

### KS3 Curriculum Overview: Maths

**Rationale:** In year 7 we want to build on their skills from KS2 and extend their understanding further. Students will learn key skills in the 4 main areas, number, algebra, data and shape and then encouraged to apply these to help solve problems.

Term	Outline	Assessment	Home Learning	Resources	Knowledge/Skills End Points	Reading
Autumn 1	Sequences Understand and use algebraic notation Equality and equivalence	Autumn term 1 assessment (this will cover some or all of the topics listed in the knowledge /skills end points column)	FAR Sequences FAR Understand and use algebraic notation FAR Equality and equivalence	Full SOW in shared area	Describe and continue sequences in diagram and number forms, both linear and non-linear. Compare numerical and graphical forms. Use single function machines and series of two function machines with numbers, bar models and letters. Use and interpret algebraic notation. Understand and use inverse operations. Form and substitute into expressions, including to generate sequences. Represent functions graphically. Understand equality. Use fact families. Form and solve one step equations. Understand equivalence of algebraic expressions. Collect like terms.	<p><b>Key words:</b> Equality Equivalence Algebraic notation</p> <p><b>Reading strategy:</b> Go through key words and annotate worded problems.</p> <p><b>Books:</b> Algebra: Everything You Need To Know To Master Algebra! by Math Wizo  Algebra &amp; Geometry by Simon Basher</p>
Autumn 2	Place value and ordering integers and decimals Fraction, decimal and percentage equivalence	Autumn term 2 assessment (this will cover some or all of the topics listed in the knowledge /skills end points column)	FAR Place value and ordering integers and decimals FAR FDP 1 FAR FDP 2	Full SOW in shared area	Recognise and use integer place value up to one billion. Recognise and use decimal place value to at least hundredths. Work out intervals and use number lines. Compare and order numbers. Use ordered lists to find the range and the median of a set of numbers. Round numbers to positive powers of ten. Round numbers to one significant figure. Represent tenths and hundredths on diagrams and number lines. Interchange between fractions, decimals and percentages for multiples of one tenth and one quarter. Interpret pie charts. Equivalent fractions. Convert between other fractions, decimals and percentages. <b>ADDITIONAL HIGHER CONTENT</b> - Explore and use standard index form. Explore fractions above one. Convert multiples of one eighth to decimals and percentages.	<p><b>Key words:</b> Integer Billion Multiple</p> <p><b>Reading strategy:</b> Go through key words and annotate worded problems.</p> <p><b>Books:</b> Equal, Schmequal by V Kroll</p>

