

YEAR 7 MATHS CURRICULUM PROGRESSION OVERVIEW

Subject Curriculum Intent

The learning at Key Stage 3 is sequenced to allow students to become fluent in the fundamentals of mathematics, to develop reasoning skills and to apply knowledge to solve problems. All units interleave crucial knowledge and skills from prior learning at Key Stage 3 as from the Key Stage 2 National Curriculum topic areas of Number, Ratio and proportion, Algebra, Geometry, Measurement and Statistics. This ensures that students build upon prior learning and have secure retention of knowledge over time.

The curriculum builds on key ideas from KS2, starting with consolidation of number properties and calculations. Then algebraic notation is introduced and linked to sequences and equations. Charts and averages are considered before percentages are consolidated and built upon while numerical skills are linked to rounding and estimating as well as area and perimeter. Next the focus is working with angles and calculating with fractions and then 3D shapes are considered. Finally, ratio skills are developed and further shape work with transformations and finally the new area of probability is introduced.

	Autumn Term 1	Autumn Term 2	Spring Term 1	Spring Term 2	Summer Term 1	Summer Term 2
Topic	-Number Properties -Number Calculations -Algebraic Notation	- Charts and Averages - Rounding -Linear Equations - Sequences	- Percentages -Area and Perimeter	- Angles -Fractions -3D Shapes	-Ratio	-Transformations -Probability
Core Knowledge/ Threshold Concept	Understand, reason, and solve problems involving: - Multiples, factors, primes, HCF, LCM and product of prime factors -Formal non calculator methods, metric units, negative numbers, order of operations -Function machines, algebraic notation,	Understand, reason and solve problems involving: -Solve problems involving, charts timetables and simple graphs, drawn and interpret pictograms, pie charts and stem and leaf diagrams, calculate averages and range from a list, combined means and tables	Understand, reason and solve problems involving: - Converting between fractions, decimals and percentages, finding a percentage of an amount, percentage increase and decrease, expressing quantities as a percentage - Properties of 2D shapes, perimeter and area of simple and	Understand, reason and solve problems involving: -Draw and measure angles, angles on a line, round a point, vertically opposite, in a triangle and in a quadrilateral, angles in parallel lines - Simplify fractions, convert between fractions and mixed numbers, add,	Understand, reason and solve problems involving: - Form and simplify ratios, link ratios to fractions, share into a ratio, solve direct proportion problems, ratio involving units, combining ratios	Understand, reason and solve problems involving: -Line and rotational symmetry, reflecting rotating, translating and enlarging shapes -Understand simple probability, probability of a single event, listing outcomes, sample spaces, frequency trees, mutually

	substitution, simplifying expressions, solving equations, expanding a and factorising with one bracket	-Rounding to nearest power of 10 and using decimals places and significant figures, estimation -Solving one and two step equations and with brackets, then with unknowns on both sides -Describing and continuing a sequence, the nth term of a sequence, generate a sequence, find missing terms in a sequence -	compound shapes, link algebra to perimeter	subtract, multiply and divide fractions, simple algebraic fractions -Properties of 3D shapes, nets, volume and surface area of prisms		exclusive events, two way tables
Assessment Opportunities:	Regular formative assessment in lessons including questioning, recall activities and self / peer assessment. Topic reviews completed after every unit and marked with personalised feedback. One 45-minute non calculator assessment on numeracy and number-based skills.	Regular formative assessment in lessons including questioning, recall activities and self / peer assessment. Topic reviews completed after every unit and marked with personalised feedback. One 45-minute non calculator assessment on all topics covered so far.	Regular formative assessment in lessons including questioning, recall activities and self / peer assessment. Topic reviews completed after every unit and marked with personalised feedback.	Regular formative assessment in lessons including questioning, recall activities and self / peer assessment. Topic reviews completed after every unit and marked with personalised feedback.	Regular formative assessment in lessons including questioning, recall activities and self / peer assessment. Topic reviews completed after every unit and marked with personalised feedback.	Regular formative assessment in lessons including questioning, recall activities and self / peer assessment. Topic reviews completed after every unit and marked with personalised feedback. Two 45-minute assessments (one non calculator and one

