

<b>Curriculum content</b>
<p><b>Year 5</b>  Aut – Place Value; Addition and Subtraction; Multiplication and Division (Multiples, factors and powers of 10); Fractional understanding</p> <p>Spr – Multiplication and division; Adding and subtracting fractions; Decimals and Percentages; Perimeter and Area</p> <p>Sum – Multiplication of fractions; decimals; Properties of shape; Position and direction</p>
<p><b>Year 6</b>  Aut – Place Value; Addition; Subtraction; Multiplication; Division; Comparing and ordering fractions</p> <p>Spr – Ratio; Adding and Subtracting fractions; Decimals; Percentages; Perimeter area and volume</p> <p>Sum – Multiplying and dividing fractions; Statistics; Properties of Shape, Position and direction</p>
<p><b>Year 7</b>  Aut – Place Value; Addition, Subtraction, Multiplication and Division, Primes and proofs.</p> <p>Spr - Fractions, Dec &amp; Percentage Equivalence; Sequences; Understand &amp; use alg. notation; Equality &amp; Equivalence</p> <p>Sum –Constructing, measuring and using notation, Developing Geometric Reasoning; Sets and Probability.</p>
<p><b>Year 8</b>  Aut – Developing Number Sense; Directed Number; Fractions and Percentages of amounts; Add and subtract fractions</p> <p>Spr – Ratio and Scale; Multiplicative Change; Multiplying and dividing fractions; Working in the Cartesian Plane.</p> <p>Sum - Tables and probability; Brackets, equations and inequality; Sequences; Indices; Angles in parallel lines and polygons</p>
<p><b>Year 9</b>  Aut – Line symmetry and reflection; Fractions and Percentages; Three-dimensional shape; Constructions and congruency</p> <p>Spr – Number; Maths &amp; Money; Forming &amp; solving equations; Testing Conjecture; Deduction, Rotation &amp; translation</p> <p>Sum - Enlargement and Similarity; Solving ratio and proportion problems; Probability; The data handling cycle</p>
<p><b>Year 10</b>  Aut – Types of numbers and sequences; Indices and roots; Manipulating expressions; Collecting, representing and interpreting data</p> <p>Spr – Ratios and Fractions; Percentages and interest; Representing solutions and equations of inequalities; Angles and Bearing</p> <p>Sum - Straight line graphs; Rates; Simultaneous equations; Probability</p>
<p><b>Year 11</b>  Aut – Standard Index from; Working with circles; Congruence, similarity and enlargement; Vectors</p> <p>Spr – Expanding and factorising; Change of subject; Functions; Trigonometry; Pythagoras theorem</p> <p>Sum – Revision (Individual gap filling/ Past Papers/ Quizzes etc) EXAMS</p>

**Year 5**

	Term 1	Term 2	Term 3
Core Knowledge/ Skills and Concepts	<p><b><u>Place Value</u></b></p> <ul style="list-style-type: none"> <li>Roman numerals to 1,000</li> <li>Numbers to 10,000</li> <li>Numbers to 100,000</li> <li>Numbers to 1,000,000</li> <li>and write numbers to 1,000,000</li> <li>Powers of 10</li> <li>10/100/1,000/10,000/100,000 more or less</li> <li>Partition numbers to 1,000,000</li> <li>Number line to 1,000,000</li> <li>Compare and order numbers to 100,000</li> <li>Compare and order numbers to 1,000,000</li> <li>Round to the nearest 10, 100 or 1,000</li> <li>Round within 100,000</li> <li>Round within 1,000,000</li> </ul> <p><b><u>Addition and Subtraction</u></b></p> <ul style="list-style-type: none"> <li>Mental strategies</li> <li>Add whole numbers with more than four digits</li> <li>Subtract whole numbers with more than four digits</li> <li>Round to check answers</li> <li>Inverse operations (add and subtract)</li> <li>Multi-step addition and subtraction problems</li> </ul>	<p><b><u>Multiplication and division – Formal methods</u></b></p> <ul style="list-style-type: none"> <li>Multiply 2-digits by 1-digit</li> <li>Multiply 3-digits by 1-digit</li> <li>Multiply 4-digits by 1-digit</li> <li>Multiply 2-digits (area model)</li> <li>Multiply 2-digits by 2-digits</li> <li>Multiply 3-digits by 2-digits</li> <li>Multiply 4-digits by 2-digits (basic practice)</li> <li>Multiply 4-digits by 2-digits</li> <li>Divide 2-digits by 1-digit (1)</li> <li>Divide 2-digits by 1-digit (2)</li> <li>Divide 3-digits by 1-digit</li> <li>Divide 4-digits by 1-digit</li> <li>Divide with remainders</li> </ul> <p><b><u>Add and subtract fractions</u></b></p> <ul style="list-style-type: none"> <li>Add and subtract fractions same denominator</li> <li>Add fractions within 1</li> <li>Add fractions with total greater than 1</li> <li>Add to a mixed number</li> <li>Add two mixed numbers</li> <li>Subtract fractions</li> <li>Subtract from a mixed number</li> <li>Subtract from a mixed number - breaking the whole</li> </ul>	<p><b><u>Multiplying fractions</u></b></p> <ul style="list-style-type: none"> <li>Multiply unit fractions by an integer</li> <li>Multiply non-unit fractions by an integer</li> <li>Multiply mixed numbers by integers</li> <li>Calculate fractions of a quantity</li> <li>Fraction of an amount</li> <li>Using fractions as operators</li> <li>Fraction problem solving</li> </ul> <p><b><u>Decimals</u></b></p> <ul style="list-style-type: none"> <li>Adding decimals within 1</li> <li>Subtracting decimals within 1</li> <li>Complements to 1</li> <li>Adding decimals - crossing the whole</li> <li>Adding decimals (same number of d. p)</li> <li>Subtracting decimals (same number of d.p)</li> <li>Adding and subtracting decimals with the same number of d.p problem solving</li> <li>Adding decimals different number of d.p</li> <li>Subtracting decimals different number of dp</li> <li>Adding and subtracting decimals with a different number of d.p problem solving</li> <li>Adding &amp; subtracting wholes and decimals</li> <li>Decimal sequences</li> <li>Multiplying decimals by 10, 100 and 1,000</li> <li>Dividing decimals by 10, 100 and 1,000</li> </ul>

