KS3 Curriculum

Year 7, 8 and 9 from September 2022

Pupils in Year 7, 8, and 9 follow the sequence of topics outlined below.

	Year 7	Year 8	Year 9
1	Place Value	Expressions	Non Calculator Fractions, Deciamls & Percentages
2	Calculations	Angles	Linear Graphs & Gradient
3	Negatives	Formulae	Transformations
4	Fractions	Area, Volume & 3D	Non Calculator Ratio & Proportion
5	Indices	Froming & Solving Equations	Angles & Similarity
6	Intro to Algebra	Number Theory & Sequences	Pythagoras & Trigonometry
7	Working with Measures	Functions, Co-ordinates & Graphs	Probability
8	Shapes, Area & Pythagoras	Introduction to Statistics	Maps & Constructions
9	Fractions, Decimals & Percentages		Percentages (Calculator Methods)

KS3 Curriculum

The following tables outline where and when each of the National Curriculum objectives are taught in KS3.

	National Curriculum Objective	Covered In
N1	understand and use place value for decimals, measures and integers of any size	Year 7 Unit 1
N2	order positive and negative integers, decimals and fractions; use the number line as a model for ordering of the real numbers; use the symbols =, ≠, , ≤, ≥	Year 7 Units 1 & 3
N3	use the concepts and vocabulary of prime numbers, factors (or divisors), multiples, common factors, common multiples, highest common factor, lowest common multiple, prime factorisation, including using product notation and the unique factorisation property	Year 8 Unit 6
N4	use the four operations, including formal written methods, applied to integers, decimals, proper and improper fractions, and mixed numbers, all both positive and negative	Year 7 Units 2,3,4 & 9 Year 9 Unit 1
N5	use conventional notation for the priority of operations, including brackets, powers, roots and reciprocals	Year 7 Unit 5
N6	recognise and use relationships between operations including inverse operations	Year 7 Unit 6
N7	use integer powers and associated real roots (square, cube and higher), recognise powers of 2, 3, 4, 5 and distinguish between exact representations of roots and their decimal approximations	Year 7 Unit 5
N8	interpret and compare numbers in standard form A x 10n 1≤A	Year 7 Unit 7
N9	work interchangeably with terminating decimals and their corresponding fractions (such as 3.5 and 2 7 or 0.375 and 8 3)	Year 7 Units 1, 4 and 9 Year 9 Unit 1
N10	define percentage as 'number of parts per hundred', interpret percentages and percentage changes as a fraction or a decimal, interpret these multiplicatively, express one quantity as a percentage of another, compare two quantities using percentages, and work with percentages greater than 100%	Year 7 Unit 9 Year 9 Units 1 & 9
N11	interpret fractions and percentages as operators	Year 7 Units 4 & 9 Year 9 Units 1 & 9
N12	use standard units of mass, length, time, money and other measures, including with decimal quantities	Year 7 Unit 7
N13	round numbers and measures to an appropriate degree of accuracy [for example, to a number of decimal places or significant figures]	Year 7 Units 1 & 7
N14	use approximation through rounding to estimate answers and calculate possible resulting errors expressed using inequality notation a<x≤b	Year 7 Unit 7
N15	use a calculator and other technologies to calculate results accurately and then interpret them appropriately	Year 7 Unit 5
N16	appreciate the infinite nature of the sets of integers, real and rational numbers	Year 7 Unit 1 Year 8 Unit 6