						calculator) on all topics covered so far.
Learning at Home	Homework is set every week on Sparx, consisting of questions recently covered in lessons, revision of previously studied content and times tables practice.	Homework is set every week on Sparx, consisting of questions recently covered in lessons, revision of previously studied content and times tables practice.	Homework is set every week on Sparx, consisting of questions recently covered in lessons, revision of previously studied content and times tables practice.	Homework is set every week on Sparx, consisting of questions recently covered in lessons, revision of previously studied content and times tables practice.	Homework is set every week on Sparx, consisting of questions recently covered in lessons, revision of previously studied content and times tables practice.	Homework is set every week on Sparx, consisting of questions recently covered in lessons, revision of previously studied content and times tables practice.
Key Vocabulary	Prime Inverse Integer	Mean Estimate	Percentage	Numerator Denominator	Ratio	Symmetry Translate
Spiritual, Moral, Social and Cultural concepts covered	To study maths is to train oneself in the art of reason, assembling the facts before making logical deductions – maths removes any prejudice. By its very nature, maths knows no borders, knows no race, religion or gender and knows no social background Spiritual development examples include: -Sense of enjoyment and fascination in learning -Use of imagination and creativity in their learning -Willingness to reflect on their experiences -The awe and wonder of mathematics such as symmetry in nature and number sequences such as the Fibonacci sequence Moral development examples include: -The use of statistics and how people manipulate them to promote their own (biased) opinions and to discuss the use and misuse of data in all issues including those supporting moral argument. -How to word questionnaires so as not to embarrass people Social development examples include: -Use of a range of social skills in different contexts such as a willingness to participate and to work collaboratively -How the census is used by governments to plan ahead for health, education and social requirements Cultural development examples include: -Appreciating the wealth of mathematics in all cultures throughout history. -How the Mathematical language is a universal language used worldwide					

**Links to
careers and
the world of
work**

Maths is used in daily life and is therefore a vital skill for everyone. Mathematical skills used on a regular basis include:

- percentages
- fractions
- time
- best value
- financial awareness
- ratios
- interpreting information
- measurements
- currency conversions

Transferable life skills include:

- resilience
- mathematical writing
- number sense working systematically
- independent thinking to solve problems
- logical reasoning

Possible career links include:

- Accountancy
- Banking
- Self Employed Business-
- Architecture
- Engineering
- Graphic Design

YEAR 8 MATHS CURRICULUM PROGRESSION OVERVIEW

Subject Curriculum Intent

The learning at Key Stage 3 is sequenced to allow students to become fluent in the fundamentals of mathematics, to develop reasoning skills and to apply knowledge to solve problems. All units interleave crucial knowledge and skills from prior learning at Key Stage 3 as from the Key Stage 2 National Curriculum topic areas of Number, Ratio and proportion, Algebra, Geometry, Measurement and Statistics. This ensures that students build upon prior learning and have secure retention of knowledge over time.

The curriculum consolidates algebra skills and extends to double brackets and links them to linear graphs. Ratio and proportion are considered as well as representing data visually and numerically using averages and range. Percentages including linked to financial maths are explored and then the concept of algebraic equations and inequalities are explored before the concept of probability is then extended and linked to visible representations. Previous work with area is extended to circles and volume and surface area and indices are linked to numbers in standard form. Angles are reviewed and the construction of triangles and bisectors area explored. Compound measures are considered before Pythagoras' Theorem and similarity are introduced.