- Compare calculations
- Find missing numbers

### **Multiplication and Division**

- Multiples
- Common multiples
- Factors
- Common factors
- Prime numbers
- Square numbers
- Cube numbers
- Multiply by 10, 100 and 1,000
- Divide by 10, 100 and 1,000
- Multiples of 10, 100 and 1,000

### **Fractional Understanding**

- Find fractions equivalent to a unit fraction
- Find fractions equivalent to a non-unit fraction
- Recognise equivalent fractions
- Convert improper fractions to mixed numbers
- Convert mixed numbers to improper fractions
- Compare fractions less than 1
- Order fractions less than 1
- Compare and order fractions > than 1

- Subtract two mixed numbers

### **Decimals and Percentages**

- Decimals up to 2 d.p.
- Decimals as fractions (1)
- Decimals as fractions (2)
- Understand thousandths
- Thousandths as decimals
- Rounding decimals
- Order and compare decimals
- Understand percentages
- Percentages as fractions and decimals
- Equivalent F.D.P

### **Perimeter and area**

- Measure perimeter
- Perimeter on a grid
- Perimeter of rectangles
- Perimeter of rectilinear shapes
- Calculate perimeter
- Counting squares
- Area of rectangles
- Area of compound shapes
- Area of irregular shapes

### **Properties of shape**

- Identify angles
- Compare and order angles
- Measuring angles in degrees
- Measuring with a protractor (1)
- Measuring with a protractor (2)
- Drawing lines and angles accurately
- Drawing lines and angles accurately
- Calculating angles on a straight line
- Calculating angles around a point
- Triangles
- Quadrilaterals
- Calculating lengths and angles in shapes
- Regular and irregular polygons
- Reasoning about 3-D shapes

### **Position and direction**

- Describe position
- Draw on a grid
- Position in the first quadrant
- Translation
- Translation with coordinates
- Line of symmetry
- Complete a symmetric figure
- Reflection
- Reflection with coordinates

**Year 6**

	Term 1	Term 2	Term 3
Core Knowledge/ Skills and Concepts	<p><b><u>Place Value</u></b></p> <ul style="list-style-type: none"> <li>• Numbers to 1,000,000</li> <li>• Numbers to 10,000,000</li> <li>• Read and write numbers to 10,000,000</li> <li>• Powers of 10</li> <li>• Number line to 10,000,000</li> <li>• Compare and order any integers</li> <li>• Round any integer</li> <li>• Negative numbers</li> </ul>	<p><b><u>Ratio</u></b></p> <ul style="list-style-type: none"> <li>• Use ratio language</li> <li>• Ratio and fractions</li> <li>• Introducing the ratio symbol</li> <li>• Calculating ratio</li> <li>• Using scale factors</li> <li>• Calculating scale factors</li> <li>• Ratio and proportion problems</li> <li>• Ratio and proportion problems (2)</li> </ul>	<p><b><u>Multiplying and Dividing Fractions</u></b></p> <ul style="list-style-type: none"> <li>• Multiply fractions by integers</li> <li>• Multiply fractions by fractions</li> <li>• Divide a fraction by an integer</li> <li>• Divide any fraction by an integer</li> <li>• Mixed questions with fractions</li> <li>• Fraction of an amount</li> <li>• Fraction of an amount - find the whole</li> </ul>
	<p><b><u>Four Operations</u></b></p> <ul style="list-style-type: none"> <li>• Add and subtract integers</li> <li>• Common factors</li> <li>• Common multiples</li> <li>• Rules of divisibility</li> <li>• Primes to 100</li> <li>• Square and cube numbers</li> <li>• Multiply up to a 4-digit number by a 2-digit number</li> <li>• Solve problems with multiplication</li> <li>• Short division</li> <li>• Division using factors</li> <li>• Introduction to long division</li> <li>• Long division with remainders</li> <li>• Solve problems with division</li> <li>• Solve multi-step problems</li> </ul>	<p><b><u>Adding and Subtracting Fractions</u></b></p> <ul style="list-style-type: none"> <li>• Add and subtract simple fractions</li> <li>• Add and subtract any two fractions</li> <li>• Add mixed numbers</li> <li>• Subtract mixed numbers</li> <li>• Multi-step problems</li> </ul> <p><b><u>Decimals</u></b></p> <ul style="list-style-type: none"> <li>• Decimals up to 2 d.p.</li> <li>• Understand thousandths</li> <li>• Three decimal places</li> <li>• Multiply by 10, 100 and 1,000</li> <li>• Divide by 10, 100 and 1,000</li> <li>• Multiply decimals by integers</li> <li>• Divide decimals by integers</li> <li>• Division to solve problems</li> </ul>	<p><b><u>Statistics</u></b></p> <ul style="list-style-type: none"> <li>• Read and interpret line graphs</li> <li>• Draw line graphs</li> <li>• Use line graphs to solve problems</li> <li>• Circles</li> <li>• Read and interpret pie charts</li> <li>• Pie charts with percentages</li> <li>• Draw pie charts</li> <li>• The mean</li> </ul> <p><b><u>Properties of Shape</u></b></p> <ul style="list-style-type: none"> <li>• Measure with a protractor</li> <li>• Draw lines and angles accurately</li> <li>• Introduce angles</li> <li>• Angles on a straight line</li> </ul>

