MATHEMATICS FOUNDATION TIER

Year 11

What are the aims and intentions of this curriculum?

The Year 11 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	*15. Constructions, loci and bearings*	Face, Edges, Vertex, Plan, Front Elevation, Side Elevation, Hypotenuse, Length, Angle, Degree, Bearing, North, Clockwise, Bisect, Perpendicular, Loci, Arc, Compass, Line, Parallel	Identify 3D solids, their properties and planes of symmetry; Draw plans and elevations; Sketch 3D shapes using plans and elevations; Draw nets of 3D objects; Construct triangles using a ruler, compass and protractor; Identify congruent triangles; Use scales to work out lengths and distances; Use scales to draw accurate diagrams; Construct polygons inside circles; Draw angle and line bisectors; Loci (1 point, 2 points, 1 line, 2 lines); Find bearings with a compass; Find bearings using parallel lines; Solve problems with accurate scale and bearing diagrams	Piximaths Aiming for grade 7-9 booklet MyMaths: https://vle.mathswatch.co.uk/vle/ End of topic class test Stretch and challenge feedback sheet (fortnightly)
Autumn 1	*16 Quadratic equations and graphs*	Quadratic function, Expand, Factorise, Function, Input, Output, Intercept, Turning point, Function, Plot, Parabola, Roots	Square single brackets and multiply double brackets; Plot graphs of quadratic functions and use them to find the intercepts, turning points and lines of symmetry; Solve quadratic equations by estimating the roots of quadratics graphs; Solve equations in the form $ax^2+bx+c=k$ graphically; Factorise quadratics of the form x^2+bx+c and (in the special case where b=0) using the difference of two squares; Solve quadratic equations	Piximaths Aiming for grade 7-9 booklet MyMaths: https://vle.mathswatch.co.uk/vle/ End of topic class test Stretch and challenge feedback sheet (fortnightly)
	17. Perimeter, area and volume	Circumference, Area, Semicircle, Sector, Spheres, Volume, Surface area, Compound shapes, Pyramids	Find and use the circumference and area of full and partial circles to solve circle related problems; Solving problems involving sectors; Find the area and perimeter of compound 2D shapes; Find the volume and surface area of composite 3D shapes, including pyramids, cones and spheres	
	18. Fractions, indices and standard form	Index (Indices-plural), Base, Power, Standard form, Negative power, Ordinary number	Multiply and divide mixed numbers; Apply the laws of indices; Convert between standard form and ordinary numbers; Add, subtract, multiply and divide standard form	

Autumn 2	*19. Congruence, similarity and vectors* *20. More algebra*	Similar, Corresponding angles, Corresponding sides, Congruent, Resultant Cubic function, Roots, Asymptotes, Simultaneous equation, Intersection, rearrange, Inverse operations formula	Find the missing angles and sides of similar triangles; Find and use the scale factor to solve problems in similar shapes (including finding the perimeter); Identify congruent triangles; Identify congruent triangles and use congruency to find missing sides and angles in shapes; Draw vectors and find column vectors; Represent resultant vectors algebraically and diagrammatically; Diagrammatic and algebraic representation of vectors multiplied by a scalar; Write a vector in terms of others (including ratios) Draw and interpret simple cubic and reciprocal graphs; Real life non-linear graphs; Solve simultaneous equations (linear-linear) graphically; Solve simultaneous equations (linear-linear) algebraically; Rearrange formulae; Prove identities; Expanding triple brackets	Piximaths Aiming for grade 7-9 booklet MyMaths: https://vle.mathswatch.co.uk/vle/ End of topic class test Stretch and challenge feedback sheet (fortnightly)
Spring 1	*Revision*	Quotient, Expression, Ratio, Integer, Indices, Expression, Solve, Factorise, Expand, Simplify, Like Terms, Coordinates, Translate, Vector, Reflect, Rotate, Enlarge, Hypotenuse Adjacent, Opposite, Angle, Outcome, Even, Independent, Dependent, Mutually Exclusive, Likely, Certain, Unlikely Experiment, Sample Space, Mean, Mode, Median, Range, Compare, Equally Likely, Conditional	Lessons are tailored to address specific misconceptions, general logical mistakes, memory recall and the mathematical communicating ability of each class. Revision lessons include the following areas: • Working with numbers • Algebra • Ratio and proportion • Graphing • Transformations • Geometry • Probability; and • Statistics	Piximaths Aiming for grade 7-9 booklet MyMaths: https://vle.mathswatch.co.uk/vle/ End of topic class test Stretch and challenge feedback sheet (fortnightly)
Spring 2	*Revision*	Quotient, Expression, Ratio, Integer, Indices, Expression, Solve, Factorise, Expand, Simplify, Like Terms, Coordinates, Translate, Vector, Reflect, Rotate, Enlarge, Hypotenuse Adjacent, Opposite, Angle, Outcome, Even, Independent, Dependent, Mutually Exclusive, Likely, Certain, Unlikely Experiment, Sample Space, Mean, Mode, Median, Range, Compare, Equally Likely, Conditional	Lessons are tailored to address specific misconceptions, general logical mistakes, memory recall and the mathematical communicating ability of each class. Revision lessons include the following areas: • Working with numbers • Algebra • Ratio and proportion • Graphing • Transformations • Geometry • Probability; and • Statistics	Piximaths Aiming for grade 7-9 booklet MyMaths: https://vle.mathswatch.co.uk/vle/ End of topic class test Stretch and challenge feedback sheet (fortnightly)