

# **Our Maths Curriculum**



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#### Key Characteristics of a Mathematician

- Can understand the big ideas and can link these together within mathematics.
- Use a lot of different skills when doing my mathematics.
- Knows and says number facts and knows the number system.
- Know and have a go at solving problems in different lessons, including new or unusual problems.
- Can think about things on my own and persevere when I'm given challenges.
- Knows that making mistakes is an important part of learning.
- To explain my working out and why and how different methods work.
- Can answer written and mental calculations.
- Can use lots of mathematical vocabulary.
- Tries there best and enjoys Maths lessons.



#### **Big Ideas**

#### • Know and use numbers

This concept involves understanding the number system and how they are used in a wide variety of mathematical ways.

#### • Add and subtract

This concept involves understanding both the concepts and processes of addition and subtraction.

#### • Multiply and divide

This concept involves understanding both the concepts and processes of multiplication and division.

#### • Use fractions

This concept involves understanding the concept of part and whole and ways of calculating using it.

#### • Understand the properties of shapes

This concept involves recognising the names and properties of geometric shapes and angles.

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#### • Describe position, direction and movement

This concept involves recognising various types of mathematical movements.

#### • Use measures

This concept involves becoming familiar with a range of measures, devices used for measuring and calculations.

#### • Use statistics

This concept involves interpreting, manipulating and presenting data in various ways.

#### • Use algebra

This concept involves recognising mathematical properties and relationships using symbolic representations.



#### Breadth of Study Key Stage One and Two

Key Stage One	Key Stage Two
<ul> <li>Count and calculate in a range of practical contexts.</li> <li>Use and apply mathematics in everyday activities and across the curriculum.</li> </ul>	• Count and calculate in increasingly complex con- texts, including those that cannot be experienced first hand.
Repeat key concepts in many different practical ways to secure retention.	• Rigorously apply mathematical knowledge across the curriculum, in particular in science, technology and computing.
• Explore numbers and place value up to at least 100.	• Deepen conceptual understanding of mathematics by frequent repetition and extension of key concepts in a range of engaging and purposeful contexts.
• Add and subtract using mental and formal written methods in practical contexts.	• Explore numbers and place value so as to read and understand the value of all numbers.
• Multiply and divide using mental and formal written methods in practical contexts.	• Add and subtract using efficient mental and formal written methods.
• Explore the properties of shapes.	• Multiply and divide using efficient mental and for- mal written methods.



Use language to describe position, direction and movement.	• Use the properties of shapes and angles in increas- ingly complex and practical contexts, including in construction and engineering contexts.
<ul> <li>Use and apply in practical contexts a range of measures, including time.</li> </ul>	• Describe position, direction and movement in in- creasingly precise ways.
Handle data in practical contexts.	• Use and apply measures to increasingly complex contexts.
	Gather, organise and interrogate data.
	<ul> <li>Understand the practical value of using algebra.</li> </ul>



#### **Milestones Early Years**



Number Sense	Subitises up to three or four objects quickly. Identifies first and second. Matches numeral to quantity up to five. Can place numeral cards in order up to five.	Subitises to five in familiar arrange- ments. Identifies first to fifth. Can place numbers on a blank num- ber line to ten.	Subitises to six in familiar and non- familiar arrangements, describing how they see the number. Identifies first to tenth. Can place numbers on a blank number line to 20. Can place numbers on a vertical number line (which includes zero and negative numbers).
Pattern	Recognises, describes and builds A B repeating pattern, e.g. A B; A B; A B. Fills in the missing element of an A B pattern. Duplicates an A B pattern when the model is close by.	Recognises, describes, and builds more complex patterns, e.g. A A B, A B C and A B B C. Fills in the missing elements of a pattern. Extends a pattern if it ends with a whole unit within the pattern, e.g. Red, Red, Blue ; Red, Red, Blue ; Red, Blue (where Red, Red, Blue is a whole unit).	Can translate patterns by using new materials or actions to repre- sent a pattern, e.g. blue button, red button, yellow button might become cube, circle, triangle. Recognises core units of a pattern, e.g. cube, circle, triangle is a unit within a pattern, followed by an- other unit of cube, circle, triangle. Is able to extend a pattern even if it ends in a partial unit, e.g. cube, cir- cle, triangle; cube, circle.



			Creates their own patterns.
Number operations 1.	Finds answers to 'result unknown' problems up to five, by counting with objects, e.g. 'You have two books and get one more. How many are there altogether?' (Counts out two, then one and then counts all three.) Matches sets by lining them up with one-to-one correspondence. Knows a whole is bigger than the parts but may not accurately quantify each.	Finds answers to 'result unknown' problems up to ten, by counting with objects, e.g. 'You have six toys and are given three more. How many are there altogether?' (Counts out six, then three and then counts all nine.) Solves subtraction problems by sep- arating objects, e.g. 'You have six balls and you give Mustafa two. How many balls do you have left?' (Counts out six, then takes away two and counts the remaining four.) Compares by counting with groups up to five. Quickly names parts of a set up to six.	Counts on from the first set, rather than counting the whole, e.g. 5; 6, 7, 8. Solves 'change unknown' prob- lems, e.g. 'You have six sweets. Taylor gives you some more so now you have eight. How many did he give you?' When subtracting, counts back from first number, keeping track of counts. Compares larger sets by counting and says which has more or less. Can compose and decompose numbers to ten.
Number Operations 2.	Shares by dealing out a group of objects between two people.	Makes small equal groups (up to six) in the context of sharing fairly.	Solves sharing problems using con- crete objects up to 20 and between two and five people.