	Autumn Term 1	Autumn Term 2	Spring Term 1	Spring Term 2	Summer Term 1	Summer Term 2
Topic	-Manipulating algebra -Linear Graphs -Ratio and Proportion	-Representing Data and Averages -Percentages -	-- Equations and Inequalities -Probability	-Area and Volume -Indices and Standard Form	-Angles -Scale Drawing and Constructions	-Compound Measures -Pythagoras' Theorem -Congruence and Similarity
Core Knowledge/ Threshold Concept	Understand, reason, and solve problems involving: -Form and simplify algebraic expressions, expand and simplify expressions. Expand single and double brackets -Co-ordinates, straight line graphs, $y = mx + c$, find gradients	Understand, reason, and solve problems involving: -Represent data visually including scatter graphs and pie charts and with data in frequency tables, averages and range from a list of data and a table -Convert between fractions, decimals and	Understand, reason, and solve problems involving: -Form and solve equations and inequalities, represent solutions on a number line -Review simple probability, link probability to sample spaces, two-way tables and Venn diagrams	Understand, reason, and solve problems involving: -Review 2D shapes, area of simple shapes and trapezia, circumference and area of circles, area of compound shapes, volume and surface area of prisms -Explore and use simple laws of indices,	Understand, reason, and solve problems involving: -Reviews angles in triangles and quadrilaterals, work with angles in parallel lines -Link ratios to scale diagrams and construct triangle and bisectors	Understand, reason, and solve problems involving: -Convert metric units, work with speed including graphically, consider other compound measures -Introduce Pythagoras' Theorem and use it to find missing sides

	-Understand and use ratio notation, share into a ratio, direct proportion, link ratio to currencies	percentages, calculate percentage change including using multipliers, write a quantity as a fraction or percentages of another, financial problems		convert between ordinary and standard form numbers, calculate with numbers in standard form		-Identify congruent shapes and find sides in similar shapes
Assessment Opportunities:	Regular formative assessment in lessons including questioning, recall activities and self / peer assessment. Topic reviews completed after every unit and marked with personalised feedback.	Regular formative assessment in lessons including questioning, recall activities and self / peer assessment. Topic reviews completed after every unit and marked with personalised feedback. One 45-minute calculator assessment on all topics covered so far.	Regular formative assessment in lessons including questioning, recall activities and self / peer assessment. Topic reviews completed after every unit and marked with personalised feedback.	Regular formative assessment in lessons including questioning, recall activities and self / peer assessment. Topic reviews completed after every unit and marked with personalised feedback. Two 45-minute assessments (one non calculator and one calculator) on all topics covered so far.	Regular formative assessment in lessons including questioning, recall activities and self / peer assessment. Topic reviews completed after every unit and marked with personalised feedback.	Regular formative assessment in lessons including questioning, recall activities and self / peer assessment. Topic reviews completed after every unit and marked with personalised feedback.
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Key Vocabulary	Factorise Gradient Y-intercept Proportion	Correlation Modal Multiplier		Indices	Parallel	Density Hypotenuse Scale Factor
Spiritual, Moral, Social and Cultural concepts covered	To study maths is to train oneself in the art of reason, assembling the facts before making logical deductions – maths removes any prejudice. By its very nature, maths knows no borders, knows no race, religion or gender and knows no social background Spiritual development examples include: -Sense of enjoyment and fascination in learning -Use of imagination and creativity in their learning -Willingness to reflect on their experiences -The awe and wonder of mathematics such as symmetry in nature and number sequences such as the Fibonacci sequence Moral development examples include: -The use of statistics and how people manipulate them to promote their own (biased) opinions and to discuss the use and misuse of data in all issues including those supporting moral argument. -How to word questionnaires so as not to embarrass people Social development examples include: -Use of a range of social skills in different contexts such as a willingness to participate and to work collaboratively -How the census is used by governments to plan ahead for health, education and social requirements Cultural development examples include: -Appreciating the wealth of mathematics in all cultures throughout history. -How the Mathematical language is a universal language used worldwide					
Links to careers and the world of work	Maths is used in daily life and is therefore a vital skill for everyone. Mathematical skills used on a regular basis including: -percentages -fractions -time -best value -financial awareness -ratios -interpreting information -measurements -currency conversions					

Transferable life skills include:

- resilience
- mathematical writing
- number sense working systematically
- independent thinking to solve problems
- logical reasoning

Possible career links include:

- Accountancy
- Banking
- Self Employed Business
- Architecture
- Engineering
- Graphic Design

YEAR 9 MATHS CURRICULUM PROGRESSION OVERVIEW

Subject Curriculum Intent

The learning at Key Stage 3 is sequenced to allow students to become fluent in the fundamentals of mathematics, to develop reasoning skills and to apply knowledge to solve problems. All units interleave crucial knowledge and skills from prior learning at Key Stage 3 as from the Key Stage 2 National Curriculum topic areas of Number, Ratio and proportion, Algebra, Geometry, Measurement and Statistics. This ensures that students build upon prior learning and have secure retention of knowledge over time.

