Pupils will be following stages according to their prior attainment at primary school. A maximum of 13 **mastery indicators** each year are chosen to represent the most important skills that students need to acquire in order to make progress in their mathematics. Alongside the mastery indicators, **essential knowledge** lists the facts that students need to know in order to make progress in their mathematics.

	Below minimum expected standard at end of KS2 **Set 4**	**At minimum expected standard at end of KS2** **Set 2/3**	**Exceeding minimum expected standard at end of KS2** **Set 1**
Year 7	Stage 5	Stage 6	Stage 7
Year 8	Stage 6	Stage 7	Stage 8
Year 9	Stage 7	Stage 8	Stage 9

Mathematics overview: Stage 5

Unit	*Mastery indicators*	*Essential knowledge*
Numbers and the number system	• Identify multiples and factors of a number • Count forwards and backwards through zero • Round to one decimal place • Use columnar addition and subtraction with numbers of any size • Multiply a three- or four-digit number by a two-digit number using long multiplication • Divide numbers up to four-digits by a single-digit number using short division and interpret the remainder • Add and subtract fractions with denominators that are multiples of the same number • Write decimals as fractions • Understand that per cent relates to number of parts per hundred • Convert between adjacent metric units of measure for length, capacity and mass • Measure and draw angles • Calculate the area of rectangles • Distinguish between regular and irregular polygons	• Know the place value headings up to millions • Recall primes to 19 • Know the first 12 square numbers • Know the Roman numerals I, V, X, L, C, D, M • Know percentage and decimal equivalents for $^1/_2$, $^1/_4$, $^1/_5$, $^2/_5$, $^4/_5$ • Know rough conversions between metric and Imperial units • Know that angles are measured in degrees • Know angles in one whole turn total 360° • Know angles in half a turn total 180° • Know that area of a rectangle = length × width
Counting and comparing		
Calculating: addition and subtraction		
Calculating: multiplication and division		
Investigating properties of shapes		
Visualising and constructing		
Exploring time		
Exploring fractions, decimals and percentages		
Pattern sniffing		
Measuring space		
Investigating angles		
Calculating fractions, decimals and percentages		
Calculating space		
Checking, approximating and estimating		
Mathematical movement		
Presentation of data		

Mathematics overview: Stage 6

Unit	*Mastery indicators*	*Essential knowledge*
Numbers and the number system	• Multiply and divide numbers with up to three decimal places by 10, 100, and 1000 • Use long division to divide numbers up to four digits by a two-digit number • Use simple formulae expressed in words • Generate and describe linear number sequences • Use simple ratio to compare quantities • Write a fraction in its lowest terms by cancelling common factors • Add and subtract fractions and mixed numbers with different denominators • Multiply pairs of fractions in simple cases • Find percentages of quantities • Solve missing angle problems involving triangles, quadrilaterals, angles at a point and angles on a straight line • Calculate the volume of cubes and cuboids • Use coordinates in all four quadrants • Calculate and interpret the mean as an average of a set of discrete data	• Know percentage and decimal equivalents for fractions with a denominator of 2, 3, 4, 5, 8 and 10 • Know the rough equivalence between miles and kilometres • Know that vertically opposite angles are equal • Know that the area of a triangle = base × height ÷ 2 • Know that the area of a parallelogram = base × height • Know that volume is measured in cubes • Know the names of parts of a circle • Know that the diameter of a circle is twice the radius • Know the conventions for a 2D coordinate grid • Know that mean = sum of data ÷ number of pieces of data
Calculating		
Calculating: division		
Visualising and constructing		
Investigating properties of shapes		
Algebraic proficiency: using formulae		
Exploring fractions, decimals and percentages		
Proportional reasoning		
Pattern sniffing		
Measuring space		
Investigating angles		
Calculating fractions, decimals and percentages		
Solving equations and inequalities		
Calculating space		
Checking, approximating and estimating		
Mathematical movement		
Presentation of data		
Measuring data		

Mathematics overview: Stage 7

Unit	*Mastery indicators*	*Essential knowledge*
Numbers and the number system Counting and comparing Calculating Visualising and constructing Investigating properties of shapes Algebraic proficiency: tinkering Exploring fractions, decimals and percentages Proportional reasoning Pattern sniffing Measuring space Investigating angles Calculating fractions, decimals and percentages Solving equations and inequalities Calculating space Checking, approximating and estimating Mathematical movement Presentation of data Measuring data	• Use positive integer powers and associated real roots • Apply the four operations with decimal numbers • Write a quantity as a fraction or percentage of another • Use multiplicative reasoning to interpret percentage change • Add, subtract, multiply and divide with fractions and mixed numbers • Check calculations using approximation, estimation or inverse operations • Simplify and manipulate expressions by collecting like terms • Simplify and manipulate expressions by multiplying a single term over a bracket • Substitute numbers into formulae • Solve linear equations in one unknown • Understand and use lines parallel to the axes, y = x and y = -x • Calculate surface area of cubes and cuboids • Understand and use geometric notation for labelling angles, lengths, equal lengths and parallel lines	• Know the first 6 cube numbers • Know the first 12 triangular numbers • Know the symbols =, ≠, <, >, ≤, ≥ • Know the order of operations including brackets • Know basic algebraic notation • Know that area of a rectangle = l × w • Know that area of a triangle = b × h ÷ 2 • Know that area of a parallelogram = b × h • Know that area of a trapezium = ((a + b) ÷ 2) × h • Know that volume of a cuboid = l × w × h • Know the meaning of faces, edges and vertices • Know the names of special triangles and quadrilaterals • Know how to work out measures of central tendency • Know how to calculate the range