	Engages in rhythmic counting, emphasising alternate numbers, e.g. one, two, one, two.	Skips one-to-one counting, saying 'two, four, six', missing out, or count- ing internally, the other numbers.	Solves small number multiplication problems by sorting objects into small groups.
Finger Gnosis	Uses fingers during fine motor skills activities. Takes part in finger rhymes.	Identifies different fingers especially in songs like ' <b>Peter Pointer'</b> and ' <b>Baby Small'</b> . Matches finger symbols to collec- tions of objects.	Shows numbers with fingers. Follows lines on a maze with differ- ent fingers.
Sets	Recognises and identifies objects that are alike, e.g. red objects. Sorts by using a single attribute, e.g. 'I picked out all the heart- shaped pieces.'	Uses binary sorting: dividing a col- lection into two groups, ones with a specific attribute and ones without. Comes up with their own criteria for sorting.	Uses multiple set sorting by focusing on different attributes, e.g. red gloves and mittens can become large red gloves and large red mit- tens. Compares and orders sets by using specifically mathematical attributes, e.g. the set that has the most (quantity) and the set that has the the biggest objects (magnitude).
Measurement	Identifies length, weight and ca- pacity as attributes. Explores differences in size, weight and length.	Makes comparisons between objects relative to size, length, weight and capacity. Physically aligns two objects to see which is longer.	Describes measurable attributes of objects. Enjoys predicting and discussing comparisons of attributes.



	Can compare the capacity of two containers by pouring from one to the other. Understands recent past and fu- ture. Is beginning to anticipate times of the day, e.g. lunch time, home time. Describes length or height meas- urements as big or small.	Packs cubes into a box in an organ- ised way. Can order up to five objects by length. Uses 'than' to compare objects. Remembers the sequence of events in a book or in real life. Uses non-standard measuring tools.	<ul> <li>Focuses on fairness and accuracy.</li> <li>Uses a variety of measuring tools.</li> <li>Compares the length of two objects by using a third object (a measuring tool).</li> <li>Estimates how many cubes will fill a space.</li> <li>Sequences and orders events.</li> <li>Is beginning to use a timer and a calendar.</li> <li>Uses an increasing amount of measurement vocabulary.</li> <li>Is beginning to use some indirect comparison, e.g. turning a circumference into a length using string.</li> </ul>
Shapes	Uses names of 2D shapes as la- bels, with no reference to attrib- utes. May physically rotate shapes to match a prototype shape.	Is beginning to use attributes to de- scribe shapes. Recognises corners.	Uses attributes to identify some unusual shapes. May recognise a right-angled trian- gle.



	Uses everyday language for 3D shapes, e.g. ball or block. Is beginning to see shapes in the environment, e.g. a house is seen as a square with a triangle roof. Uses blocks to build structures.	Describes 3D shapes using 2D names, e.g. a cuboid is called a rec- tangle. Recognises edges and sides. Can make a picture using 2D shapes. Can build structures with arches, roofs and gaps for windows.	Recognises most familiar shapes and typical examples of other shapes, e.g. a hexagon or a rhom- bus. Ignores the orientation of shapes when identifying them. Describes the faces on a 3D shape. Names some common 3D shapes, e.g. a sphere or cube. Puts 2D shapes together to make part of a picture, e.g. triangles and a circle to make a flower. Builds more complex structures, substituting combinations for an- other shape.
Spatial Relationships	Responds to and uses some spa- tial language. Walks different routes and points out landmarks.	Describes the position of an object. Follows/gives verbal directions to find something using spatial lan- guage. Follows a simple map.	Describes where an object is, using spatial language. Follows a sequence of directions. Plans and discusses different routes.



	Uses trial and error to move and rotate objects to fit spaces.		Rotates and flips objects to make shapes fit, using spatial reasoning. Enjoys making simple maps.
Data	Recognises and identifies objects that are alike. Sorts by using a single attribute, e.g. colour, shape or function. Interprets a realia graph by saying which has more or less.	Sorts objects by a single attribute and is able to say how many. Interprets a realia graph and picto- gram with some adult guidance.	Sorts objects for a reason. Creates realia graphs and picto- grams. Can say which has more and which less on a bar graph. Makes labels for a graph.



