

What are the aims and intentions of this curriculum?

The Year 10 curriculum is designed to prepare students for their GCSE examinations. It builds on the complexity, depth, and range of the Key Stage 3 (KS3) curriculum, focusing on number operations, algebra, ratio, proportion, rates of change, geometry, measurements, probability, and statistics. Students are assigned homework on a weekly basis, and it is expected that they complete it both online and offline.

Our vision is for students to be able to analyze mathematical situations, critically evaluate problems, and deduce plausible and accurate solutions. Additionally, they should become proficient enough to pursue professions and training at the highest level while communicating clearly and effectively.

Term	Topics	Knowledge and key terms	Skills developed	Assessment
Summer 2	1. Numbers	Square Numbers, Square Root, Cube Numbers, Cube Root, Scientific Notation, Significant Figures, Proportion, Ratio, Prime, Composite, Sequence, Real Numbers, Rational Numbers, Irrational Numbers	Basic mathematical operations as well as the order (BIDMAS); Use of function machines to solve a variety of problems; Simplification of fractions, expressions and other calculations to ease cognitive load; Rounding numbers to simplify answers as well as to estimating calculations to an acceptable degree; Working with fractions using all operations; Find and use the highest common factor, lowest common multiple via prime factorization and representing them as products of prime factors and/or grouping them using Venn diagrams; Evaluate powers (2, 3 4 and 5), Evaluate, simplify and rationalize surds without a calculator; Compare powers and units of measurement given as powers; Algebra	End of topic review Homework Bookmarking Classroom feedback Half-term formal assessment
	2. Algebra	Expression, Variable, Coefficient, Constant, Equations, Like Terms, Expand, Factorise	Simplify expressions (addition and subtraction); Multiply algebraic powers; Simplify algebraic fractions with powers; Substitute into expressions and formulae (including indices); Expand single brackets, multiple single brackets; Factorise common factors; Write expressions; Use scientific formulae, graphs tables and charts	
Autumn 1	3. Graphs, tables and charts	Data, Axis, Scale, Coordinates, Interval, Line Graph, Bar Graph, Histogram, Scatter Graph, Frequency, Cumulative, Mean, Median, Mode, Range, Correlation	Make and using frequency tables; Create and interpret two-way tables; Draw comparative and composite bar charts; Calculate averages from bar charts; Draw and interpreting time series (line) graphs; Draw and interpret stem and leaf diagrams (including back-to-back); Draw and interpret Pie Charts; Draw, interpret and determine correlation of scatter graphs	End of topic review Homework Bookmarking Classroom feedback Half-term formal assessment
	4. Fractions, percentages and decimals	Numerator, Denominator, Improper, Proper, Mixed, Convert, Decimals, Terminating, Non-Terminating, Recurring, Non-	Compare and order fractions using equivalency; Use of all 4 basic mathematical operations with proper, improper and mixed fractions; Express a quantity as a fraction of another; Convert between fractions and decimals (including long division); Ordering percentages, fractions and decimals; Increase and decrease an	

	<p>5. <i>Equations, inequalities and sequences</i></p>	<p>Recurring, Truncate, Equivalent, Comparison, Ratio, Proportion</p> <p>Variable, Constant, Co-Efficient, Linear, Quadratic, Cubic, Solution, Roots, Simplify, Balance, Substitute, Elimination, Simultaneous, Inequality, Greater Than, Less Than, Greater Than Or Equal To, Less Than Or Equal To, Boundaries, Sequence, Arithmetic, Quadratic, Geometric Sequence</p>	<p>amount with a percentage (non-calculator and calculator based); Calculate simple interest and other percentage problems</p> <p>Solve linear equations; Solve and find possible integer solutions for single and double inequalities; Express single and double inequalities on number lines and vice versa; Use formulae; Continue a linear sequences and find the n^{th} term; Extend other sequences (Geometric, Fibonacci, quadratic, et al); Use the n^{th} term to generate sequences and determine if a number is in a sequence</p>	
<p>Autumn 2</p>	<p>6. <i>Angles</i></p> <p>7. <i>Averages and range</i></p> <p>8. <i>Perimeter, area and volume 1</i></p>	<p>Acute, Obtuse, Right Angle, Reflex, Complementary, Supplementary, Vertical Opposite, Corresponding, Alternate(Interior/Exterior), Co-Interior, Adjacent, Linear Pair, Transversal</p> <p>Average, mean, median, mode, central tendency, frequency, grouped data, Ungroup data, mid-value</p> <p>Area, perimeter, circumference, volume, surface area, polygons, regular and irregular, base, height, width, radius, diameter, trapezium, parallelogram, Quadrilateral, rhombus, kite</p>	<p>Apply and describe the properties of shapes; Name shapes; Solve geometric problems using the properties of shapes; Use angles related to parallel lines, triangles and regular and irregular polygons</p> <p>Calculate averages from ungrouped and grouped frequency tables; Find the mean, median, mode and range of an unordered set of data; Create and interpret stem-and-leaf diagrams; Mean of a subset; Identify biasness and determine a sample from a population systematically; Work with problems involving area, perimeter and volume</p> <p>Find the perimeter and area of rectangles and parallelograms, triangles and trapezia, compound shapes; Convert between measures of area; Find the surface area and volume of cuboids and prisms, and solve problems involving surface area and volume; Convert between measures of volume</p>	<p>End of topic review Homework Bookmarking Classroom feedback Half-term formal assessment</p>