<p>Spring 1</p>	<p>Solving problems with addition and subtraction Solving problems with multiplication and division Fractions and percentages of amounts</p>	<p>Spring term 1 assessment (this will cover some or all of the topics listed in the knowledge /skills end points column)</p>	<p>FAR Addition and subtraction of decimals and whole numbers and money FAR Perimeter, time, frequency trees and standard form FAR areas and means FAR factors, multiples, calculations FAR fractions and percentages of amounts</p>	<p>Full SOW in shared area</p>	<p>Use mental and formal written methods of addition with integers and decimals, including choosing the most appropriate method. Solve problems in the context of perimeter, money and frequency trees and tables. Solve problems in the context of bar charts and line charts. Multiply by 10, 100 and 1000, 0.1 and 0.01, and convert metric units. Use mental and formal written methods of multiplication and division. Find the HCF and LCM of small numbers. Evaluate areas of triangles, rectangles and parallelograms. Find the mean of a set of numbers. Find simple fractions and percentages of amounts. Begin to use the order of operations. Work out simple fractions and percentages of amounts, with and without a calculator. <b>ADDITIONAL HIGHER CONTENT -</b> Explore addition of numbers given in standard form. Evaluate the area of a trapezium. Find the HCF and LCM of algebraic expressions. Find areas involving algebraic expressions. Use fractions greater than 1.</p>	<p><b>Key words:</b> Decimal Perimeter Amount</p> <p><b>Reading strategy:</b> Go through key words and annotate worded problems.</p> <p><b>Books:</b> Why do buses come in threes? By Jeremy Wyndham</p> <p>Perimeter, Area, and Volume: A Monster Book of Dimensions</p> <p>Multiplying Menace: the Revenge of Rumpelstiltskin by Pam Calvert</p>
<p>Spring 2</p>	<p>Operations and equations with directed number Addition and subtraction of fractions</p>	<p>Spring term 2 assessment (this will cover some or all of the topics listed in the knowledge /skills end points column)</p>	<p>FAR Directed numbers and BIDMAS FAR BIDMAS with negatives and solving equations FAR add and subtract fractions FAR equivalence mixed improper</p>	<p>Full SOW in shared area</p>	<p>Order directed numbers, both in contextualised and abstract situations. Revisit four operations to include directed number. Use a calculator with directed number. Solve two-step equations (with and without a calculator). Use the order of operations. Represent tenths and hundredths on diagrams and number lines. Convert mixed numbers and improper fractions. Add and subtract fractions with... the same denominator, one denominator a multiple of the other, different denominators. Add and subtract fractions and decimals e.g. <math>\frac{3}{4} + 0.2</math>. <b>ADDITIONAL HIGHER CONTENT -</b> Negative square roots. Higher powers.</p>	<p><b>Key words:</b> Directed Number Negative Improper</p> <p><b>Reading strategy:</b> Go through key words and annotate worded problems.</p> <p><b>Books:</b> Think of a number by Johnny Ball</p>
<p>Summer 1</p>	<p>Constructing, measuring and using geometric notation</p>	<p>Summer term 1 assessment (this will cover some or all of the</p>	<p>FAR Identifying lines and angles FAR Measuring angles and</p>	<p>Full SOW in shared area</p>	<p>Understand and use letting and labelling notation for lines and angles. Draw and measure lines and angles accurately. Classify angles. Identify and draw</p>	<p><b>Key words:</b> Notation Geometry Reasoning</p>

	<b>Developing geometric reasoning</b>	topics listed in the knowledge /skills end points column)	<b>identifying shapes</b> FAR Pie charts FAR Developing geometric reasoning		<b>parallel and perpendicular lines.</b> Recognise types of triangle, quadrilateral and other polygons. Construct triangles given SSS, SAS, ASA. Draw and interpret pie charts. Calculate and use angles at a point, angles on a straight line and vertically opposite angles. Calculate missing angles in triangles and quadrilaterals. <b>ADDITIONAL HIGHER CONTENT -</b> Understand and use parallel lines rules. Understand and use the sum of angles in any polygon. Derive simple proofs using angles rules.	<b>Reading strategy:</b> Go through key words and annotate worded problems.  <b>Books:</b> Understanding Charts and Graphs by Christine Taylor-Butler
<b>Summer 2</b>	<b>Developing number sense</b> <b>Sets and probability</b> <b>Prime numbers and proof</b>	<b>Summer term 2 assessment</b> <b>(this will cover some or all of the topics listed in the knowledge /skills end points column)</b>	<b>FAR Developing number sense</b> <b>FAR Sets and probability 1</b> <b>FAR Sets and probability 2</b> <b>FAR Prime numbers and proofs</b>	<b>Full SOW in shared area</b>	<b>Mental arithmetic strategies.</b> Use known facts to derive other facts. Evaluate an algebraic expression given a related fact. Use estimation. Understand and use set notation. Draw and use Venn diagrams. Understand and use the language of probability. Calculate the probability of a single event. Use the sum of probabilities of an event is 1. Recognise prime, square and triangle numbers. Express a number as a product of prime factors. Powers and roots. Make and test conjectures. Understand and use counterexamples. <b>ADDITIONAL HIGHER CONTENT -</b> Understand and use the complement of a set. Use prime factors to find HCFs and LCMs.	<b>Key words:</b> Arithmetic Prime Probability  <b>Reading strategy:</b> Go through key words and annotate worded problems.  <b>Books:</b> The Music of the Primes by Marcus du Sautoy