- Order of operations
- Mental calculations and estimation
- Reason from known facts

**Compare and order fractions**

- Equivalent fractions and simplifying
- Equivalent fractions on a number line
- Compare and order (denominator)
- Compare and order (numerator)

- Decimals as fractions
- Fractions to decimals (1)
- Fractions to decimals (2)

**Percentages**

- Understand percentages
- Fractions to percentages
- Equivalent FDP
- Order FDP
- Percentage of an amount (1)
- Percentage of an amount (2)
- Percentages - missing values

**Perimeter, Area and Volume**

- Shapes - same area
- Area and perimeter
- Area of a triangle (1)
- Area of a triangle (2)
- Area of a triangle (3)
- Area of a parallelogram
- What is volume?
- Volume - counting cubes
- Volume of a cuboid

- Angles around a point
- Calculate angles
- Vertically opposite angles
- Angles in a triangle
- Angles in a triangle - special cases
- Angles in a triangle - missing angles
- Angles in special quadrilaterals
- Angles in regular polygons
- Draw shapes accurately
- Draw nets of 3-D shapes

**Position and direction**

- The first quadrant
- Four quadrants
- Translations
- Reflections

**Year 7**

	Term 1	Term 2	Term 3
Core Knowledge/ Skills and Concepts	<p><b><u>Place Value</u></b></p> <ul style="list-style-type: none"> <li>Recognise the PV of any number in an integer up to 1 billion</li> <li>Understand and write integers up to 1 billion in words and figures</li> <li>Integers and decimals on a number line</li> <li>Round integers to the nearest power of 10</li> <li>Compare 2 numbers using = <math>\neq</math> <math>&lt;</math> <math>&gt;</math> <math>\leq</math> <math>\geq</math></li> <li>Order a list of integers</li> <li>Find range and median of a set of numbers</li> <li>Understand place value for decimals</li> <li>Compare and order any number up to 1 billion</li> </ul> <p><b><u>Addition &amp; subtraction</u></b></p> <ul style="list-style-type: none"> <li>Properties of addition and subtraction</li> <li>Mental strategies for addition and subtraction</li> <li>Use formal method for addition (including of decimals)</li> <li>Use formal method for subtraction (including of decimals)</li> <li>Select the most appropriate method: mental, written or calculator</li> <li>Solve problems in context of perimeter</li> <li>Solve financial maths problems</li> </ul> <p><b><u>Multiplication &amp; Division</u></b></p> <ul style="list-style-type: none"> <li>Properties of multiplication and division</li> <li>Understand and use factors</li> <li>Understand and use multiples</li> <li>Multiply and divide by powers of 10</li> <li>Covert metric units</li> <li>Use formal methods to multiply (including decimals)</li> <li>Use formal methods to divide (including decimals)</li> </ul>	<p><b><u>FDP Equivalences</u></b></p> <ul style="list-style-type: none"> <li>Represent tenths and hundreds (diagrams and number lines).</li> <li>See relationship between fractions and decimals</li> <li>Convert between fractions and decimals – tenths and hundredths</li> <li>Understand the meaning of percentage using a hundred square</li> <li>Convert between simple fractions, decimals and percentages</li> <li>Use and interpret pie charts</li> </ul> <p><b><u>Sequences</u></b></p> <ul style="list-style-type: none"> <li>Describe and continue sequences</li> <li>Predict and continue sequences</li> <li>Sequences in a table and graphically</li> <li>Linear and non-linear sequences</li> <li>Continue linear sequences</li> <li>Continue non-linear sequences</li> <li>Explain the term to term rule</li> </ul> <p><b><u>Understand and use algebraic notation</u></b></p> <ul style="list-style-type: none"> <li>Given a numerical input, find the output of a single function machine</li> <li>Use inverse operations to find the input given the output</li> <li>Use diagrams and letters to generalise number operations</li> <li>Use diagrams and letters with single function machines</li> <li>Find the function machine given a simple expression</li> <li>Substitute values into a single operation expression</li> <li>Find numerical inputs and outputs for a series of two function machines</li> <li>Use diagrams and letters with a series of two function machines</li> </ul>	<p><b><u>Construction &amp; measuring</u></b></p> <ul style="list-style-type: none"> <li>Understand and use letter and labelling conventions including those for geometric figures</li> <li>Draw and measure line segments including geometric figures</li> <li>Understand angles as measure of turn</li> <li>Classify angles</li> <li>Draw and measure angles up to <math>180^\circ</math>e</li> <li>Draw and measure angles between <math>180^\circ</math> and <math>360^\circ</math></li> <li>Identify perpendicular and parallel lines</li> <li>Recognise types of angles</li> <li>Recognise types of quadrilaterals</li> </ul> <p><b><u>Geometric Reasoning</u></b></p> <ul style="list-style-type: none"> <li>Understand and use the sum of angles at a point</li> <li>Understand and use the sum of angles on a straight line</li> <li>Understand and use the equality of vertically opposite angles</li> <li>Know and apply the sum of all angles in a triangle</li> <li>Know and apply the sum of all angles in a quadrilateral</li> <li>Solve angle problems using properties of triangles and quadrilaterals</li> </ul> <p><b><u>Sets and probability</u></b></p> <ul style="list-style-type: none"> <li>Generate sample spaces for single events</li> <li>Calculate the probability of a single event</li> <li>Understand and use the probability scale</li> <li>Know that the sum of probabilities of all possible outcomes is 1</li> </ul>