	National Curriculum Objective	
A1	use and interpret algebraic notation, including: ab in place of a × b 3y in place of y + y + y 3 × y a2 in place of a × a a3 in place of a × a × a a2 b in place of a × a × b b a in place of a ÷ b coefficients written as fractions rather than as decimals brackets	Year 7 Unit 6 Year 8 Units 1, 3 and 5
A2	substitute numerical values into formulae and expressions, including scientific formulae	Year 7 Unit 6 Year 8 Units 3 & 7
A3	understand and use the concepts and vocabulary of expressions, equations, inequalities, terms and factors	Year 7 Units 1 & 6 Year 8 Units 1 and 5
A4	simplify and manipulate algebraic expressions to maintain equivalence by: collecting like terms multiplying a single term over a bracket taking out common factors expanding products of two or more binomials	Year 7 Unit 6 Year 8 Unit 1
A5	understand and use standard mathematical formulae; rearrange formulae to change the subject	Year 8 Unit 3
A6	model situations or procedures by translating them into algebraic expressions or formulae and by using graphs	Year 8 Units 1, 3, 5 and 7
A7	use algebraic methods to solve linear equations in one variable (including all forms that require rearrangement)	Year 7 Unit 6 Year 8 Unit 5
A8	work with coordinates in all four quadrants	Year 8 Unit 7
A9	recognise, sketch and produce graphs of linear and quadratic functions of one variable with appropriate scaling, using equations in x and y and the Cartesian plane	Year 8 Unit 7 Year 9 Unit 2
A10	interpret mathematical relationships both algebraically and graphically	Year 8 Units 1, 3, 5 and 7
A11	reduce a given linear equation in two variables to the standard form y = mx + c; calculate and interpret gradients and intercepts of graphs of such linear equations numerically, graphically and algebraically	Year 9 Unit 2
A12	use linear and quadratic graphs to estimate values of y for given values of x and vice versa and to find approximate solutions of simultaneous linear equations	Year 8 Unit 7
A13	find approximate solutions to contextual problems from given graphs of a variety of functions, including piece-wise linear, exponential and reciprocal graphs	Year 8 Unit 7 Year 9 Unit 2
A14	generate terms of a sequence from either a term-to-term or a position-to-term rule	Year 8 Unit 6
A15	recognise arithmetic sequences and find the nth term	Year 8 Unit 6
A16	recognise geometric sequences and appreciate other sequences that arise.	Year 8 Unit 6

National Curriculum Objective		
G1	derive and apply formulae to calculate and solve problems involving: perimeter and area of triangles, parallelograms, trapezia, volume of cuboids (including cubes) and other prisms (including cylinders)	Year 7 Units 7 & 8 Year 8 Unit 4
G2	calculate and solve problems involving: perimeters of 2-D shapes (including circles),areas of circles and composite shapes	Year 7 Units 7 & 8 Year 8 Unit 4
G3	draw and measure line segments and angles in geometric figures, including interpreting scale drawings	Year 8 Unit 2 Year 9 Unit 8
G4	derive and use the standard ruler and compass constructions (perpendicular bisector of a line segment, constructing a perpendicular to a given line from/at a given point, bisecting a given angle); recognise and use the perpendicular distance from a point to a line as the shortest distance to the line	Year 9 Unit 8
G5	describe, sketch and draw using conventional terms and notations: points, lines, parallel lines, perpendicular lines, right angles, regular polygons, and other polygons that are reflectively and rotationally symmetric	Year 7 Chaper 8 Year 8 Unit 2 Year 9 Unit 5
G6	use the standard conventions for labelling the sides and angles of triangle ABC, and know and use the criteria for congruence of triangles	Year 9 Unit 8
G7	derive and illustrate properties of triangles, quadrilaterals, circles, and other plane figures [for example, equal lengths and angles] using appropriate language and technologies	Year 7 Unit 8 Year 8 Unit 2 Year 9 Unit 5
G8	identify properties of, and describe the results of, translations, rotations and reflections applied to given figures	Year 9 Unit 3
G9	identify and construct congruent triangles, and construct similar shapes by enlargement, with and without coordinate grids	Year 9 Units 3 & 8
G10	apply the properties of angles at a point, angles at a point on a straight line, vertically opposite angles	Year 8 Unit 2 Year 9 Unit 5
G11	understand and use the relationship between parallel lines and alternate and corresponding angles	Year 8 Unit 2 Year 9 Unit 5
G12	derive and use the sum of angles in a triangle and use it to deduce the angle sum in any polygon, and to derive properties of regular polygons	Year 9 Unit 5
G13	apply angle facts, triangle congruence, similarity and properties of quadrilaterals to derive results about angles and sides, including Pythagoras' Theorem, and use known results to obtain simple proofs	Year 9 Units 5, 6 & 8
G14	use Pythagoras' Theorem and trigonometric ratios in similar triangles to solve problems involving right-angled triangles	Year 7 Unit 8 Year 9 Unit 6
G15	use the properties of faces, surfaces, edges and vertices of cubes, cuboids, prisms, cylinders, pyramids, cones and spheres to solve problems in 3-D	Year 8 Unit 4
G16	interpret mathematical relationships both algebraically and geometrically	Year 8 Unit 4