Previous algebraic skills are extended to consider expanding and factorising using two brackets. Then both 2D and 3D shapes are developed to look at circles, surface area and volume of prisms and nets of 3D shapes. Equation skills are linked to representing inequalities and rearranging formulae and then to drawing and interpreting linear graphs. Previous fractions work is then reviewed including those with mixed numbers extended to look at when fraction terminate or d recur. Rounding is reviewed and linked to bounds and error intervals. Percentages are used in context such as interest and reverse percentages. Students will then look at angles in polygons before there is a review of ratio linked to best buy and then transformations are reviewed and extended further. Probability is linked to tree and Venn diagrams and sequences are recapped and linked to quadratic sequences before Pythagoras' Theorem is consolidated and trigonometry is introduced. More consideration and extension of displaying data and averages is considered before linking constructions to loci problems. Finally there is a review of any areas which require consolidation.

	Autumn Term 1	Autumn Term 2	Spring Term 1	Spring Term 2	Summer Term 1	Summer Term 2
Topic	- Expanding and Factorising -2D and 3D Shapes -Equations	-Graphs -Fractions	-Rounding and Bounds -Using Percentages -Angles	-Ratio and Proportion - Transformations, Similarity and Congruence	-Probability -Sequences -Pythagoras' Theorem and Trigonometry -Handling Data	-Constructions and Loci -GCSE Preparation
Core Knowledge/ Threshold Concept	Understand, reason, and solve problems involving: -Expanding one or more brackets and factorising expressions -Area and perimeter of 2D shapes including circles, volume and	Understand, reason, and solve problems involving: -Plotting linear graphs, interpreting gradients and y-intercepts -Review of calculations with fractions, mixed numbers and decimals	Understand, reason, and solve problems involving: - Rounding using decimal places and significant figures, upper and lower bounds and estimation	Understand, reason, and solve problems involving: -Review of ratio, best value and proportion problems -Identify congruent shapes, perform and describe different	Understand, reason, and solve problems involving: -Linking probability to relative frequency and expected outcomes, using tree diagrams and Venn diagrams to find probabilities	Understand, reason, and solve problems involving: --Constructing triangles, bisectors of lines and angles and a perpendicular to and from a line -Review of years 7-9

	surface area of prisms including cylinders, nets, plans and elevations -Solve equations and inequalities, representing inequalities, substitution, rearranging formulae		-Review of percentage multipliers, interest, financial problems, exchange rates and reverse percentages -Angles in parallel lines and polygons -Understanding and using Pythagoras' theorem	transformations, link enlargements to similar shapes	-Continue sequences, find the nth term and picture sequences -Use Pythagoras to find missing sides, solve problems involving Pythagoras' theorem, introduction to trigonometry -using averages and range to compare sets of data and more displaying data	
Assessment Opportunities:	Regular formative assessment in lessons including questioning, recall activities and self / peer assessment. Topic reviews completed after every unit and marked with personalised feedback.	Regular formative assessment in lessons including questioning, recall activities and self / peer assessment. Topic reviews completed after every unit and marked with personalised feedback. One 45-minute calculator assessment on all topics covered so far.	Regular formative assessment in lessons including questioning, recall activities and self / peer assessment. Topic reviews completed after every unit and marked with personalised feedback.	Regular formative assessment in lessons including questioning, recall activities and self / peer assessment. Topic reviews completed after every unit and marked with personalised feedback. Four 45-minute (two non calculator and two calculator) or two 90 minute assessments (one non calculator and one calculator) on all topics covered so far.	Regular formative assessment in lessons including questioning, recall activities and self / peer assessment. Topic reviews completed after every unit and marked with personalised feedback.	Regular formative assessment in lessons including questioning, recall activities and self / peer assessment. Topic reviews completed after every unit and marked with personalised feedback.

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Key Vocabulary	Formula		Interest Polygon			Perpendicular
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