#### Milestone Key Stage One and Key Stage Two

	N	Ailestone 1 (Years 1 and 2)	Milestone 2 (Years 3 and 4)	Milestone 3 (Years 5 and 6)
Know and use numbers This concept involves understanding the number system and how they are used in a wide variety of mathematical ways.	Counting	<ul> <li>Count to and across 100, forwards and backwards, beginning with 0 or 1, or from any given nuber.</li> <li>Count, read and write numbers 100 in numerals.</li> <li>Given a number, identify one more and one less.</li> <li>Count in steps of 2, 3, 5 and 10 from 0 or 1 and in tens from any number, forward and backward.</li> </ul>	<ul> <li>Count in multiples of 2 to 9, 25, 50, 100 and 1000.</li> <li>Find 1000 more or less than a given number.</li> <li>Count backwards through zero include negative numbers.</li> </ul>	<ul> <li>Read numbers up to 10 000 000.</li> <li>Use negative numbers in context and calculate intervals across zero.</li> </ul>



Representing	<ul> <li>Identify, represent and estimate numbers using different representations, including the number line.</li> <li>Read and write numbers initially from 1 to 20 and then to at least 100 in numerals and in words.</li> </ul>	<ul> <li>Identify, represent and estimate numbers using different representations.</li> <li>Read Roman numerals to 100 (I to C) and know that over time, the numeral system changed to include the concept of zero and place value.</li> </ul>	<ul> <li>Write numbers up to 10 000 000</li> <li>Read Roman numerals to 1000 (M) and recognise years written in Roman numerals.</li> </ul>
Comparing	<ul> <li>Use the language of: equal to, more than, less than (fewer), most and least.</li> <li>Compare and order numbers from 0 up to 100; use &lt;, &gt; and = signs.</li> </ul>	• Order and compare numbers beyond 1000.	• Order and compare numbers up to 10 000 000.
Place value	<ul> <li>Recognise the place value of each digit in a two-digit number (tens, ones).</li> </ul>	<ul> <li>Recognise the place value of each digit in a four-digit number. (thousands, hundreds, tens, and ones)</li> <li>Round any number to the nearest 10, 100 or 1000.</li> </ul>	<ul> <li>Round any whole number to a required degree of accuracy.</li> <li>Determine the value of each digit in any number.</li> </ul>
Solving problems	<ul> <li>Use place value and number facts to solve problems.</li> </ul>	<ul> <li>Solve number and practical problems with increasingly large positive numbers.</li> </ul>	<ul> <li>Solve number and practical problems.</li> </ul>



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Add and subtract This concept involves understanding both the concepts and processes of addition and subtraction	Complexity	<ul> <li>Solve one-step problems with addition and subtraction:</li> <li>Using concrete objects and pictorial representations including those involving numbers, quantities and measures.</li> <li>Using the addition (+), subtraction (-) and equals (=) signs.</li> <li>Applying their increasing knowledge of mental and written methods.</li> </ul>	<ul> <li>Solve two-step addition and subtraction problems in contexts, deciding which operations and methods to use and why.</li> </ul>	• Solve multi-step addition and subtraction problems in contexts, deciding which operations and methods to use and why.
	Methods	<ul> <li>Add and subtract numbers using concrete objects, pictorial representations, and mentally, including:</li> <li>One-digit and two-digit numbers to 20, including zero.</li> <li>A two-digit number and ones.</li> <li>A two-digit number and tens.</li> <li>Two two-digit numbers.</li> <li>Adding three one-digit numbers.</li> <li>Show that addition of two numbers can be done in any order</li> </ul>	<ul> <li>Add and subtract numbers with up to 4 digits using the formal writ- ten methods of columnar addition and subtraction where appropriate.</li> <li>Add and subtract numbers men- tally, including:</li> <li>A three-digit number and ones.</li> <li>A three-digit number and tens.</li> <li>A three-digit number and tens.</li> <li>A three-digit number and hundreds.</li> </ul>	<ul> <li>Add and subtract whole numbers with more than 4 dig- its, including using formal writ- ten methods. (columnar addi- tion and subtraction)</li> <li>Add and subtract numbers mentally with increasingly large numbers.</li> </ul>

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		(commutative) and subtraction of one number from another cannot.		
	Checking	• Recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems.	• Estimate and use inverse operations to check answers to a calculation.	• Use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy.
	Using number facts	<ul> <li>Represent and use number bonds and related subtraction facts within 20.</li> <li>Recall and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100.</li> </ul>	• Solve problems, including missing number problems, using number facts, place value and more complex addition and subtraction.	• Add and subtract negative integers.
Multiply and divide This concept involves understanding both the concepts and processes of	Complexity	<ul> <li>Solve one-step (two-step at greater depth) problems involving multiplication and division.</li> </ul>	• Solve problems involving multiplying and dividing, including using the distributive law to multiply two digit numbers by one digit, integer scaling problems and harder correspondence problems (such as n objects are connected to m objects).	• Solve problems involving ad- dition, subtraction, multiplica- tion and division and a combi- nation of these, including un- derstanding the meaning of the equals sign.