National Curriculum Objective		
P1	record, describe and analyse the frequency of outcomes of simple probability experiments involving randomness, fairness, equally and unequally likely outcomes, using appropriate language and the 0-1 probability scale	Year 9 Unit 7
P2	understand that the probabilities of all possible outcomes sum to 1	Year 9 Unit 7
P3	enumerate sets and unions/intersections of sets systematically, using tables, grids and Venn diagrams	Year 9 Unit 7
P4	generate theoretical sample spaces for single and combined events with equally likely, mutually exclusive outcomes and use these to calculate theoretical probabilities.	Year 9 Unit 7
S1	describe, interpret and compare observed distributions of a single variable through: appropriate graphical representation involving discrete, continuous and grouped data; and appropriate measures of central tendency (mean, mode, median) and spread (range, consideration of outliers)	Year 8 Unit 8
S2	construct and interpret appropriate tables, charts, and diagrams, including frequency tables, bar charts, pie charts, and pictograms for categorical data, and vertical line (or bar) charts for ungrouped and grouped numerical data	Year 8 Unit 8
S3	describe simple mathematical relationships between two variables (bivariate data) in observational and experimental contexts and illustrate using scatter graphs.	Year 8 Unit 8

KS4 Curriculum

GCSE Foundation

Pupils in 10MK and 10MS start studying the Pearson Edexcel GCSE Foundation Course at the start of Year 10. Content is taught in the same order as sequenced by the exam board. This order is logical with content accumulating in a spiral fashion as the course progresses.

GCSE Higher

Pupils in 10MZ, 10MA, and 10MG start studying the Pearson Edexcel GCSE Higher Course at the start of Year 10. Content is taught in the same order as sequenced by the exam board. This order is logical with content accumulating in a spiral fashion as the course progresses.

GCSE Crossover

Pupils in 10ML and 10ME begin Year 10 by studying the topics which appear on both the Foundation and Higher course. This leads to the term 'Crossover', as in the topics which cross over between tiers. This allows us to delay the decision on tier of entry for pupils meaning more pupils have the possibility of sitting the Higher tier in Year 11. If pupils were to start on the Foundation tier it would be very difficult for them to then switch to the Higher tier at a later point due to the amount of content they would have missed in comparison with their peers. Topics are sequenced so that new content builds on prior knowledge.

GCSE Foundation Overview

Unit		Title	Estimated hours
1	a	Integers and place value	4
	b	Decimals	3
	c	Indices, powers and roots	5
	d	Factors, multiples and primes	4
2	a	Algebra: the basics	6
	b	Expressions and substitution into formulae	5
3	a	Tables, charts and graphs	11
	b	Pie charts	3
	c	Scatter graphs	4
4	a	Fractions, decimals and percentages	7
	b	Percentages	6
5	a	Equations and inequalities	9
	b	Sequences	5
6	a	Properties of shapes, parallel lines and angle facts	7
	b	Interior and exterior angles of polygons	4
7		Statistics, sampling and the averages	7
8		Perimeter, area and volume	10
9	a	Real-life graphs	8
	b	Straight-line graphs	6
10		Transformations	11
11	a	Ratio	4
	b	Proportion	5
12		Right-angled triangles: Pythagoras and trigonometry	5
13		Probability	12
14		Multiplicative reasoning	7
15	a	Plans and elevations	5
	b	Constructions, loci and bearings	7
16	a	Quadratic equations: expanding and factorising	5
	b	Quadratic equations: graphs	4
17		Circles, cylinders, cones and spheres	6
18	a	Fractions and reciprocals	5
	b	Indices and standard form	5
19	a	Similarity and congruence in 2D	7
	b	Vectors	7

