



Mathematics

Key Stage 4 (Years 10 and 11)

In Years 10 and 11, students follow either the Higher or the Foundation tier of GCSE Mathematics.

GCSE Mathematics: Higher tier

Qualification Edexcel GCSE (9–1) Mathematics (1MA1). Students follow either the Higher or the Foundation tier.

Unit	Topic	What students learn	Term
Year 10			
Unit 1	Number	Number problems and reasoning; place value and estimating; HCF and LCM; calculating with powers (indices); zero, negative and fractional indices; powers of 10 and standard form; surds; topic test.	Autumn
Unit 2	Algebra	Algebraic indices; expanding and factorising; equations; formulae; linear sequences; non-linear sequences; more expanding and factorising; topic test.	Autumn
Unit 3	Interpreting and representing data	Statistical diagrams; time series; scatter graphs; line of best fit; averages and range; topic test.	Autumn
Unit 4	Fractions, ratio and percentages	Fractions; ratios; ratio and proportion; percentages; fractions, decimals and percentages; topic test.	Autumn
Unit 5	Angles and trigonometry	Angle properties of triangles and quadrilaterals; interior angles of a polygon; exterior angles of a polygon; Pythagoras' theorem; trigonometry; topic test.	Autumn
Unit 6	Graphs	Linear graphs; more linear graphs; graphing rates of change; real-life graphs; line segments; quadratic graphs; cubic and reciprocal graphs; more graphs; topic test.	Spring
Unit 7	Area and volume	Perimeter and area; units and accuracy; prisms; circles; sectors of circles; cylinders and spheres; pyramids and cones; topic test.	Spring
Unit 8	Transformations and constructions	3D solids; reflection and rotation; enlargement; transformations and combinations of transformations; bearings and scale drawings; constructions; loci; topic test.	Spring
Unit 9	Equations and inequalities	Solving quadratic equations; completing the square; solving simple simultaneous equations; more simultaneous equations; solving linear and quadratic simultaneous equations; solving linear inequalities; topic test.	Spring
Unit 10	Probability	Combined events; mutually exclusive events; experimental probability; independent events and tree diagrams; conditional probability; Venn diagrams and set notation; topic test.	Spring
Unit 11	Multiplicative reasoning	Growth and decay; compound measures; more compound measures; ratio and proportion; topic test.	Summer

Unit	Topic	What students learn	Term
Unit 12	Similarity and congruence	Congruence; geometric proof and congruence; similarity; more similarity; similarity in 3D solids; topic test.	Summer
Unit 13	More trigonometry	Accuracy; graph of the sine function; graph of the cosine function; the tangent function; calculating areas and the sine rule; the cosine rule and 2D trigonometric problems; solving problems in 3D; transforming trigonometric graphs; topic test.	Summer
Unit 14	Further statistics	Sampling; cumulative frequency; box plots; drawing histograms; interpreting histograms; comparing and describing populations; topic test.	Summer
Unit 15	Equations and graphs	Solving simultaneous equations graphically; representing inequalities graphically; quadratic equations; using quadratic graphs; cubic equations; using iteration to solve equations; topic test.	Summer
Year 11			
Unit 11	Multiplicative reasoning	Growth and decay; compound measures; more compound measures; ratio and proportion; topic test.	Autumn 1
Unit 12	Similarity and congruence	Congruence; geometric proof and congruence; similarity; more similarity; similarity in 3D solids; topic test.	Autumn 1
Unit 13	More trigonometry	Accuracy; graph of the sine function; graph of the cosine function; the tangent function; calculating areas and the sine rule; the cosine rule and 2D trigonometric problems; solving problems in 3D; transforming trigonometric graphs; topic test.	Autumn 1
Unit 14	Further statistics	Sampling; cumulative frequency; box plots; drawing histograms; interpreting histograms; comparing and describing populations; topic test.	Autumn 2
Unit 15	Equations and graphs	Solving simultaneous equations graphically; representing inequalities graphically; quadratic equations; using quadratic graphs; cubic equations; using iteration to solve equations; topic test.	Autumn 2
Unit 16	Circle theorems	Radii and chords; tangents; angles in circles; applying circle theorems; topic test.	Spring 1
Unit 17	More algebra	Rearranging formulae; algebraic fractions; simplifying algebraic fractions; more algebraic fractions; surds; solving algebraic fraction equations; functions; proof; topic test.	Spring 1
Unit 18	Vectors and geometric proof	Vectors and vector notation; vector arithmetic; more vector arithmetic; parallel vectors and collinear points; solving geometric problems; topic test.	Spring 2
Unit 19	Proportion and graphs	Direct proportion; more direct proportion; inverse proportion; exponential functions; non-linear graphs; translating graphs of functions; reflecting and stretching graphs of functions; topic test.	Spring 2

GCSE Mathematics: Foundation tier

Qualification Edexcel GCSE (9–1) Mathematics (1MA1).