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multiplication and division.				<ul> <li>Solve problems involving multiplication and division, in- cluding scaling by simple frac- tions and problems involving simple rates.</li> <li>Use knowledge of the order of operations to carry out calculations involving the four operations.</li> </ul>
	Methods	<ul> <li>Calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication (x), division (÷) and equals (=) signs.</li> <li>Show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot.</li> <li>Solve problems involving multiplication and division using mental methods.</li> </ul>	<ul> <li>Multiply two-digit and three-digit numbers by a one-digit number using formal written layout.</li> <li>Use place value, known and de- rived facts to multiply and divide mentally, including: multiplying by 0 and 1; dividing by 1; multiplying together three numbers.</li> <li>Recognise and use factor pairs and commutativity in mental calculations.</li> </ul>	<ul> <li>Multiply multi-digit numbers up to 4 digits by a two-digit whole number using the for- mal written method of long multiplication.</li> <li>Divide numbers up to 4 digits by a two-digit whole number using the formal written method of long division, and interpret remainders as whole number remainders, fractions, or by rounding, as appropriate for the context.</li> <li>Divide numbers up to 4 digits by a two-digit number using the formal written method of</li> </ul>

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			<ul> <li>short division where appropriate, interpreting remainders according to the context.</li> <li>Perform mental calculations, including with mixed operations and large numbers.</li> </ul>
Checking	<ul> <li>Use known multiplication facts to check the accuracy of calculations.</li> </ul>	• Recognise and use the inverse relationship between multiplication and division and use this to check calculations and solve missing number problems.	• Estimate and use inverse operations and rounding to check answers to a calculation.
Using multiplication and division facts	<ul> <li>Recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables.</li> <li>Recognise odd and even numbers.</li> <li>Use multiplication and division facts to solve problems.</li> </ul>	• Recall multiplication and division facts for multiplication tables up to 12 x 12.	<ul> <li>Identify common factors, common multiples and prime numbers.</li> <li>Establish whether a number up to 100 is prime and recall prime numbers up to 19.</li> <li>Multiply and divide whole numbers and those involving decimals by 10, 100 and 1000.</li> <li>Recognise and use square numbers and cube numbers,</li> </ul>



				<ul> <li>and the notation for squared</li> <li>(2) and cubed (3).</li> <li>Solve problems involving multiplication and division including using knowledge of factors and multiples, squares and cubes.</li> </ul>
Fractions This concept involves understanding the concept of part and whole and ways of calculating using it.	Recognising fractions	<ul> <li>Recognise, find and name a half as one of two equal parts of an ob- ject, shape or quantity.</li> <li>Recognise, find and name a quar- ter as one of four equal parts of an object, shape or quantity.</li> <li>Recognise, find, name and write fractions 1/2, 1/4, 2/4 and 3/4 of a length, shape, set of objects or quantity.</li> </ul>	<ul> <li>Recognise, find and write fractions of a discrete set of objects: unit fractions and non-unit fractions with small denominators.</li> <li>Recognise and use fractions as numbers: unit fractions and non-unit fractions with small denominators.</li> <li>Round decimals with one decimal place to the nearest whole number.</li> <li>Compare numbers with the same number of decimal places up to two decimal places.</li> <li>Count up and down in tenths; recognise that tenths arise from dividing an object into 10 equal parts</li> </ul>	<ul> <li>Compare and order fractions whose denominators are all multiples of the same number.</li> <li>Compare and order fractions, including fractions &gt; 1.</li> <li>Recognise mixed numbers and improper fractions and convert from one form to the other and write mathematical statements &gt; 1 as a mixed number.</li> <li>Round decimals with two decimal places to the nearest whole number and to one decimal place.</li> </ul>



		<ul> <li>and in dividing one-digit numbers or quantities by 10.</li> <li>Count up and down in hun- dredths; recognise that hundredths arise when dividing an object by one hundred and dividing tenths</li> </ul>	<ul> <li>Read, write, order and compare numbers with up to three decimal places.</li> <li>Identify the value of each digit in numbers given to three decimal places.</li> </ul>
		<ul> <li>by ten.</li> <li>Compare and order unit fractions and fractions with the same denominators.</li> </ul>	<ul> <li>Solve problems involving number up to three decimal places.</li> <li>Recognise the percent symbol (%) and understand that percent relates to 'number of parts per hundred', and write percentages as a fraction with denominator 100, and as a decimal.</li> </ul>
Equivalence	• Recognise the equivalence of 2/4 and 1/2.	<ul> <li>Recognise and show, using diagrams, families of common equivalent fractions.</li> <li>Recognise and write decimal equivalents of any number of tenths or hundredths.</li> <li>Recognise and write decimal equivalents to 1/4, 1/2, 3/4.</li> </ul>	<ul> <li>Identify, name and write equivalent fractions of a given fraction, represented visually, including tenths and hun- dredths.</li> <li>Read and write decimal numbers as fractions.</li> <li>Recognise and use thou- sandths and relate them to</li> </ul>