<p><b><u>Prime Numbers and Proof</u></b></p> <ul style="list-style-type: none"> <li>• Find and use multiples</li> <li>• Identify factors of numbers and expressions</li> <li>• Recognise and identify prime numbers</li> <li>• Recognise square and triangular numbers</li> <li>• Find common factors of a set of numbers including HCF</li> <li>• Find common multiples of a set of numbers including LCM</li> <li>• Write a number as a product of its prime factors</li> <li>• Make and test conjectures</li> <li>• Use counterexamples to disprove a conjecture</li> </ul>	<ul style="list-style-type: none"> <li>• Find the function machine given a two-step expression</li> <li>• Substitute values into two-step expressions</li> <li>• Generate sequences given an algebraic rule</li> <li>• Represent one- and two-step functions graphically</li> </ul> <p><b><u>Equality and equivalence</u></b></p> <ul style="list-style-type: none"> <li>• Understand the meaning of equality</li> <li>• Understand and use fact families, numerically and algebraically</li> <li>• Solve one-step linear equations involving +/- using inverse operations</li> <li>• Solve one-step linear equations involving x/+ using inverse operation</li> <li>• Understand the meaning of like and unlike terms</li> <li>• Understand the meaning of equivalence</li> <li>• Simplify algebraic expressions by collecting like terms, using the <math>\equiv</math> symbol</li> </ul>	
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**Year 8**

	<b>Term 1</b>	<b>Term 2</b>	<b>Term 3</b>
<i>Core Knowledge/ Skills and Concepts</i>	<p><b><u>Developing Number Sense</u></b></p> <ul style="list-style-type: none"> <li>Know and use mental strategies for addition and subtraction</li> <li>Know and use mental strategies for multiplication and division</li> <li>Know and use mental strategies for decimals</li> <li>Know and use mental strategies for fractions</li> <li>Use factors to simplify calculations</li> <li>Use known number facts to derive other facts</li> <li>Use known algebraic facts to derive other facts</li> <li>Know when to use a mental method, written method or calculator.</li> </ul> <p><b><u>Operations and equations with directed Number</u></b></p> <ul style="list-style-type: none"> <li>Understand and use representations of directed numbers</li> <li>Order directed numbers using lines and appropriate symbols</li> <li>Perform calculations that cross zero</li> <li>Add directed numbers</li> <li>Subtract directed numbers</li> <li>Multiply and divide directed numbers</li> <li>Use a calculator for directed numbers</li> <li>Evaluate algebraic expression with directed number</li> <li>Introduce 2 step equations</li> </ul> <p><b><u>Fractions and percentages of amounts</u></b></p> <ul style="list-style-type: none"> <li>Find a fraction of a given amount</li> <li>Use a given fraction to find the whole and/or other fractions</li> </ul>	<p><b><u>Ratio and Scale</u></b></p> <ul style="list-style-type: none"> <li>Understand the meaning and representation of ratio</li> <li>Understand and use ratio notation</li> <li>Solve problems involving ration of the form 1:n or n:1</li> <li>Solve proportional problems involving the ratio m:n</li> <li>Divide a value into a given ratio</li> <li>Express ratio in their simplest integer form</li> <li>Compare ratio and related fractions</li> <li>Understand <math>\pi</math> as the ratio between diameter and circumference</li> </ul> <p><b><u>Multiplicative change</u></b></p> <ul style="list-style-type: none"> <li>Solve problems involving direct proportion</li> <li>Explore conversion graphs</li> <li>Convert between currencies</li> <li>Explore relationship between similar shapes</li> <li>Understand scale factors as multiplicative representations</li> <li>Draw and interpret scale diagrams</li> <li>Interpret maps using scale factors and ratios</li> </ul> <p><b><u>Multiplying and dividing fractions</u></b></p> <ul style="list-style-type: none"> <li>Represent multiplication of fractions</li> <li>Multiply a fraction by an integer</li> <li>Find the product of a pair of unit fractions</li> <li>Find the product of a pair of any fractions</li> <li>Divide an integer by a fraction</li> <li>Divide a fraction by a unit fraction</li> <li>Understand and use the reciprocal</li> <li>Divide any pairs of fractions</li> </ul>	<p><b><u>Tables and probability</u></b></p> <ul style="list-style-type: none"> <li>Construct sample spaces for 1 or more events</li> <li>Find probabilities from sample spaces</li> <li>Find probabilities from two-way tables</li> <li>Find probabilities from Venn diagrams</li> </ul> <p><b><u>Brackets, Equations and Inequalities</u></b></p> <ul style="list-style-type: none"> <li>Form algebraic expressions</li> <li>Use directed numbers with algebra</li> <li>Multiply out of a single bracket</li> <li>Factorise into a single bracket</li> <li>Expand multiple single brackets and simplify</li> <li>Form and solve equations with brackets</li> <li>Understand and solve simple inequalities</li> </ul> <p><b><u>Sequences</u></b></p> <ul style="list-style-type: none"> <li>Generate sequences given a rule in words</li> <li>Generate sequences given a simple algebraic rule</li> <li>Generate sequences given a complex algebraic rule</li> </ul> <p><b><u>Indices</u></b></p> <ul style="list-style-type: none"> <li>Adding and subtracting expressions with indices</li> <li>Simplifying algebraic expressions by multiple indices</li> <li>Simplify algebraic expressions by dividing indices</li> <li>Using the addition law for indices</li> <li>Using the addition and subtraction law for indices</li> </ul>

