Love of Learning, Opportunity, Resilience, Respect

2024 - 2025 Boston High School Mathematics Curriculum Overview

Year	Term 1	Term 2	Term 3	Term 4	Term 5	Term 6
7	Add and subtract negative numbers Multiplying and dividing directed numbers Order of operations Squares, Roots and Triangular Numbers Multiples and LCM Factors and HCF Prime numbers and Prime Factorising Simplify expressions by collecting like terms Simplify expressions by collecting like terms including indices Substitution without Indices Substitution with Indices Formulae – substitution – link to area work	Solving Linear equations – one step Metric units Time conversion Compound units, SDT DMV Rounding using decimals and significant figures. Estimating Calculations Central Measures and the range	Methods of multiplication Area of compound shapes Problems involving area and perimeter Area of parallelogram; triangle and trapezium Find the perimeter of shapes	Find equivalent fractions Convert between mixed numbers and improper fractions Addition and Subtraction of fractions, including algebraic fractions Addition and subtraction of decimals Multiplying fractions Divisibility tests Finding the reciprocal Dividing fractions Probability including sample spaces and experimental probability Statistical diagrams including pie charts and grouped frequency tables	Statistical diagrams including pie charts and grouped frequency tables Classifying shapes Angles, constructing and measuring Calculating missing angles, on a straight line, in a triangle, in parallel lines. Bearings. Construction of triangles Properties of quadrilaterals including tessellation Function machines	Coordinates, vertical and horizontal lines Plotting a line from a table. Lines in the form x + y = a Conversion graphs Linear sequences Transformations – translation, reflection, rotation, enlargement Error intervals
8	Ratio using bar models Sharing an amount in a given ratio Value for money – best buys Map scales – link to Geography Percentage of an amount, with and without a calculator A quantity expressed as a percentage of another quantity Percentage decrease and decrease using a multiplier Percentage Change Reverse percentage Repeated percentage change	HCF, LCM Laws of indices Simplifying expressions Expanding brackets Factorising into a single bracket Inequalities on a number line Substitution into a formulae	Solving linear equations Solving linear inequalities Area recap and problem solving Circumference of a circle and perimeter of shapes involving parts of a circle and arc length Area of a circle and area of shapes that involve parts of a circle, including area of a sector.	Finding the diameter/radius Enlargement using a positive integer or a positive fractional scale factor Relationship between length scale factor and area factor Adding and subtracting fractions and mixed numbers recap [covered in Year 7] Multiplying mixed numbers Dividing mixed numbers Multiply and divide by negative powers of 10	Using standard form for large numbers Multiplying and dividing numbers written in standard form Adding and subtracting numbers in standard form Isometric drawings Elevations and plans Volume of prisms and cylinders Surface area of prisms Euler's formulae	Volume of pyramids and cones Volume of spheres and part of spheres Scatter graphs – interpreting constructing Handling data cycle - CSI Grouped frequency tables – mean calculation and frequency polygons Probability of combined events using a sample space Tree diagrams and probability Combinations
9	Expanding brackets Factorising algebraic expressions	Exponential growth graphs Using a tangent to a curve Adding and subtracting fractions	Expanding expressions with more than two brackets Factorising quadratic expressions with positive coefficients	Speed More compound units Unit costs Introduction of Pythagoras's Theorem [GCSE book]	Using trig ratios to solve problems Solving bearing problems using Trigonometry	Draw and calculate bearings and back bearings Demonstrate two triangles are congruent using SSS, SAS, SSA, RHS