			<ul> <li>tenths, hundredths and decimal equivalents.</li> <li>Use common factors to simplify fractions; use common multiples to express fractions in the same denomination.</li> <li>Associate a fraction with division and calculate decimal fraction equivalents.</li> <li>Recall and use equivalences between simple fractions, decimals and percentages, including in different contexts.</li> </ul>
Solving problems	• Write simple fractions for example, 1/2 of 6 = 3.	<ul> <li>Add and subtract fractions with the same denominator within one whole.</li> <li>Solve problems involving in- creasingly harder fractions.</li> <li>Calculate quantities and fractions to divide quantities (including non- unit fractions where the answer is a whole number).</li> <li>Add and subtract fractions with the same denominator.</li> </ul>	<ul> <li>Add and subtract fractions with the same denominator and denominators that are multiples of the same number.</li> <li>Add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent frac- tions.</li> </ul>







			<ul> <li>found by using integer multiplication and division facts.</li> <li>Solve problems involving the calculation of percentages and the use of percentages for comparison.</li> <li>Solve problems involving similar shapes where the scale factor is known or can be found.</li> <li>Solve problems involving unequal sharing and grouping using knowledge of fractions and multiples.</li> </ul>
Understand the properties of shapes This concept involves recognising the names and properties of geometric shapes and angles.	<ul> <li>Recognise and name common 2D and 3D shapes.</li> <li>Identify and describe the properties of 2-D shapes, including the number of sides and line symmetry in a vertical line.</li> <li>Identify and describe the properties of 3-D shapes, including the number of edges, vertices and faces.</li> </ul>	<ul> <li>Draw 2-D shapes and make 3-D shapes using modelling materials; recognise 3-D shapes in different orientations and describe them.</li> <li>Recognise angles as a property of shape or a description of a turn.</li> <li>Identify right angles, recognise that two right angles make a half-turn, three make three quarters of a turn and four a complete turn;</li> </ul>	<ul> <li>Identify 3-D shapes, including cubes and other cuboids, from 2-D representations.</li> <li>Know angles are measured in degrees: estimate and compare acute, obtuse and reflex angles.</li> <li>Draw given angles, and measure them in degrees (°).</li> <li>Identify:</li> </ul>



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			<ul> <li>Illustrate and name parts of circles, including radius, diameter and circumference and know that the diameter is twice the radius.</li> <li>Recognise angles where they meet at a point, are on a straight line, or are vertically opposite and find missing angles.</li> </ul>
Describe position, direction and movement This concept involves recognising various types of mathematical movements.	<ul> <li>Describe position, direction and movement, including whole, half, quarter and three-quarter turns.</li> <li>Order and arrange combinations of mathematical objects in patterns and sequences.</li> <li>Use mathematical vocabulary to describe position, direction and movement, including movement in a straight line and distinguishing between rotation as a turn and in terms of right angles for quar- ter, half and three-quarter turns (clockwise and anti-clockwise).</li> </ul>	<ul> <li>Recognise angles as a property of shape and as an amount of ro- tation.</li> <li>Identify right angles, recognise that 2 right angles make a half turn and 4 make a whole turn.</li> <li>Identify angles that are greater than a right angle.</li> <li>Describe positions on a 2-D grid as coordinates in the first quad- rant.</li> <li>Describe movements between positions as translations of a given unit to the left/right and up/down.</li> </ul>	<ul> <li>Identify, describe and represent the position of a shape following a reflection or translation, using the appropriate language, and know that the shape has not changed.</li> <li>Describe positions on the full coordinate grid. (all four quadrants)</li> <li>Draw and translate simple shapes on the coordinate plane, and reflect them in the axes.</li> </ul>



		• Plot specified points and draw sides to complete a given polygon.	
Use measures This concept involves becoming familiar with a range of measures, devices used for measuring and calculations.	<ul> <li>Compare, describe and solve practical problems for: <ul> <li>lengths and heights</li> <li>mass/weight</li> <li>capacity and volume</li> <li>time.</li> <li>Measure and begin to record:</li> <li>lengths and heights</li> <li>mass/weight</li> <li>capacity and volume</li> <li>time (hours, minutes, seconds).</li> </ul> </li> <li>Recognise and know the value of different denominations of coins and notes.</li> <li>Sequence events in chronological order using language.</li> <li>Recognise and use language relating to dates, including days of the week, weeks, months and years.</li> </ul>	<ul> <li>Measure, compare, add and subtract: lengths (m/cm/mm); mass (kg/g); volume/capacity (l/ml).</li> <li>Measure the perimeter of simple 2-D shapes.</li> <li>Add and subtract amounts of money to give change. (£ and p)</li> <li>Tell and write the time from an analogue clock, including using Roman numerals from I to XII, and 12-hour and 24-hour clocks.</li> <li>Estimate and read time with increasing accuracy to the nearest minute; record and compare time in terms of seconds, minutes and hours; use appropriate vocabulary.</li> <li>Know the number of seconds in a minute and the number of days in each month, year and leap year.</li> <li>Compare durations of events.</li> </ul>	<ul> <li>Convert between different units of metric measure.</li> <li>Understand and use approxi- mate equivalences between metric units and common im- perial units such as inches, pounds and pints.</li> <li>Measure and calculate the perimeter of composite recti- linear shapes in centimetres and metres.</li> <li>Calculate and compare the area of rectangles (includ- ing squares), and including us- ing standard units, square centimetres (cm2) and square metres (m2) and estimate the area of irregular shapes.</li> <li>Estimate volume and capac- ity.</li> </ul>



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• Tell the time to the hour and half past the hour and draw the hands on a clock face to show these times.