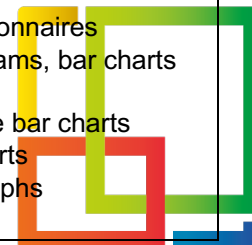




<ul style="list-style-type: none"> <li>• Find a percentage of a given amount using mental methods</li> <li>• Find a percentage of a given amount using a calculator</li> </ul> <p><b><u>Addition and Subtraction of fractions</u></b></p> <ul style="list-style-type: none"> <li>• Understand representations of fractions</li> <li>• Convert between mixed numbers and improper fractions</li> <li>• Add and subtract fractions</li> <li>• Add and subtract fractions from integers expressing the answer as a single fraction</li> <li>• Understand and use equivalent fractions</li> <li>• Add and subtract fractions where denominators share a common multiple</li> <li>• Add and subtract fractions with any denominator</li> <li>• Add and subtract improper fractions and mixed numbers</li> </ul>	<p><b><u>Working in the Cartesian Plane</u></b></p> <ul style="list-style-type: none"> <li>• Work with coordinates in all four quadrants</li> <li>• Identify and draw lines that are parallel to the axes</li> <li>• Recognise and use the line <math>y = x</math></li> <li>• Recognise and use the lines of the form <math>y = kx</math></li> <li>• Link <math>y = kx</math> to direct proportion problems</li> <li>• Recognise and use lines of the form <math>y = x+a</math></li> <li>• Explore graphs with negative gradients (<math>y = -kx</math>, <math>y = a - x</math>, <math>x + y = a</math>)</li> <li>• Link graphs to linear sequences</li> <li>• Plot graphs of the form <math>y = mx + c</math></li> </ul>	<p><b><u>Angles in parallel lines and polygons</u></b></p> <ul style="list-style-type: none"> <li>• Understand and use basic angles rules and notation</li> <li>• Investigate angles between parallel lines and the transversal</li> <li>• Identify and calculate with co-interior, alternate and corresponding angles</li> <li>• Solve complex problems with parallel lines</li> <li>• Construction triangles and special quadrilaterals</li> <li>• Investigate the properties of special quadrilaterals</li> <li>• Identify and calculate with sides and angles in special quadrilaterals</li> <li>• Understand and use the sum of exterior angles and polygons</li> <li>• Calculate and use the sum of the interior angles in any polygon</li> <li>• Calculate missing interior angles in regular polygons</li> </ul>
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**Year 9**