	Expressions with several variables Equations with fractions Properties of polygons Interior and exterior angles of regular polygons Tessellations and regular polygons Scatter graphs and correlation Two-way tables Estimation of a mean from grouped data Cumulative frequency diagrams	Multiplying fractions and mixed numbers Dividing fractions and mixed numbers Algebraic fractions Expanding the product of two brackets	Factorising quadratic expressions with negative coefficients The difference of two squares Graphs from equations of the form $ay \pm bx = c$ Solving simultaneous equations by drawing graphs Solving quadratic equations by drawing graphs Solving cubic equations by drawing graphs	Using Pythagoras' theorem to solve problems The converse of Pythagoras' theorem 3D Pythagoras' Theorem Using trig ratios to find side length Using trig ratios to find missing angles	Using trigonometry to find the area of a triangle $0.5absinC$ Special Sequences (square, cubic, Fibonacci) Calculating the nth term of a linear sequence Determine if a number is in a given sequence Generate a sequence from a diagram or a problem Continue, generate and find the nth term of a quadratic sequence Solve problems involving direct and inverse proportion using table method. Express one value as a percentage of another Increase/Decrease an amount by a given percentage -Calculate compound interest. Calculate reverse percentages (working out the original value) Calculate angles in parallel lines Solve problems using angle facts – on a line, around a point, etc. – and use special properties of quadrilaterals.	Construct bisectors of lines and angles and construct the angles of 60, 90 and therefore 30 and 45 degrees. Construct a locus from given information. Draw Scale diagrams Construct and interpret plans and elevations of 3D shapes
10	Recap all transformations Transform shapes in 2D – enlarge using positive, negative and fractional scale factors. Combine Transformations and describe the overall transformation. Factorising quadratic expressions with positive coefficients	Find the equation of a line using its gradient and intercept. Find the equation of a line given two points. Using conversion graphs for money or units. Use straight line graphs to find formulae Draw linear graphs parallel or perpendicular to each	Use mutually exclusive and exhaustive outcomes. Use two-way tables to calculate a probability. Use Venn diagrams to solve probability questions and know correct symbology. Use laws of indices when multiplying, dividing and brackets with powers. Work with negative powers.	Rationalise a denominator Solve a simple linear inequality and represent it on a number line. Show inequalities on a graph and find regions which satisfy more than one inequality. Convert terminal decimals to fractions and vice versa.	Find the lower and upper bounds/limits for that have been rounded to a given degree of accuracy. Solve problems involving combinations Use limits within calculations, particularly in a given context.	Solve simultaneous linear equations in two variables using the elimination method. Solve simultaneous equations using the substitution method. [Sets 1 & 2] Solve simultaneous equations using a graphical method where one is linear and one is non-linear.

	Factorising quadratic expressions with negative coefficients The difference of two squares Change the subject of a formula including when the required unknown occurs twice. Draw Graphs using the gradient-intercept method and using substitution. Find the gradient of a straight line & draw a line with a given gradient. Draw graphs using the cover up method. Find the equation of a line from its graph.	other or find their equation from a graph. Calculate the area of a parallelogram and trapezium, particularly in context. Calculate the perimeter and area of a circle, and use this in context. Calculate the area of a sector Find the volume and surface area of a prism, including 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. Know how to calculate experimental probability/relative frequencies. Predict the expected number of successful outcomes when given a probability.	Working with fractional powers Convert between standard form and decimal form. Calculate using numbers in standard form. Simplify and calculate with surds, including expanding single and double brackets	Convert fractions to recurring decimals and vice versa (using the algebraic method).	Plot quadratic, cubic, reciprocal and exponential graphs using graph paper. Recognise the shapes and equations of graphs in order to pair the graph with its equation. Solve quadratic equations using factorisation. Complete the square and use this to solve equations. Know and identify the turning point of a quadratic curve. Solving quadratic equations using the quadratic formula.	Solve linear and non-linear equations simultaneously algebraically. Solve quadratic inequalities.
11 Further Maths	Solve linear and non-linear equations simultaneously algebraically. Solve quadratic inequalities. Understand and use a sampling method – stratified, random & systematic. Draw and interpret frequency polygons. Draw and interpret histograms. Draw and interpret cumulative frequency and box and whisker diagrams. Calculate the median, quartiles and interquartile ranges from a histogram.	Show that two triangles are similar and calculate a linear scale factor. Calculate missing lengths in similar triangles. Calculate the volume scale factor of two similar shapes and use this to find missing lengths, volumes or surface areas. Use Pythagoras' Theorem and Trigonometry in 3D. Exact Trig values Use trigonometric ratios for any angle from 0 to 360o – recognise and use the graphs.	Find and use the equation of a circle and also the equation of a tangent to a circle. Simplify algebraic fractions and solve equations containing algebraic fractions. Change the subject of a formula where the subject occurs more than once. Understand that a function is a relation between two sets of values Understand and use function notation, for example f(x)	Bespoke	Bespoke	

	Capture/ Recapture Addition rules for outcomes of events. Calculate the probability of combined events – AND and OR rules – and use independent events. Use tree diagrams to work out the probability of combined events. Work out the probability of conditional events. Use the Circle Theorem facts of angles from a chord/arc/two points and angle at the centre. Use opposite angles of a cyclic quadrilateral. Use tangents and chords to find the size of missing angles. Use the Alternate Segment Theorem. Calculate the constant of proportionality. Solve problems involving direct proportion. Solve problems involving indirect proportion.	Use the Sine and Cosine Rules – recalling the result for key angles. Calculate the area of a triangle using Sine. Understand and use the properties of the graphs of y= sin x, y= cos x and y= tan x for angles of any size Sketch and use the graphs to solve problems Interpret distance-time graphs – draw the graph of the depth of a liquid as a container is filled. Interpret and use a velocity-time graph to find distance travelled and acceleration. Use rectangles, triangles and trapezia to estimate the area under a curve. Interpret the meaning of the area under the curve. Draw a tangent at a point on a curve to approximate the gradient. Interpret the gradient at a point.	Substitute values into a function, knowing that, for example f(2) is the value of the function when x = 2 Solve equations that use function notation Understand, interpret and use composite function fg(x) Use iteration to find an approximate solution to an equation. Recognise, sketch and interpret graphs of linear, quadratic, simple cubic, reciprocal, exponential and the trigonometric functions Draw or sketch graphs of linear, quadratic and exponential functions with up to 3 domains Label points of intersection of graphs with the axes Understand that graphs should only be drawn within the given domain Identify any symmetries on a quadratic graph and from this determine the coordinates of the turning point Know and use vector notation. Add and subtract vectors. Use vectors to solve geometric problems. Transform a graph with a function y = f(x) – translations in the x or y direction, enlargements in the x or y direction, and reflections in the x or y axes.			

