller than the original object. **Unit 13** How to identify direct proportion. How to identify inverse proportion. **Unit 14** Compound unit formula such as speed, distance, time and density, mass, volume. On a distance time graph, gradient = speed.	**Unit 15** Probability can be stated as a fraction, decimal or percentage. The more trials carried out, the better the estimate for the probability of an event occurring. **Unit 16** A quadratic expression can be represented graphically by a smooth curve (parabola). A pair of simultaneous equations have one solution pair. The solution for a pair of simultaneous equations is where the graphs intersect.

What students will be able to do	**Unit 1** Calculate the gradient of a linear graph. Identify the y-intercept of a linear graph. Compare the gradients between linear graphs plotted on axes. Compare the intercepts of linear graphs plotted on axes. Create a table of values using a linear equation. Use a table of values to plot a linear graph of the form y=mx+c. Find the equation of a line from a graph (y=mx+c). Compare the gradients between linear graphs using y=mx+c. Compare the intercepts of linear graphs using y=mx+c. Interpret gradients and intercepts of real-life graphs. Identify perpendicular lines using gradients. **Unit 2** Solve two step equations, with the unknown on both sides. Solve two step inequalities, with the unknown on both sides. Solve three step equations with the unknown on both sides. Solve three step inequalities with the unknown on both sides. Form and solve an equation in a mathematical context. Use a formula to calculate a value given as the subject of the formula. Rearrange one-step formula to calculate a missing value which is not the subject of the formula. Rearrange two-step formula to calculate a missing value which is not the subject of the formula. **Unit 3** Form and test conjectures about relationships.	**Unit 4** Recognise prisms and non-prisms. Recognise nets of 3-D shapes. Draw a net of a 3-D shape. Use isometric paper to draw a 3D shape. Draw front/side elevations and plan views of 3-D shapes. Draw a 3-D shape on isometric paper, given the front/side elevation and plan view. Calculate the surface area of a cube or cuboid. Calculate the surface area of a triangular prism. Calculate the surface area of a cylinder. Calculate the volume of a cube and cuboid. Calculate the volume of a prism. Calculate the volume of a cylinder. **Unit 5** Find the locus of a distance from a point. Find the locus of a distance from a straight line or shape. Find the locus equidistant from two points. Construct a perpendicular bisector. Construct a perpendicular to a line from a point. Construct a perpendicular to a point on a line. Find the locus of a distance from two lines. Construct an angle bisector. Identify congruent shapes.	**Unit 6** Identify integers, real and rational numbers. Simplify a surd. **Unit 7** Calculate the original amount, given a percentage change and an end amount. Solve 'reverse' percentage problems. Calculate amounts after repeated percentage change. **Unit 8** **Sol**ve problems with bills and bank statements. Calculate simple interest. Calculate compound interest. Calculate wages and taxes. Solve problems with exchange rates. Solve unit pricing problems.	**Unit 9** Identify angles in parallel lines. Solve angle problems. Make conjectures with angles. Make conjectures with shapes. **Unit 10** Identify the order of rotational symmetry of a shape. Rotate a shape about a point on the shape. Rotate a shape about a point outside the shape. Translate points by a given vector. Translate shapes by a given vector. **Unit 11** Identify the hypotenuse in a right-angled triangle. Use Pythagoras' Theorem to determine whether a triangle is right-angled. Use Pythagoras' Theorem to calculate the hypotenuse of a right-angled triangle. Use Pythagoras' Theorem to calculate a missing side in a right-angled triangle. Use Pythagoras' Theorem to	**Unit 12** Enlarge a shape by a positive integer scale factor. Enlarge a shape from a point by a positive integer scale factor. Enlarge a shape by a positive fractional scale factor. Enlarge a shape from a point by a positive fractional scale factor. Enlarge a shape from a point by a negative scale factor. Identify the scale factor for two similar shapes. Calculate missing sides and angles in similar shapes. Solve problems with similar triangles. **Unit 13** Solve direct proportion problems. Identify direct proportion graphs. Solve indirect proportion problems. Identify indirect proportion graphs. Calculate a missing value given a ratio and the difference. Solve 'best buy' problems. **Unit 14** Solve speed, distance, time problems. Use distance-time graphs. Solve density, mass, volume problems. Solve flow problems. Use flow graphs. Interpret rates of change and their units.	**Unit 15** Calculate the relative frequency of an event occurring. Calculate the expected number of times an outcome will occur, using the probability. Calculate the expected number of times an outcome will occur, using the relative frequency. Create a sample space for two independent events occurring. Calculate the probability of combined independent events. Construct a tree diagram to represent two successive independent events. Use a tree diagram for two independent events to calculate a probability. Construct a tree diagram to represent two events, without replacement. Use a tree diagram for two events, without replacement, to calculate a probability. Calculate probabilities using a two-way table. Calculate probabilities using a Venn diagram. **Unit 16** Create a table of values using a quadratic equation. Use a table of values to plot a quadratic graph. Identify the turning point of a quadratic graph. Read values off a reciprocal and cubic graph. Solve a pair of simultaneous equations graphically. Represent inequalities on a number line. Represent an inequality using a region on a graph.

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	Look for and demonstrate proofs or counterexamples. Simplify and manipulate algebraic expressions maintaining equivalence. Clearly justify whether a statement is true or false and why.	Identify congruent triangles using SSS, SAS, ASA and RHS.		calculate the length of a line segment.		
Beyond the classroom (Wider reading / Trips)	Sparx Compulsory Homework Task. Sparx XP Boost Task. Sparx Target Task. Sparx Independent Learning Tasks. Y8 End of Year Assessment Intervention. Recommended Read: The Number Mysteries by Marcus du Sautoy.	Sparx Compulsory Homework Task. Sparx XP Boost Task. Sparx Target Task. Sparx Independent Learning Tasks. Y8 End of Year Assessment Intervention.	Sparx Compulsory Homework Task. Sparx XP Boost Task. Sparx Target Task. Sparx Independent Learning Tasks. Y9 Autumn Term Assessment Intervention. Recommended Read: The Thrilling Adventures of Lovelace and Babbage by Sydney Padua.	Sparx Compulsory Homework Task. Sparx XP Boost Task. Sparx Target Task. Sparx Independent Learning Tasks. Y9 Autumn Term Assessment Intervention.	Sparx Compulsory Homework Task. Sparx XP Boost Task. Sparx Target Task. Sparx Independent Learning Tasks. Y9 Spring Term Assessment Intervention. Recommended Read: Humble Pi by Matt Parker.	Sparx Compulsory Homework Task. Sparx XP Boost Task. Sparx Target Task. Sparx Independent Learning Tasks. Y9 Spring Term Assessment Intervention.