	<b>Term 1</b>	<b>Term 2</b>	<b>Term 3</b>
<b>Core Knowledge/ Skills and Concepts</b>	<p><b><u>Line symmetry and reflection</u></b></p> <ul style="list-style-type: none"> <li>Recognise line of symmetry</li> <li>Reflect a shape in a horizontal or vertical line (shapes touching the line and not touching the line)</li> <li>Reflect a shape in a diagonal line (shapes touching the line and not touching the line)</li> </ul> <p><b><u>Fractions and percentages</u></b></p> <ul style="list-style-type: none"> <li>Convert fluently between key fractions, decimals and percentages</li> <li>Calculate key fractions, decimals and percentages of an amount without calculators</li> <li>Calculate key fractions, decimals and percentages of an amount with calculators</li> <li>Convert between decimals and percentages greater than 100%</li> <li>Percentage decrease with a multiplier</li> <li>Calculate percentage increase and decrease using a multiplier</li> <li>Express one number as a fraction or a percentage of another without a calculator</li> <li>Express one number as a fraction or a percentage of another with a calculator</li> <li>Work with percentage change</li> <li>Choose appropriate methods to solve percentage problems</li> </ul> <p><b><u>Three dimensional Shapes</u></b></p> <ul style="list-style-type: none"> <li>Know names of 2-D and 3-D shapes</li> <li>Recognise prisms</li> <li>Accurate nets of cuboids and 3-D shapes</li> <li>Sketch and recognise nets of cuboids and other 3-D shapes</li> <li>Plans and elevations</li> <li>Find area of 2-D shapes</li> </ul>	<p><b><u>Numbers</u></b></p> <ul style="list-style-type: none"> <li>Integers, real and rational numbers</li> <li>Work with directed number</li> <li>Solve problems with integers</li> <li>Solve problems with decimals</li> <li>Highest Common factor and Lowest Common Multiple</li> <li>Adding and subtracting fractions</li> <li>Multiplying and dividing fractions</li> <li>Solve problems with fractions</li> <li>Numbers in standard form</li> </ul> <p><b><u>Maths and Money</u></b></p> <ul style="list-style-type: none"> <li>Solve problems with bills and bank statements</li> <li>Calculate simple interest</li> <li>Calculate compound interest</li> <li>Solve problems with VAT</li> <li>Calculate wages and taxes</li> <li>Solve problems with exchange rates</li> <li>Solve unit pricing problems</li> </ul> <p><b><u>Forming and Solving Equations</u></b></p> <ul style="list-style-type: none"> <li>Solve one and two-step equations and inequalities</li> <li>Solve one and two-step equations and inequalities with brackets</li> <li>Inequalities with negative numbers</li> <li>Solve equations with unknowns on both sides</li> <li>Equations and inequalities in other mathematical concepts</li> <li>Formulae and Equations</li> <li>Rearrange formulae (1 step)</li> <li>Rearrange formulae (2 step)</li> </ul>	<p><b><u>Enlargement and Similarity</u></b></p> <ul style="list-style-type: none"> <li>Recognise enlargement and similarity</li> <li>Enlarge a shape by a positive integer scale factor</li> <li>Enlarge a shape by a positive integer scale factor from a point</li> <li>Enlarge a shape by a positive fractional scale factor</li> <li>Work out missing sides and angles in a pair of given similar shapes</li> </ul> <p><b><u>Solve ratio and Proportion problems</u></b></p> <ul style="list-style-type: none"> <li>Solve problems with direct proportion</li> <li>Direct proportion and conversion graphs</li> <li>Solve problems with inverse proportion</li> <li>Solve ratio problems given the whole or part</li> <li>Solve 'best buy' problems</li> </ul> <p><b><u>Probability</u></b></p> <ul style="list-style-type: none"> <li>Single event probability</li> <li>Relative frequency</li> <li>Expected outcomes</li> <li>Independent events</li> <li>Use diagrams to work out probabilities</li> </ul> <p><b><u>The data handling cycle</u></b></p> <ul style="list-style-type: none"> <li>Set up a statistical enquiry</li> <li>Design and criticise questionnaires</li> <li>Draw and interpret pictograms, bar charts and vertical line charts</li> <li>Draw and interpret multiple bar charts</li> <li>Draw and interpret pie charts</li> <li>Draw and interpret line graphs</li> </ul>



<ul style="list-style-type: none"> <li>• Surface area of cube and cuboids</li> <li>• Surface area of triangular prisms</li> <li>• Surface area of cylinder</li> <li>• Volume of cubes and cuboids</li> <li>• Volume of other 3-D shapes</li> </ul> <p><b><u>Constructions and congruency</u></b></p> <ul style="list-style-type: none"> <li>• Draw and measure angles</li> <li>• Construct and interpret scale drawings</li> <li>• Locus of distance from a point</li> <li>• Locus of distance from a straight line/shape</li> <li>• Locus equidistant from 2 points</li> <li>• Construct a perpendicular bisector</li> <li>• Construct a perpendicular from a point</li> <li>• Construct a perpendicular to a point</li> <li>• Locus of distance from two lines</li> <li>• Construct an angle bisector</li> <li>• Construct triangle from given information</li> <li>• Identify congruent figures</li> <li>• Explore congruent triangles</li> <li>• Identify congruent triangles</li> </ul>	<p><b><u>Testing conjecture</u></b></p> <ul style="list-style-type: none"> <li>• Factors, multiples and primes</li> <li>• True or false</li> <li>• Always, sometimes, Never</li> <li>• Show that</li> <li>• Conjecture about number</li> <li>• Expand a pair of binomials</li> <li>• Conjectures with algebra</li> </ul> <p><b><u>Deduction</u></b></p> <ul style="list-style-type: none"> <li>• Angles in parallel lines</li> <li>• Solve angle problems (using chains of reasoning)</li> <li>• Angle problems with algebra</li> <li>• Conjecture with angles</li> <li>• Conjecture with shapes</li> </ul> <p><b><u>Rotation and Translation</u></b></p> <ul style="list-style-type: none"> <li>• Identify the order of rotational symmetry of a shape</li> <li>• Compare and contrast rotational symmetry with lines of symmetry</li> <li>• Rotate a shape about a point on a shape</li> <li>• Rotate a shape about a point not on a shape</li> <li>• Translate points and shapes by a given vector</li> <li>• Compare rotation and reflection of shapes</li> </ul>	<ul style="list-style-type: none"> <li>• Choose the most appropriate diagram for given set of data</li> <li>• Represent and interpret grouped quantitative data</li> <li>• Find and interpret the range</li> <li>• Compare distributions using charts</li> <li>• Identify misleading graphs</li> </ul>
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**Year 10**