Spring 1	<p>9. <i>Graphs</i></p> <p>10. <i>Transformations</i></p>	<p>Graphs, Axis, Scale, Coordinates, Origin, Point, Linear, Quadratic, Cubic, Reciprocal Graphs, Gradient, Intercept, Turning Point, Maximum, Minimum, Correlation</p> <p>Transformation, Image, Reflection, Rotation, Translation, Dilation, Enlargement, Vector, Center, Clockwise, Anti-Clockwise, Scale Factor, Congruent, Similar</p>	<p>Determine the midpoint of a line and draw graphs parallel to the axes; Plot coordinates from a rule (table of values); Determine the gradient and intercept of a line graphically and algebraically and use this to determine the equation of lines parallel or perpendicular given a point of intersection; Find equations of straight lines; Sketch graphs using the gradient and y-intercept; Use distance-time graphs; Draw various rates of change graphs and discuss the accuracy of inter- and extrapolation</p> <p>Translate a shape (by also using column vectors) and describe translations; Reflect shapes and describe reflections; Rotate shapes and describe rotations; Enlarge shapes from a center of enlargement; Enlarge shapes with fractional enlargement; Describe enlargements and combined transformations</p>	<p>End of topic review Homework Bookmarking Classroom feedback Half-term formal assessment</p>
Spring 2	<p>11. <i>Ratio and proportion</i></p> <p>12. <i>Right-angled triangles</i></p>	<p>Ratio, Proportion, Equivalent, Compound Ratio, Direct And Indirect Proportion, Unitary Method</p> <p>Hypotenuse, Opposite, Adjacent, Angle Of Elevation, Angle Of Depression, Pythagoras, Sine, Cosine, Tangent</p>	<p>Simplify ratios; Solve problems using ratios; Convert units using ratios; Convert between length and area using ratios; Divide quantities into 2- and 3-part ratios; Compare ratios using decimals; Solve ratio and proportion problems; Use the ratios 1:n and n:1; Best buy; Direct proportion graph, unit ratio and gradient; Solve simple direct and inverse proportion word problems; Right-angled triangles</p> <p>Use Pythagoras; Use trigonometric ratios; Solve triangle problems</p>	<p>End of topic review Homework Bookmarking Classroom feedback Half-term formal assessment</p>
Summer 1	<p>13. <i>Probability</i></p> <p>14. <i>Multiplicative reasoning</i></p>	<p>Probability, Events, Experiment, Sample Space, Outcomes, Trail, Independent Events, Dependent Events, Mutually Exclusive Events, Exhaustive Events</p> <p>Factors, Product, Exponents, Powers, Multiplier, Original Amount, Final Amount, Reverse Percentage</p>	<p>Find the probability of equally likely events; Identify and apply probability involving mutually exclusive and exhaustive events; Use a sample space and two-way tables; Find experimental probability (Relative Frequency) and use it to make predictions; Complete simple Venn Diagrams; Use set notation; Use frequency and probability Venn diagrams and trees; Determine probability in the context of dependent and independent events</p> <p>Find the percentage profit and loss; Express numbers as a percentage and find percentage change; Find original amounts; Use repeated percentage (including growth and decay); Use and convert between compound measures; Calculate using speed, distance and time; Calculate acceleration from worded problems and graphs; Inverse proportion problems</p>	<p>End of topic review Homework Bookmarking Classroom feedback End of year formal assessment</p>