Key Stage 3 Maths - The Aims of Our Curriculum

1. Enable children to retain and apply this essential knowledge. 2. Inspire children to become life-long learners. 3. Create a culture of high aspiration through challenging content and therefore pride in achievement. 4. Promote the spiritual, moral, social and cultural development of children, including fundamental British values of democracy, the rule of law, individual liberty, mutual respect and tolerance for those with different faiths and beliefs and for those without faith. 5. Provide opportunities for developing self-confidence, self-awareness, independence, creativity, respect and resilience in children. 6. Promote knowledge and understanding of how children can keep themselves safe and healthy. 7. Develop children's numeracy, literacy and oracy, including the sustained expansion of their vocabulary. 8. Promote reading as a life skill and enable our children to become life-long readers.

	Areas	Term 1	Term 2	Term 3
Year 7	Content	Place value and rounding Mental and Written Calculations Integers, powers and roots Fractions, decimals and percentages Processing and representing data, interpreting and discussing results - producing charts Equations, formulae, identities and expressions *Measures for lower set Y7* Transformations	Probability Processing and representing data, interpreting and discussing results – averages Ratio and proportion Geometrical reasoning – shape Geometrical reasoning - lines and angles Sequences, functions and graphs	Measures and area Measures - time and conversions Construction and loci Statistical enquiry
	Literacy link	Key vocabulary highlighted to pupils with an emphasis on using the correct terminology		
	Assessment	KS3 Autumn assessment	KS3 Spring assessment	KS3 Summer assessment

	Cross curricular links	Links made to other subject areas and real-life wherever possible

Key skills

Place value and rounding

1)   understand and use decimal notation and place value, and multiply and divide integers and decimals by 10, 100 and 1000.

Integers, powers and roots

2)   recognise and use multiples, factors, primes, common factors, highest common factors and lowest common multiples in simple cases.

3)   recognise the squares of numbers to 12 ⬚ 12, cubes to 5 x 5 x 5 and the corresponding roots.

Algebra

4)   simplify linear algebraic expressions by collecting like terms and multiply a single term over a bracket.

5)   substitute integers into simple formula.

6)   use linear expressions to describe the nth term of an arithmetic sequence and generate terms of a sequence when given a rule.

7)   generate points in all four quadrants and plot the graphs of simple linear functions, where y is given explicitly in terms of x.

8)   solve linear equations with one unknown and use the term inverse.

Processing and representing data; interpreting and discussing results

9)   construct and interpret graphs and diagrams to represent data including bar-line graphs, frequency diagrams for discrete and continuous data, pie charts and scatter diagrams.

10) find the mode, median and range, and the modal class for grouped data.

Mental and written calculations

11) use the order of operations including brackets, BIDMAS.

12) add and subtract using formal written methods, extending to fractions and decimals.

13) multiply and divide using formal written methods up to 4 digit by 2 digit whole numbers. Extend to decimals with up to 3 decimal places and know how to multiply and divide with all types of fractions.

Transformations

14) transform 2-D shapes by (i) reflecting in given mirror lines; (ii) rotating about a given point; (i) translating and (iv) enlarging using a scale factor.

Probability

15) recognise that probabilities can be written as fractions, decimals and percentages and use the probability scale from 0 to 1.

Fractions decimals percentages

16) recognise the equivalence of fractions, decimals and percentages and calculate both percentages and fractions of amounts.

Measures and area

17) know and use the formula for the area of 2D shapes: rectangle, triangle, parallelogram and trapezium.

18) convert one metric unit to another and know rough metric equivalents of imperial measures.

19) calculate the volume and surface area of simple 3D shapes.

Geometrical reasoning

20) identify parallel and perpendicular lines; know the sum of angles at a point, on a straight line and in a triangle and recognise vertically opposite angles.

Ratio and proportion

21) use ratio notation, simplify ratios and divide a quantity into two parts in a given ratio.

Construction and loci

22) measure and draw lines and angles (including reflex) accurately.

Year 8	Areas	Term 1	Term 2	Term 3
	Content	Place value and rounding	Probability	*Simultaneous equations for higher sets*
		**Mental and Written Calculations throughout the year	Processing and representing data, interpreting and discussing results – averages.	*Trigonometry for higher sets*
		Integers, powers and roots	*****Higher level topics for upper sets inc. cumulative frequency and box and whisker plots*	Measures and area
		***Standard form for higher sets		Construction and loci
		Fractions, decimals and percentages	Ratio and proportion	Measures - time and conversions
		Processing and representing data, interpreting and discussing results - producing charts	Geometrical reasoning – shape	Financial budgeting
		Equations, formulae, identities and expressions	Geometrical reasoning - lines and angles	
		Transformations	Sequences, functions and graphs	
		Pythagoras for upper sets/measures revision for lower set		
	Literacy link	Key vocabulary highlighted to pupils with an emphasis on using the correct terminology		
	Assessment	KS3 Autumn assessment	KS3 Spring assessment	KS3 Summer assessment

	Cross curricular links	Links made to other subject areas and real-life wherever possible	

Key skills

Written calculations

1)   understand the effects of multiplying and dividing by numbers between 0 and 1.

Place value and rounding

2)   round numbers to a given number of significant figures, including large and small numbers, and approximate answers to calculations.

Integers powers and roots

3)   find the prime factor decomposition of a number using index notation for small positive integer powers.

4)   know and use the index laws for multiplication and division of positive integer powers.

Algebra

5)   transform algebraic expressions by taking out common factors.

6)   plot the graphs of more complex linear functions, where y is given explicitly in terms of x and recognise that equations of the form $y = mx + c$ correspond to straight-line graphs.

7)   construct and solve linear equations with unknowns on either or both sides (with and without brackets).

8)   use systematic trial and improvement methods to find approximate solutions to equations.

Processing and representing data; interpreting and discussing results

9)   construct and interpret (i) line graphs; (ii) stem and leaf diagrams and (iii) be able to make statements regarding direct and indirect links in relation to scatter diagrams.

Transformations

10) transform 2-D shapes by reflecting in more difficult mirror lines such as diagonal ones; (ii) rotating increasingly difficult shapes about a given point; (i) translating using vectors and (iv) enlarging using a positive integer scale factor, given a centre of enlargement.

Geometrical reasoning

11) identify corresponding, alternate and interior angles in parallel lines.

12) explain how to calculate the sum of the interior and exterior angles of regular polygons.

13) know and use the three rules of bearings and make accurate scale drawings.

14) understand and apply Pythagoras' theorem when solving problems in 2-D.

15) visualise and use 2-D representations of 3-D objects; analyse 3-D shapes through 2-D projections, including plans & elevations.

Probability

16) use diagrams & tables to record systematically, all possible mutually exclusive outcomes for single events & for 2 successive events.

17) use tree diagrams to represent outcomes of two or more events and to calculate probabilities of combinations of independent events.

Fractions decimals percentages

18) order fractions by writing them with a common denominator or by converting them to decimals.

19) find the outcome of a given percentage increase or decrease (by multiplying by decimals).

Measures and area

20) calculate volumes and surface areas of shapes made from cuboids.

21) know the definition of a circle and the names of its parts and know and use the formula for the area and circumference of a circle.

22) convert between area measures (e.g. mm2 to cm2, cm2 to m2, and vice versa) and between volume measures (e.g. mm3 to cm3, cm3 to m3, and vice versa).