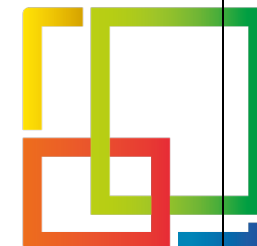
Core Knowledge/ Skills and Concepts

	Term 1	Term 2	Term 3
	<p><b><u>Types of Number and sequence</u></b></p> <ul style="list-style-type: none"> <li>Understand the difference between factors and multiples</li> <li>Understand primes and express a number as a product of its prime factors</li> <li>Find the HCF and LCM of a set of numbers</li> <li>Describe and continue arithmetic and geometric sequences</li> <li>Explore other sequences</li> <li>Find the rule for the nth term of a linear sequence</li> </ul> <p><b><u>Indices and Roots</u></b></p> <ul style="list-style-type: none"> <li>Square and cube numbers</li> <li>Calculate higher powers and roots</li> <li>Powers of ten and standard form</li> <li>The addition and subtraction rules for indices</li> <li>Understand and use the power zero and negative indices</li> <li>Work with powers of powers</li> <li>Calculate with numbers in standard form</li> </ul> <p><b><u>Manipulating Expressions</u></b></p> <ul style="list-style-type: none"> <li>Simplify algebraic expressions</li> <li>Use identities</li> <li>Form and solve equations and inequalities with fractions</li> <li>Represent numbers algebraically</li> <li>Algebraic arguments and proof</li> </ul> <p><b><u>Collecting, Representing and Interpreting Data</u></b></p> <ul style="list-style-type: none"> <li>Understand populations and samples</li> <li>Primary and secondary data</li> </ul>	<p><b><u>Ratios and Fractions</u></b></p> <ul style="list-style-type: none"> <li>Compare quantities using a ratio</li> <li>Link ratios and fractions</li> <li>Share in a ratio (given total or one part)</li> <li>Use ratios and fractions to make comparisons</li> <li>Link ratios and graphs</li> <li>Solve problems with currency conversion</li> <li>Link ratios and scales</li> <li>Use &amp; interpret ratios of the form 1 : n &amp; n : 1</li> <li>Solve best buy problems</li> <li>Combine a set of ratios</li> <li>Link ratio and algebra</li> </ul> <p><b><u>Percentages and Interest</u></b></p> <ul style="list-style-type: none"> <li>Convert and compare fractions, decimals and percentages</li> <li>Work out percentages of amounts (with and without a calculator)</li> <li>Increase and decrease by a given percentage</li> <li>Express one number as a percentage of another</li> <li>Calculate simple and compound interest</li> <li>Repeated percentage change</li> <li>Find the original value after a percentage change</li> <li>Solve problems involving growth and decay</li> <li>Solve problems involving percentages, ratios and fractions</li> </ul> <p><b><u>Representing solutions and equations of inequalities</u></b></p> <ul style="list-style-type: none"> <li>Understand the meaning of a solution</li> <li>Form and solve one-step and two-step equations</li> </ul>	<p><b><u>Straight Line Graphs</u></b></p> <ul style="list-style-type: none"> <li>Equations of lines parallel to the axis and <math>y = x</math> and <math>y = -x</math></li> <li>Using tables of values</li> <li>Compare gradients</li> <li>Compare intercepts</li> <li>Understand and use <math>y = mx + c</math></li> <li>Write an equation in the form <math>y = mx + c</math></li> <li>Find the equation of a straight line from a graph</li> <li>Interpret gradient and intercept of real life graphs</li> </ul> <p><b><u>Rates</u></b></p> <ul style="list-style-type: none"> <li>Solve speed, distance and time problems without a calculator</li> <li>Solve speed, distance and time problems with a calculator</li> <li>Use distance/time graphs</li> <li>Solve problems with density, mass and volume</li> <li>Solve problems and their graphs</li> <li>Rates of change and their units</li> </ul> <p><b><u>Simultaneous Equations</u></b></p> <ul style="list-style-type: none"> <li>Understand that equations can have more than one solution</li> <li>Determine whether a given <math>(x, y)</math> is a solution to a pair of linear simultaneous equations</li> <li>Solve a pair of linear simultaneous equations by substituting a know variable</li> <li>Solve a pair of linear simultaneous equations by substituting an expression</li> <li>Solve a pair of linear simultaneous equations using graphs</li> </ul>

<ul style="list-style-type: none"> <li>• Construct and interpret frequency tables and frequency polygons</li> <li>• Construct and interpret two-way tables</li> <li>• Construct and interpret line and bar charts (including composite bar charts)</li> <li>• Construct and interpret pie charts</li> <li>• Criticise charts and graphs</li> <li>• Find and interpret averages from a list</li> <li>• Find and interpret averages from a table</li> <li>• Construct and interpret time series graphs</li> <li>• Construct and interpret stem-and-leaf diagrams</li> <li>• Compare distributions using charts and measures</li> <li>• Construct and interpret scatter graphs</li> <li>• Draw and use a line of best fit</li> <li>• Understand extrapolation</li> </ul>	<ul style="list-style-type: none"> <li>• Form and solve one-step and two-step inequalities</li> <li>• Show solutions to inequalities on a number line</li> <li>• Interpret representation on number lines as inequalities</li> <li>• Draw straight line graphs</li> <li>• Find solutions to equations using straight line graphs</li> <li>• Form and solve equations with unknowns on both sides</li> <li>• Form and solve inequalities with unknowns on both sides</li> <li>• Form and solve more complex equations and inequalities</li> </ul> <p><b><u>Angles and Bearings</u></b></p> <ul style="list-style-type: none"> <li>• Use cardinal directions and related angles</li> <li>• Draw and interpret scale diagrams</li> <li>• Understand and represent bearings</li> <li>• Measure and read bearings</li> <li>• Make scale drawings using bearings</li> <li>• Calculate bearings using angle rules</li> <li>• Solve bearings problems using Pythagoras and trigonometry</li> </ul>	<ul style="list-style-type: none"> <li>• Solve a pair of linear simultaneous equations by subtracting equations</li> <li>• Solve a pair of linear simultaneous equations by adding equations</li> <li>• Use a given equation to derive related facts</li> <li>• Solve a pair of linear simultaneous equations by adjusting one equation</li> <li>• Solve a pair of linear simultaneous equations by adjusting both equations</li> <li>• Form a pair of linear simultaneous equations from given information</li> <li>• Form and solve pair of linear simultaneous equations from given information</li> </ul> <p><b><u>Probability</u></b></p> <ul style="list-style-type: none"> <li>• Know how to add, subtract and multiply fractions</li> <li>• Find probabilities using equally likely outcomes</li> <li>• Use the property that probabilities sum to 1</li> <li>• Using experimental data to estimate probabilities</li> <li>• Find probabilities from tables, Venn diagrams and frequency trees</li> <li>• Construct and interpret sample spaces for more than one event</li> <li>• Calculate probability with independent events</li> <li>• Use tree diagrams for independent events</li> <li>• Use tree diagrams for dependent events</li> </ul>
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**Year 11**