• Use standard units to estimate and measure length/height (m/cm); mass (kg/g); temperature (°C); capacity (litres/ml) to the nearest appropriate unit, using rulers, scales, thermometers and measuring vessels.

• Compare and order lengths, mass, volume/capacity and record the results using >, < and =.

• Recognise and use symbols for pounds (£) and pence (p); combine amounts to make a particular value.

• Find different combinations of coins that equal the same amounts of money.

• Solve simple problems in a practical context involving addition and subtraction of money of the same unit, including giving change.

• Convert between different units of measure. (for example, kilometre to metre; hour to minute)

• Measure and calculate the perimeter of a rectilinear figure (including squares) in centimetres and metres.

• Find the area of rectilinear shapes by counting squares.

• Estimate, compare and calculate different measures, including money in pounds and pence.

• Read, write and convert time between analogue and digital 12and 24-hour clocks.

• Solve problems involving converting from hours to minutes; minutes to seconds; years to months; weeks to days. • Solve problems involving converting between units of time.

• Use all four operations to solve problems involving measure (for example, length, mass, volume, money) using decimal notation, including scaling.

• Solve problems involving the calculation and conversion of units of measure, using decimal notation up to three decimal places where appropriate.

• Use, read, write and convert between standard units, converting measurements of length, mass, volume and time from a smaller unit of measure to a larger unit, and vice versa, using decimal notation up to three decimal places.

• Convert between miles and kilometres.



	<ul> <li>Compare and sequence intervals of time.</li> <li>Tell and write the time to five minutes, including quarter past/to the hour and draw the hands on a clock face to show these times.</li> <li>Know the number of minutes in an hour and the number of hours in a day.</li> </ul>		<ul> <li>Recognise that shapes with the same areas can have dif- ferent perimeters and vice versa.</li> <li>Recognise when it is possi- ble to use formulae for area and volume of shapes.</li> <li>Calculate the area of paral- lelograms and triangles.</li> <li>Calculate, estimate and com- pare volume of cubes and cu- boids using standard units, in- cluding cubic centimetres (cm3) and cubic metres (m3), and extending to other units.</li> </ul>
Use statistics This concept involves interpreting, manipulating and presenting data in various ways.	<ul> <li>Interpret and construct simple pictograms, tally charts, block diagrams and simple tables.</li> <li>Ask and answer simple questions by counting the number of objects in each category and sorting the categories by quantity.</li> </ul>	<ul> <li>Interpret and present data using bar charts, pictograms and tables.</li> <li>Solve one-step and two-step questions (for example, 'How many more?' and 'How many fewer?') using information pre- sented in scaled bar charts, picto- grams and tables.</li> </ul>	<ul> <li>Solve comparison, sum and difference problems using in- formation presented in a line graph.</li> <li>Complete, read and interpret information in tables, includ- ing timetables.</li> </ul>



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	• Ask and answer questions about totalling and comparing categorical data.	<ul> <li>Interpret and present discrete and continuous data using appro- priate graphical methods, including bar charts and time graphs.</li> <li>Solve comparison, sum and dif- ference problems using infor- mation presented in bar charts, pictograms, tables and other graphs.</li> </ul>	<ul> <li>Interpret and construct pie charts and line graphs and use these to solve problems.</li> <li>Calculate and interpret the mean as an average.</li> </ul>
Use algebra This concept involves recognising mathematical properties and relationships using symbolic representations.	• Solve addition and subtraction problems involving missing numbers.	<ul> <li>Solve addition and subtraction, multiplication and division prob- lems that involve missing num- bers.</li> </ul>	<ul> <li>Use simple formulae.</li> <li>Generate and describe linear number sequences.</li> <li>Express missing number problems algebraically.</li> <li>Find pairs of numbers that satisfy an equation with two unknowns.</li> <li>Enumerate possibilities of combinations of two variables.</li> </ul>