Mathematics overview: Stage 8

Unit	*Mastery indicators*	*Essential knowledge*
Numbers and the number system	• Apply the four operations with negative numbers • Convert numbers into standard form and vice versa • Apply the multiplication, division and power laws of indices • Convert between terminating decimals and fractions • Find a relevant multiplier when solving problems involving proportion • Solve problems involving percentage change, including original value problems • Factorise an expression by taking out common factors • Change the subject of a formula when two steps are required • Find and use the nth term for a linear sequence • Solve linear equations with unknowns on both sides • Plot and interpret graphs of linear functions • Apply the formulae for circumference and area of a circle • Calculate theoretical probabilities for single events	• Know how to write a number as a product of its prime factors • Know how to round to significant figures • Know the order of operations including powers • Know how to enter negative numbers into a calculator • Know that $a^0 = 1$ • Know percentage and decimal equivalents for fractions with a denominator of 3, 5, 8 and 10 • Know the characteristic shape of a graph of a quadratic function • Know how to measure and write bearings • Know how to identify alternate angles • Know how to identify corresponding angles • Know how to find the angle sum of any polygon • Know that circumference = $2\pi r = \pi d$ • Know that area of a circle = πr^2 • Know that volume of prism = area of cross-section × length • Know to use the midpoints of groups to estimate the mean of a set of grouped data • Know that probability is measured on a 0-1 scale • Know that the sum of all probabilities for a single event is 1
Calculating		
Visualising and constructing		
Understanding risk I		
Algebraic proficiency: tinkering		
Exploring fractions, decimals and percentages		
Proportional reasoning		
Pattern sniffing		
Investigating angles		
Calculating fractions, decimals and percentages		
Solving equations and inequalities		
Calculating space		
Algebraic proficiency: visualising		
Understanding risk II		
Presentation of data		
Measuring data		

Mathematics overview: Stage 9

Unit	*Mastery indicators*	*Essential knowledge*
Calculating	• Calculate with roots and integer indices • Manipulate algebraic expressions by expanding the product of two binomials • Manipulate algebraic expressions by factorising a quadratic expression of the form $x^2 + bx + c$ • Understand and use the gradient of a straight line to solve problems • Solve two linear simultaneous equations algebraically and graphically • Plot and interpret graphs of quadratic functions • Change freely between compound units • Use ruler and compass methods to construct the perpendicular bisector of a line segment and to bisect an angle • Solve problems involving similar shapes • Calculate exactly with multiples of π • Apply Pythagoras' Theorem in two dimensions • Use geometrical reasoning to construct simple proofs • Use tree diagrams to list outcomes	• Know how to interpret the display on a scientific calculator when working with standard form • Know the difference between direct and inverse proportion • Know how to represent an inequality on a number line • Know that the point of intersection of to lines represents the solution to the corresponding simultaneous equations • Know how to find the nth term of a quadratic sequence • Know the characteristic shape of the graph of a cubic function • Know the characteristic shape of the graph of a reciprocal function • Know the definition of speed • Know the definition of density • Know the definition of pressure • Know Pythagoras' Theorem • Know the definitions of arc, sector, tangent and segment • Know the conditions for congruent triangles
Visualising and constructing		
Algebraic proficiency: tinkering		
Proportional reasoning		
Pattern sniffing		
Solving equations and inequalities I		
Calculating space		
Conjecturing		
Algebraic proficiency: visualising		
Solving equations and inequalities II		
Understanding risk		
Presentation of data		

Maths Foundation- Course Overview

Module number	Title
1	Integers
2	Decimals
3	Coordinates
4	Angles, lines and triangles
5	Reading scales and converting units
6	Collecting data
7	Charts and graphs
8	Symmetry, Similarity and Congruence
9	Types of number
10	Introduction to algebra
11	Constructions
12	Patterns and sequences
13	Properties of quadrilaterals and parallel lines
14	Fractions
15	Pie charts
16	Fractions, decimals and percentages
17	Applications of percentages
18	Algebra using powers and brackets
19	Ratio and proportion
20	Linear equations and inequalities
21	Perimeter and area
22	3-D shapes
23	Real-life graphs
24	Straight line graphs
25	Compound measures
26	Timetables and distance-time graphs
27	Volume
28	Probability
29	Formulae
30	Angles properties of polygons
31	Transformations
32	Scatter graphs and correlation
33	Averages and range
34	Quadratic graphs
35	Trial and Improvement
36	Circles
37	Pythagoras' Theorem

Higher Course Overview

Module number	Title
1	Integers and decimals
2	Coordinates
3	Fractions
4	Algebra
5	Shape and angles
6	Collecting data
7	Displaying data
8	Construction and loci
9	Types of number
10	Patterns and sequences
11	2-D and 3-D shapes
12	Perimeter and area
13	Fractions, decimals and percentages
14	Formulae and linear equations
15	Linear graphs
16	Simultaneous equations
17	Probability
18	Ratio and scale
19	Averages and range
20	Pythagoras and trigonometry
21	Trial and Improvement
22	Surface area and volume
23	Compound measures
24	Transformations
25	Similarity and Congruence
26	Quadratic functions, equations and graphs
27	Index notation and surds
28	Circle theorems
29	Sine and cosine rules
30	Vectors
31	Further graphs and functions
32	Transformations of functions