	Term 1	Term 2	Term 3
Core Knowledge/ Skills and Concepts	<p><b><u>Standard Index Form</u></b></p> <ul style="list-style-type: none"> <li>Investigate positive powers of 10</li> <li>Work with numbers greater than 1 in standard form</li> <li>Investigate negative powers of 10</li> <li>Work with numbers between 0 and 1 in standard form</li> <li>Compare and order numbers in standard form</li> <li>Mentally calculate numbers in standard form</li> <li>Add and subtract numbers in standard form</li> <li>Multiply numbers in standard form</li> <li>Use a calculator to work with numbers in standard form</li> </ul> <p><b><u>Working with Circles</u></b></p> <ul style="list-style-type: none"> <li>Recognise and label parts of a circle</li> <li>Calculate fractional parts of a circle</li> <li>Calculate the length of an arc</li> <li>Calculate the area of a sector</li> <li>Understand and use the volume of a cylinder and cone</li> <li>Understand and use the volume of a sphere</li> <li>Understand and use the surface area of a sphere</li> <li>Understand and use the surface area of a cylinder and cone</li> </ul>	<p><b><u>Expanding and Factorising</u></b></p> <ul style="list-style-type: none"> <li>Expand and factorise with a single bracket (R)</li> <li>Expand binomials (R)</li> <li>Factorise quadratic expressions</li> <li>Solve equations equal to 0</li> <li>Solve quadratic equations by factorisation</li> </ul> <p><b><u>Changing the subject</u></b></p> <ul style="list-style-type: none"> <li>Solve linear equations</li> <li>Solve inequalities</li> <li>Form and solve equations and inequalities in the context of shape</li> <li>Change the subject of a simple formula</li> <li>Change the subject of a known formula</li> <li>Change the subject of a complex formula</li> </ul> <p><b><u>Functions</u></b></p> <ul style="list-style-type: none"> <li>Use function machines</li> <li>Substitution into expressions and formulae</li> <li>Use function notation</li> <li>Graphs of quadratic functions</li> </ul> <p><b><u>Trigonometry</u></b></p> <ul style="list-style-type: none"> <li>Explore ratio in similar right-angled triangles</li> <li>Work fluently with the hypotenuse, opposite and adjacent sides</li> <li>Use the tangent ratio to find missing side lengths</li> <li>Use the sine and cosine ratio to find missing side lengths</li> <li>Use the sine, cosine and tangent to find missing side lengths</li> <li>Use the sine, cosine and tangent to find missing angles</li> </ul>	<p><b><u>Revision</u></b></p> <ul style="list-style-type: none"> <li>Past exam paper practice</li> <li>Individual "Gap filling" revision</li> <li>"Tough topic" recap</li> <li>Quizzes</li> </ul> <p><b><u>EXAMS</u></b></p> <ul style="list-style-type: none"> <li>DATES TBC – Autumn term 2023</li> <li>Paper 1 (Calculator)</li> <li>Paper 2 (Non-Calculator)</li> <li>Paper 3 (Non-Calculator)</li> </ul>



### **Congruency, Similarity and Enlargement**

- Enlarge a shape by a positive integer scale factor
- Enlarge a shape by a fractional scale factor
- Identify similar shapes
  
- Work out missing sides and angles in a given pair of similar shapes
- Use parallel line rules to work out missing angles
- Establish a pair of triangles are similar
- Understand the difference between congruence and similarity
- Understand and use conditions for congruent triangles

### **Vectors**

- Understand and represent vectors
- Use and read vector notation
- Draw and understand vectors multiplied by a scalar
- Draw and understand addition of vectors
- Draw and understand addition and subtraction of vectors

----- **MOCK EXAMS** -----

- Calculate sides in right-angled triangles using Pythagoras' Theorem
- Select the appropriate method to solve right-angled triangle problems
- Work with key angles in right-angled triangles

### **Pythagoras' Theorem**

- Squares and square roots
- Identify the hypotenuse of a right-angle triangle
- Determine whether a triangle is right-angled
- Calculate the hypotenuse of a right-angled triangle
- Calculate missing sides in right-angled triangles
- Use Pythagoras' theorem on coordinate axis
- Explore proofs of Pythagoras' theorem