Unit	Topic	What students learn	Term
Year 10			
Unit 1	Number	Calculations; decimal numbers; place value; factors and multiples; squares, cubes and roots; index notation; prime factors; topic test.	Autumn
Unit 2	Algebra	Algebraic expressions; simplifying expressions; substitution; formulae; expanding brackets; factorising; using expressions and formulae; topic test.	Autumn
Unit 3	Graphs, tables and charts	Frequency tables; two-way tables; representing data; time series; stem and leaf diagrams; pie charts; scatter graphs; line of best fit; topic test.	Autumn
Unit 4	Fractions and percentages	Working with fractions; operations with fractions; multiplying fractions; dividing fractions; fractions and decimals; fractions and percentages; calculating percentages; topic test.	Autumn
Unit 5	Equations, inequalities and sequences	Solving equations; solving equations with brackets; introducing inequalities; more inequalities; more formulae; generating sequences; using the n th term of a sequence; topic test.	Autumn
Unit 6	Angles	Properties of shapes; angles in parallel lines; angles in triangles; exterior and interior angles; more exterior and interior angles; geometrical patterns; topic test.	Spring
Unit 7	Averages and range	Mean and range; mode, median and range; types of average; estimating the mean; sampling; topic test.	Spring
Unit 8	Perimeter, area and volume 1	Rectangles, parallelograms and triangles; trapezia and changing units; area of compound shapes; surface area of 3D solids; volume of prisms; more volume and surface area; topic test.	Spring
Unit 9	Graphs	Coordinates; linear graphs; gradient; $y = mx + c$; real-life graphs; distance-time graphs; more real-life graphs; topic test.	Spring
Unit 10	Transformations	Translation; reflection; rotation; enlargement; describing enlargements; combining transformations; topic test.	Spring
Unit 11	Ratio and proportion	Writing ratios; using ratios; ratios and measures; comparing using ratios; using proportion; proportion and graphs; proportion problems; topic test.	Summer
Unit 12	Right-angled triangles	Pythagoras' theorem; trigonometry: the sine ratio; trigonometry: the cosine ratio; trigonometry: the tangent ratio; finding lengths and angles using trigonometry; topic test.	Summer
Unit 13	Probability	Calculating probability; two events; experimental probability; Venn diagrams; tree diagrams; more tree diagrams; topic test.	Summer
Unit 14	Multiplicative reasoning	Percentages; growth and decay; compound measures; distance, speed and time; direct and inverse proportion; topic test.	Summer

Unit	Topic	What students learn	Term
Unit 15	Constructions, loci and bearings	3D solids; plans and elevations; accurate drawings; scale drawings and maps; constructions; loci and regions; bearings; topic test.	Summer
Year 11			
Unit 11	Ratio and proportion	Writing ratios; using ratios; ratios and measures; comparing using ratios; using proportion; proportion and graphs; proportion problems; topic test.	Autumn 1
Unit 12	Right-angled triangles	Pythagoras' theorem; trigonometry: the sine ratio; trigonometry: the cosine ratio; trigonometry: the tangent ratio; finding lengths and angles using trigonometry; topic test.	Autumn 1
Unit 13	Probability	Calculating probability; two events; experimental probability; Venn diagrams; tree diagrams; more tree diagrams; topic test.	Autumn 1
Unit 14	Multiplicative reasoning	Percentages; growth and decay; compound measures; distance, speed and time; direct and inverse proportion; topic test.	Autumn 2
Unit 15	Constructions, loci and bearings	3D solids; plans and elevations; accurate drawings; scale drawings and maps; constructions; loci and regions; bearings; topic test.	Autumn 2
Unit 16	Quadratic equations and graphs	Expanding double brackets; plotting quadratic graphs; using quadratic graphs; factorising quadratic expressions; solving quadratic equations algebraically; topic test.	Autumn 2
Unit 17	Perimeter, area and volume 2	Circumference of a circle; area of a circle; semicircles and sectors; composite 2D shapes and cylinders; pyramids and cones; spheres and composite solids; topic test.	Spring 1
Unit 18	Fractions, indices and standard form	Multiplying and dividing fractions; the laws of indices; writing large numbers in standard form; writing small numbers in standard form; calculating with standard form; topic test.	Spring 1
Unit 19	Congruence, similarity and vectors	Similarity and enlargement; more similarity; using similarity; congruence; vectors; topic test.	Spring 2
Unit 20	More algebra	Graphs of cubic and reciprocal functions; non-linear graphs; solving simultaneous equations graphically; solving simultaneous equations algebraically; rearranging formulae; proof; topic test.	Spring 2