

What are the aims and intentions of this curriculum?

The year 10 curriculum is aimed at preparing students for their GCSE. The curriculum is based on an increase in complexity, depth and range compared to that of KS3 in terms of number operations, algebra, ratio, proportion, rates of change, geometry, measures, probability and statistics. Students receive homework on a weekly basis and it is expected of them to complete it both online and offline. Our vision is for students to ultimately be able to mathematical analyse situations, critically evaluate problems and to deduce plausible accurate solutions. Furthermore, they should be proficient enough in order to access professions and trainings at the highest level.

Term	Topics	Knowledge and key terms	Skills developed	Assessment
Autumn 1	Graphs	Equation, expression, variable, constant, coefficient, term, function, linear, gradient, slope, intercept, intersect, correlation, proportion, plot, compare, substitute, solve.	Use linear equations in all its forms. E.g. Flow charts. Determine the midpoint of a line. Describe, determine and apply the purposes of the constants and the variables in the equation $y=mx+c$. Compare and describe the differences between two linear graphs in terms of the constants in their equations. Draw linear graphs with given equations using a table. Interpret and draw distance-time graphs. Recall and identify data correlation.	End of topic review Homework Bookmarking Classroom feedback Half-term formal assessment
	Transformations	Rotate, enlarge, reflect, translate, mirror line, line of symmetry, Cartesian plane, axis, coordinate, vector notation.	Establishment of the meaning of various keywords. Name all four types of mathematical transformations related to GCSE. Apply and describe translation, reflection and rotation in all four quadrants. Use column vectors to describe translations.	
Autumn 2	Transformations	Scale factor, centre of enlargement, quadrants, object, image.	Apply and describe enlargements by using scale factors and centre of enlargements. Identify and describe combined transformations.	End of topic review Homework Bookmarking Classroom feedback Half-term formal assessment
	Ratio and proportion	Ratio, simplify, round, unitary method, unit form, divide, highest common factor, order, conversion of fractions.	Use ratios in a variety of settings, e.g. Scales, bar charts, metric conversions, areas and volumes, etc. Divide quantities into 2 and 3 parts for a given ratio including word problems. Use index notation and determine HCF. Unit conversions. Rounding and ratio simplification. Write ratios in unit form. Ordering of fractions that are written as decimals, percentages and common fractions. Use proportions related to real life problems, e.g. which product is a better value for money. Link ratio to the gradient. Recognize and use direct proportion on a graph.	

<p>Spring 1</p>	<p><i>Pythagoras' Theorem and trigonometry</i></p> <p><i>Probability</i></p>	<p>Square, square root, surd, Pythagoras' theorem, hypotenuse, adjacent, opposite, side, angle, right angle, perpendicular, triangle, sine, cosine, tangent, ratio, substitute, solve, round, inverse function, unit.</p> <p>Mutually exclusive, mutually exhaustive, probability, event, outcome, list, two-way table, tree diagram, theoretical probability, experimental probability or relative frequency, describing probabilities as likely/unlikely/even/chance/impossible/definitely, biased, unbiased.</p>	<p>Calculate simple squares and square roots by means of individually and expression simplification via rounding. Understand and use Pythagoras' theorem to determine the hypotenuse as well as the shorter sides of a right-angled triangle. Calculate the length of a line segment. Simplify fractions and convert to decimals using a calculator. Identify the opposite, adjacent and hypotenuse sides for a particular angle in a right-angled triangle. Recall and use the sine, cosine and tangent ratios in order to solve problems.</p> <p>Write probabilities as a fraction, decimal and percentage. Identify mutually exclusive and mutually exhaustive events. List outcomes of single events as well as recording these events in two-way tables. Compare fractions of various forms. Understand the difference between theoretical and experimental probabilities.</p>	<p>End of topic review Homework Bookmarking Classroom feedback Half-term formal assessment</p>
<p>Spring 2</p>	<p><i>Probability</i></p> <p><i>Multiplicative reasoning</i></p>	<p>Universal set, set, element, number of elements, dependent event, independent event, probability, fraction, possible outcomes.</p> <p>Profit, loss, percentage, increase, decrease, original amount, final amount, simple and compound growth/decay, unit conversions, average, speed, distance, time, acceleration, linear, non-linear, proportion, fraction, inverse.</p>	<p>Interpret sets using the correct vocabulary. Use Venn diagrams to work out probabilities. Use frequency trees and tree diagrams to determine probabilities of dependent and independent events.</p> <p>Determine percentage profit or loss. Determine the original amount before a percentage increase or decrease. Solve compound growth or decay problems. Convert metric units of speed. Determine average speed, distance, time and acceleration by means of formulae. Use inverse proportions.</p>	<p>End of topic review Homework Bookmarking Classroom feedback Half-term formal assessment</p>
<p>Summer 1</p>	<p><i>Constructions, loci and bearings</i></p>	<p>Object types, shape types, object and shape properties, arc, sector, views of 3D objects, construction, congruent, scale drawing, scale factor, ratio, perpendicular bisector, angle bisector, loci, bearing, symmetry.</p>	<p>Recognise and describe 3D objects and their properties using the correct mathematical terminology. Show a comprehension of the properties of 2D shapes that make up 3D objects. Identify and sketch planes of symmetry of 3D objects. Accurately draw front, elevation and plan views of 3D objects and vice versa. Construct accurate triangles using a ruler, protractor and compass. Identify congruent triangles in terms of SSS, SAS, ASA and RHS. Use scales to convert from diagrams to actual measurements and vice versa in real life contexts. Draw accurate measurements on diagrams using a given scale. Construct polygons inside a circle. Recognise nets of common 3D objects and be able to construct them</p>	<p>End of topic review Homework Bookmarking Classroom feedback Half-term formal assessment</p>

	<i>Quadratic equations and graphs</i>	Square, factor, factorize, coefficient, power, degree, solution, solve, sketch, plot, intercept, coordinate, simplify.	<p>accurately. Bisect angles and lines using a ruler and a compass. Draw loci and use them to solve practical problems. Find and use three-figure bearings. Use angles at parallel lines and scale diagrams to solve problems involving bearings.</p> <p>Multiply double brackets and square single brackets. Identify quadratic expressions and functions. Plot quadratic functions by using tables and mirror lines. Use quadratic graphs to solve problems.</p>	
Summer 2	<p><i>Quadratic equations and graphs</i></p> <p><i>Perimeter, area and volume</i></p>	<p>Solve algebraically, solve graphically, sketch, intersect, translate, vertical, horizontal, factorise, solve, solution, degree, number of solutions.</p> <p>Inequality, number line, error interval, percentage error interval, volume, surface area, formula, substitution, simplify.</p>	<p>Solve quadratic equations in the form $ax^2+bx+c=0$ and $ax^2+bx+c=k$ using a graph. Factorise quadratic expressions and functions in order to solve them.</p> <p>Calculate circumference, radius or diameter of a circle. Use rounded and truncated values to determine the error interval using inequalities. Work out percentage error. Calculate the areas of of circles, semi, quarter circles and their sectors in terms of decimal values and π. Solve problems using areas and perimeters of 2D shapes. Calculate the volume and surface area of cylinders, pyramids, cones, spheres and composite solids.</p>	<p>End of topic review</p> <p>Homework</p> <p>Bookmarking</p> <p>Classroom feedback</p> <p>Half-term formal assessment</p>