#### Maths Progression across Year Groups and Milestones (taken from Whiterose Maths)



Place Value	Year One	Year Two	Year Three
Counting	<ul> <li>count to and across 100, forwards and backwards, beginning with 0 or 1, or from any given number</li> <li>Count numbers to 100 in nu- merals; count in multiples of twos, fives and tens</li> </ul>	• count in steps of 2, 3, and 5 from 0, and in tens from any number, forward and back- ward	• count from 0 in multiples of 4, 8, 50 and 100; find 10 or 100 more or less than a given number
Represent	<ul> <li>identify and represent numbers using objects and pictorial representations</li> <li>read and write numbers to 100 in numerals</li> <li>read and write numbers from 1 to 20 in numerals and words</li> </ul>	<ul> <li>read and write numbers to at least 100 in numerals and in words</li> <li>identify, represent, and esti- mate numbers using different representations, including the number line</li> </ul>	<ul> <li>identify, represent and estimate numbers using</li> <li>Different representations</li> <li>read and write numbers up to 1000 in numerals and in words</li> </ul>
Use and compare	• given a number, identify one more and one less	<ul> <li>recognise the place value of each digit in a two-digit num- ber (tens, ones)</li> <li>compare and order numbers from 0 up to 100; use &lt;, &gt; and = signs</li> </ul>	<ul> <li>recognise the place value of each digit in a three-digit num- ber (hundreds, tens, ones)</li> <li>compare and order numbers up to 1000</li> </ul>
Problems/rounding		• use place value and number facts to solve problems	<ul> <li>solve number problems and</li> </ul>



		practical problems involving
		these ideas

Place Value	Year Four	Year Five	Year Six
Counting	<ul> <li>count in multiples of 6, 7, 9, 25 and 1000</li> <li>count backwards through zero to include negative numbers</li> </ul>	<ul> <li>count forwards or backwards in steps of powers of 10 for any given number up to 1 000 000</li> <li>count forwards and back- wards with positive and nega- tive whole numbers, including through zero</li> </ul>	
Represent	<ul> <li>identify, represent and estimate numbers using different representations</li> <li>read Roman numerals to 100 (I to C) and know that over time, the numeral system changed to include the concept of zero and place value</li> </ul>	<ul> <li>read, write, (order and compare) numbers to at least 1</li> <li>000 000 and determine the value of each digit</li> <li>read Roman numerals to 1000 (M) and recognise years written in Roman numerals</li> <li>Note – In the WRM schemes, negative numbers are introduced in Year 5</li> </ul>	• read, write, (order and com- pare) numbers up to 10,000, 000 and determine the value of each digit



Use and compare	<ul> <li>find 1000 more or less than a given number</li> <li>recognise the place value of each digit in a four-digit number (thousands, hundreds, tens, and ones)</li> <li>order and compare numbers beyond 1000</li> </ul>	• (read, write) order and com- pare numbers to at least 1 000 000 and determine the value of each digit	• (read, write), order and com- pare numbers up to 10 000 000 and determine the value of each digit
Problems/rounding	<ul> <li>round any number to the nearest 10, 100 or 1000</li> <li>solve number and practical problems that involve all of the above and with increasingly large positive numbers</li> </ul>	<ul> <li>interpret negative numbers in context</li> <li>round any number up to 1 000 000 to the nearest 10, 100, 1000, 10 000 and 100 000</li> <li>solve number problems and practical problems that involve all of the above</li> </ul>	<ul> <li>round any whole number to a required degree of accuracy</li> <li>use negative numbers in context, and calculate intervals across zero</li> <li>solve number and practical problems that involve all of the above</li> </ul>
Addition and Subtraction	Year One	Year Two	Year Three
Calculations	• add and subtract one-digit and twodigit numbers to 20, including zero	<ul> <li>add and subtract numbers using concrete objects, picto- rial representations, and men- tally, including:</li> <li>a two-digit number and ones</li> <li>a two-digit number and tens</li> </ul>	<ul> <li>add and subtract numbers mentally, including:</li> <li>&gt; a three-digit number and ones</li> <li>&gt; a three-digit number and tens</li> <li>&gt; a three-digit number and bundrada</li> </ul>



		➤ adding three onedigit num- bers	• add and subtract numbers with up to three digits, using formal written methods of co- lumnar addition and subtrac- tion
Problems	• solve one-step problems that involve addition and subtrac- tion, using concrete objects and pictorial representations, and missing number problems such as $7 = \chi - 9$	<ul> <li>solve problems with addition and subtraction:</li> <li>&gt; using concrete objects and pictorial representations, in- cluding those involving num- bers, quantities and measures</li> <li>&gt; applying their increasing knowledge of mental and writ- ten methods</li> </ul>	• solve problems, including missing number problems, us- ing number facts, place value, and more complex addition and subtraction

Addition and Subtraction	Year Four	Year Five	Year Six
Calculations	• add and subtract numbers with up to 4 digits using the formal written methods of co- lumnar addition and subtrac- tion where appropriate	<ul> <li>add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction)</li> <li>add and subtract numbers mentally with increasingly</li> </ul>	<ul> <li>perform mental calculations, including with mixed opera- tions and large numbers</li> <li>use their knowledge of the order of operations to carry out calculations involving the four operations</li> </ul>
		large numbers	
Problems	<ul> <li>solve addition and subtrac-</li> </ul>	<ul> <li>solve addition and subtrac-</li> </ul>	<ul> <li>solve addition and subtrac-</li> </ul>
	tion twostep problems in con-	tion multistep problems in con-	tion multistep problems in con-



texts, deciding which opera-	texts, deciding which opera-	texts, deciding which opera-
tions and methods to use and	tions and methods to use and	tions and methods to use and
why	why	why
	• solve problems involving ad-	-
	dition, subtraction, multiplica-	
	tion and division and a combi-	
	nation of these, including un-	
	derstanding the meaning of	
	the equals sign	