20	Rearranging equations, graphs of cubic and reciprocal functions and simultaneous equations	5

GCSE Higher Overview

Unit		Title	Estimated hours
1	a	Calculations, checking and rounding	4
	b	Indices, roots, reciprocals and hierarchy of operations	4
	c	Factors, multiples, primes, standard form and surds	7
2	a	Algebra: the basics, setting up, rearranging and solving equations	10
	b	Sequences	4
3	a	Averages and range	4
	b	Representing and interpreting data and scatter graphs	5
4	a	Fractions and percentages	12
	b	Ratio and proportion	6
5	a	Polygons, angles and parallel lines	6
	b	Pythagoras' Theorem and trigonometry	6
6	a	Graphs: the basics and real-life graphs	6
	b	Linear graphs and coordinate geometry	8
	c	Quadratic, cubic and other graphs	6
7	a	Perimeter, area and circles	5
	b	3D forms and volume, cylinders, cones and spheres	7
	c	Accuracy and bounds	5
8	a	Transformations	6
	b	Constructions, loci and bearings	7
9	a	Solving quadratic and simultaneous equations	7
	b	Inequalities	6
10		Probability	8
11		Multiplicative reasoning	8
12		Similarity and congruence in 2D and 3D	6
13	a	Graphs of trigonometric functions	6
	b	Further trigonometry	9
14	a	Collecting data	4
	b	Cumulative frequency, box plots and histograms	6
15		Quadratics, expanding more than two brackets, sketching graphs, graphs of circles, cubes and quadratics	7
16	a	Circle theorems	5
	b	Circle geometry	5

17		Changing the subject of formulae (more complex), algebraic fractions, solving equations arising from algebraic fractions, rationalising surds, proof	7
18		Vectors and geometric proof	9
19	a	Reciprocal and exponential graphs; Gradient and area under graphs	7
	b	Direct and inverse proportion	7

GCSE Mathematics

Scheme of Work

Crossover

Unit	JM Clip No.	Topic	Unit	JM Clip No.	Topic
1	01	Two Way Tables	32	36	Speed, Distance, Time
2	02	Frequency Trees		37	Compound Measures
3	53	Venn Diagrams	33	38	Real Life Graphs
4	04	Product of Prime Factors	34	39 / 40	Pythagoras
5	06	Multiples in Context		41	Trig - Non Calculator
6	07	Best Value		42	Trig - Finding Sides
7	08	Exchange Rates		43	Trig - Finding Angles
8	09	Rounding and Error Intervals		45	Pythagoras with Trig
9	70	Estimation	35	44	Bearings
10	10	Percentage of an Amount	36	46	Alternate/Corresponding Angles
11	11	Interest and Growth	37	47	Interior and Exterior Angles
	12	Depreciation and Decay	38	48	Sampling
12	03	Use of Calculator	39	49	Pie Charts
13	13	Reverse Percentages	40	50	Probability
14	14 / 15	Fractions	41	51 / 52	Probability Trees
15	16 / 17	Ratio	42	54	Plans and Elevations
16	18	Proportion - Recipes	43	55	Constructions
17	19 / 20	Standard Index Form	44	56 / 57	Circles
18	21	Index Laws		58	Arcs and Sectors
19	22	Expand and Simplify	45	59 / 60	Surface Area and Volume
20	23 / 24	Factorising	46	61	Congruence
21		Solving equations		62	Similar Shapes
22	25	Subject of	47	63	Enlargements
23	26	Averages		64	Reflections
24	27	Averages from a Table		65	Rotations
	28	Averages from Grouped Data		66	Reflections with Rotations
25	05	Inequalities		67	Translations
26	29	Frequency Diagrams	48	68	Vectors
27	30	Scatter Graphs	49	69	Sequences
28	31	Time Series	50	71 / 72	Forming and Solving Equations
29	32	Straight Line Graphs	51	73 / 74	Simultaneous Equations
30	33	Quadratic and Cubic Graphs	52		Direct Proportion
31	34 / 35	Coordinate Geometry			Inverse Proportion