Curriculum map – Mathematics (2023-2024)

YEAR 11 FOUNDATION TIER	AUTUMN 1	AUTUMN 2	SPRING 1	SPRING 2	SUMMER 1	SUMMER 2
TOPIC(s)	**Unit 1** Scatter Graphs **Unit 2** Inequalities **Unit 3** Real Life Graphs **Unit 4** Pythagoras' Theorem and trigonometry in right-angled triangles	**Unit 5** Multiplicative Reasoning **Unit 6** Constructions, loci and bearings	**Unit 7** Quadratic equations: graphs **Unit 8** Similarity and Congruence in 2D	**Unit 9** Vectors **Unit 10** Rearranging equations, graphs of cubic and reciprocal graphs. **Unit 11** Simultaneous equations	Revision and consolidation	GCSE examinations

YEAR 11 FOUNDATION TIER	AUTUMN 1	AUTUMN 2	SPRING 1	SPRING 2	SUMMER 1	SUMMER 2
What students will know	**Unit 1** The definition of positive correlation. The definition of negative correlation. **Unit 2** When representing inequalities on a number line, a hollow circle does not include that value, a solid circle means the value is included. **Unit 3** The gradient of a line represents the rate of change. **Unit 4** Pythagoras' Theorem is $a^2+b^2=c^2$. The trigonometric ratios for a right-angled triangle (SOHCAHTOA). The exact values of sin θ and cos θ for $\theta = 0°, 30°, 45°, 60°$ and $90°$. The exact value of tan θ for $\theta = 0°, 30°, 45°$ and $60°$	**Unit 5** Formulae for the three common compound measures (Speed, Density, Pressure). The multipliers for a given percentage increase/decrease. What it means for two variables to be in direct or inverse proportion to each other. Graphical representations of proportion. **Unit 6** Understand congruence. Bearings are three figures and are always measured clockwise from North. The perpendicular distance from a point to a line is the shortest distance to the line.	**Unit 7** Finding graphical solutions only gives approximate answers. The point(s) at which a quadratic graph crosses the x-axes are the real solutions of the equation. **Unit 8** The definition of congruence and the four conditions of congruence. The definition of similarity. The effect of angles, perimeter, area and volume of shapes after an enlargement.	**Unit 9** 2**a** is parallel to **a** and twice its length. **a** is parallel to **–a** in the opposite direction. **Unit 10** The difference between an equation and an identity and use and understand the ≠ symbol. **Unit 11** Solving simultaneous equations algebraically, gives exact solutions. Solving simultaneous equations graphically, gives approximate solutions.		

What students will be able to do						
	Unit 1 Draw a scatter graph by plotting points. Interpret points on a scatter graph. Identify outliers on a scatter graph. Draw the line of best fit on a scatter graph. Use the line of best fit to predict values. Identify positive, negative and no correlation on a scatter graph. **Unit 2** Represent an inequality on a number line. Write down integers that satisfy an inequality. Solve linear inequalities, in one variable. **Unit 3** Use input/output diagrams. Find the coordinates of the midpoint of a line segment. Read values from straight-line graphs for real-life situations. Draw straight line graphs for real-life situations, including ready reckoner graphs, conversion graphs, fuel bills graphs, fixed charge and cost per unit. Draw distance–time graphs and velocity–time graphs. Interpret distance–time graphs, and calculate the speed of individual sections, total distance and total time. Interpret information presented in a range of	**Unit 5** Solve problems using the unitary method e.g best buys/rates of pay Calculate percentage profit or loss. Calculate multipliers for repeated proportional change e.g compound interest and depreciation. Use compound measures for speed, density and pressure. Use given kinematics formulae to calculate speed, acceleration etc. Set up, solve and use direct/inverse proportion equations. **Unit 6** Identify shapes that are congruent. Draw and measure bearings. Calculate bearings. Bisect a given angle. Construct angles of 90° and 45°. Construct a perpendicular bisector of a line segment. Construct a perpendicular to a given line from a point. Construct a perpendicular to a given line at a point. Find the locus of a region bounded by a circle and intersecting line. Find the locus of a given distance from a point. Find the locus of a given distance from a line. Find the locus of equal distances from two points.	**Unit 7** Plot and draw a quadratic graph, using a table of values. Find approximate solutions of a quadratic equation using a graph. Identify the line of symmetry of a quadratic graph. Identify the turning point of a quadratic graph. **Unit 8** Use the basic congruence criteria for triangles (SSS, SAS, ASA and RHS). Solve problems by at first proving congruence. Prove that two shapes are similar by considering angles and the enlargement of sides. Use formal geometric proof for similarity of two triangles. Find and solve problems considering linear scale factors.	**Unit 9** Use vector notation, including column notation. Represent vectors pictorially. Represent combinations of vectors pictorially. Represent scalar multiples of a vector pictorially. Calculate the sum of two vectors using column vectors. Calculate the difference of two vectors using column vectors. Calculate a scalar multiple of a vector using column vectors. **Unit 10** Change the subject of a formula. Answer 'show that' questions using consecutive integers (n, $n + 1$), squares a^2, b^2, even numbers $2n$, and odd numbers $2n + 1$. Solve problems involving inverse proportion using graphs, and read values from graphs. Find the equation of the line through two given points. Recognise, sketch and interpret graphs of simple cubic functions. Recognise, sketch and interpret graphs of the reciprocal function $y = \frac{1}{x}$ with $x \neq 0$. **Unit 11**		

YEAR 11 FOUNDATION TIER	AUTUMN 1	AUTUMN 2	SPRING 1	SPRING 2	SUMMER 1	SUMMER 2
	linear and non-linear graphs. Interpret graphs with negative values on axes. Find the gradient of a straight line from real-life graphs. Interpret gradient as the rate of change in distance–time and speed–time graphs, graphs of containers filling and emptying, and unit price graphs. **Unit 4** Use Pythagoras' Theorem to justify if a triangle is right-angled or not. Use Pythagoras' Theorem to find the hypotenuse in a right-angled triangle. Use Pythagoras' Theorem to find a shorter side in a right-angled triangle. Calculate the length of a line segment, given coordinates of the end points. Use the trigonometric ratios to find a missing side in a right-angled triangle. Use the trigonometric ratios to find a missing angle in a right-angled triangle. Find angles of elevation and depression.	Find the locus of equal distances from two line segments. Find the locus of regions which may be defined by 'nearer to' or 'greater than'. Use constructions to solve loci problems.		Write simultaneous equations to represent a situation. Solve two linear simultaneous equations, with two unknowns, by elimination. Solve two linear simultaneous equations, graphically.		

YEAR 11 FOUNDATION TIER	AUTUMN 1	AUTUMN 2	SPRING 1	SPRING 2	SUMMER 1	SUMMER 2
Beyond the classroom (Wider reading / Trips)	Sparx Compulsory Homework Task. Sparx XP Boost Task. Sparx Target Task. Sparx Independent Learning Tasks. Y10 End of Year Assessment Intervention.	Sparx Compulsory Homework Task. Sparx XP Boost Task. Sparx Target Task. Sparx Independent Learning Tasks. Y10 End of Year Assessment Intervention.	Sparx Compulsory Homework Task. Sparx XP Boost Task. Sparx Target Task. Sparx Independent Learning Tasks. Y11 Autumn MOCK exam Intervention.	Sparx Compulsory Homework Task. Sparx XP Boost Task. Sparx Target Task. Sparx Independent Learning Tasks. Y11 Autumn MOCK exam Intervention	Sparx XP Boost Task. Sparx Target Task. Sparx Independent Learning Tasks. Y11 Spring MOCK exam Intervention	