11 Higher	Solve linear and non-linear equations simultaneously algebraically. Solve quadratic inequalities. Understand and use a sampling method – stratified, random & systematic. Draw and interpret frequency polygons. Draw and interpret histograms. Draw and interpret cumulative frequency and box and whisker diagrams. Calculate the median, quartiles and interquartile ranges from a histogram. Capture/ Recapture Addition rules for outcomes of events. Calculate the probability of combined events – AND and OR rules – and use independent events. Use tree diagrams to work out the probability of combined events. Work out the probability of conditional events.	Use the Circle Theorem facts of angles from a chord/arc/two points and angle at the centre. Use opposite angles of a cyclic quadrilateral. Use tangents and chords to find the size of missing angles. Use the Alternate Segment Theorem. Calculate the constant of proportionality. Solve problems involving direct proportion. Solve problems involving indirect proportion. Show that two triangles are similar and calculate a linear scale factor. Calculate missing lengths in similar triangles. Calculate the volume scale factor of two similar shapes and use this to find missing lengths, volumes or surface areas. Use Pythagoras' Theorem and Trigonometry in 3D. Exact Trig values Use trigonometric ratios for any angle from 0 to 360o – recognise and use the graphs. Use the Sine and Cosine Rules – recalling the result for key angles. Calculate the area of a triangle using Sine. Interpret distance-time graphs – draw the graph of	Interpret and use a velocity-time graph to find distance travelled and acceleration. Use rectangles, triangles and trapezia to estimate the area under a curve. Interpret the meaning of the area under the curve. Draw a tangent at a point on a curve to approximate the gradient. Interpret the gradient at a point. Find and use the equation of a circle and also the equation of a tangent to a circle. Simplify algebraic fractions and solve equations containing algebraic fractions. Change the subject of a formula where the subject occurs more than once. Use iteration to find an approximate solution to an equation. Recognise, sketch and interpret graphs of linear, quadratic, simple cubic, reciprocal, exponential and the trigonometric functions Know and use vector notation. Add and subtract vectors. Use vectors to solve geometric problems. Transform a graph with a function y = f(x) – translations in the x or y direction, enlargements in	Bespoke	Bespoke	

		the depth of a liquid as a container is filled.	the x or y direction, and reflections in the x or y axes.			
11 Boost	Calculation Methods Types of numbers Manipulating algebraic expressions Functions and sequences Construction and loci Solving linear equations	Angles Fractions, decimals, and percentages Algebraic formulae Perimeter and area Approximation and estimation Straight line graphs	Graphs of functions Volume and surface area Ratio Probability Powers and roots	Bespoke	Bespoke	
12	Algebraic Expressions Ch1 Quadratics Ch2 Equations and Inequalities Ch3 Straight line Graphs Ch5 Vectors Ch11 Modelling in Mechanics Ch8	Graphs and Transformations Ch4 Differentiation Ch12 Constant acceleration Ch9 Forces and Motion Ch10 Circles Ch6 Algebraic Methods Ch7	Differentiation Ch12 Integration Ch13 Binomial Expansion Ch8 Trigonometric Ratios Ch9	Integration Ch13 Data Collection Ch1 Measures of location and spread Ch2 Trigonometric Identities and equations Ch10 Exponentials and Logarithms Ch14	Probability Ch5 Variable acceleration Ch11 Representation of data Ch3 Correlation Ch4	Statistical distributions Ch6 Hypothesis testing Ch 7 Functions Ch2 (Y13)
13	Radians Ch5 Trigonometric functions Ch6 Trigonometry and modelling Ch7 Algebraic methods Ch1 Binomial expansion Ch4 Sequences and series Ch3	Numerical methods Ch10 Vectors Ch12 Forces and friction Ch5 Projectiles Ch6 Parametric equations Ch8 Differentiation Ch9	Application of forces Ch7 Further Kinematics Ch8 Moments Ch4 Integration Ch11 Regression correlation and hypothesis testing Ch1 Conditional probability Ch2 The normal distribution Ch3	**Bespoke**	**Bespoke**	

NOTE: The timings may vary due to the needs of individual students and classes but it is envisaged that all classes will cover the curriculum above.