Multiplication and Division	Year One	Year Two	Year Three
Recall/Use		<ul> <li>recall and use multiplication</li> </ul>	<ul> <li>recall and use multiplication</li> </ul>
		and division facts for the 2, 5	and division facts for the 3, 4
		and 10 multiplication tables,	and 8 multiplication tables
		including recognising odd and	
		even numbers	
		<ul> <li>show that multiplication of</li> </ul>	
		two numbers can be done in	
		any order (commutative) and	
		division of one number by an-	
		other cannot	
Calculations		calculate mathematical state-	<ul> <li>write and calculate mathe-</li> </ul>
		ments for multiplication and di-	matical statements for multipli-
		vision within the multiplication	cation and division using the
		tables and write them using	multiplication tables that they



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		the multiplication (x), division	know, including for two-digit
		(÷) and equals (=) signs	numbers times one-digit num-
			bers, using mental and pro-
			gressing to formal written
			methods
Problems	<ul> <li>solve one-step problems in-</li> </ul>	<ul> <li>solve problems involving</li> </ul>	<ul> <li>solve problems, including</li> </ul>
	volving multiplication and divi-	multiplication and division, us-	missing number problems, in-
	sion, by calculating the answer	ing materials, arrays, repeated	volving multiplication and divi-
	using concrete objects, picto-	addition, mental methods, and	sion, including positive integer
	rial representations and arrays	multiplication and division	scaling problems and corre-
	with the support of the teacher	facts, including problems in	spondence problems in which
		contexts	n objects are connected to m
			objects
Combined			•

Multiplication and Division	Year Four	Year Five	Year Six
Recall/Use	<ul> <li>recall multiplication and divi-</li> </ul>	• identify multiples and factors,	<ul> <li>identify common factors,</li> </ul>
	sion facts for multiplication ta-	including finding all factor	common multiples and prime
	bles up to $12 \times 12$	pairs of a number, and com-	numbers
	<ul> <li>use place value, known and derived facts to multiply and divide mentally, including: mul- tiplying by 0 and 1; dividing by 1; multiplying together three numbers</li> <li>recognise and use factor pairs and commutativity in</li> </ul>	<ul> <li>mon factors of two numbers</li> <li>know and use the vocabulary of prime numbers, prime factors and composite (nonprime) numbers</li> <li>establish whether a number up to 100 is prime and recall prime numbers up to 19</li> </ul>	• use estimation to check an- swers to calculations and de- termine, in the context of a problem, an appropriate de- gree of accuracy
	mental calculations		



		<ul> <li>recognise and use square numbers and cube numbers, and the notation for squared (2) and cubed (3)</li> </ul>	
Calculations	• multiply two-digit and three- digit numbers by a one-digit number using formal written layout	<ul> <li>multiply numbers up to 4 digits by a one- or two-digit number using a formal written method, including long multiplication for twodigit numbers</li> <li>multiply and divide numbers</li> <li>multiply and divide numbers mentally drawing upon known facts</li> <li>divide numbers up to 4 digits by a one-digit number using the formal written method of short division and interpret remainders appropriately for the context</li> <li>multiply and divide whole numbers and those involving decimals by 10, 100 and 1000</li> </ul>	<ul> <li>multiply multi-digit numbers up to 4 digits by a two-digit whole number using the for- mal written method of long multiplication</li> <li>divide numbers up to 4 digits by a two-digit whole number using the formal written method of long division, and interpret remainders as whole number remainders, fractions, or by rounding, as appropriate for the context</li> <li>divide numbers up to 4 digits by a two-digit number using the formal written method of short division where appropri- ate, interpreting remainders according to the context</li> <li>perform mental calculations, including with mixed opera- tions and large numbers</li> </ul>



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Problems	• solve problems involving multiplying and adding, including using the distributive law to multiply two digit numbers by one digit, integer scaling problems and harder correspondence problems such as n objects are connected to m objects	<ul> <li>solve problems involving multiplication and division including using their knowledge of factors and multiples, squares and cubes</li> <li>solve problems involving multiplication and division, including scaling by simple fractions and problems involving simple rates</li> </ul>	• solve problems involving ad- dition, subtraction, multiplica- tion and division
Combined		• solve problems involving ad- dition, subtraction, multiplica- tion and division and a combi- nation of these, including un- derstanding the meaning of the equals sign	• use their knowledge of the order of operations to carry out calculations involving the four operations

Fractions, Decimals and	Year One	Year Two	Year Three
Percenatges			
Recognise and write	<ul> <li>recognise, find and name a</li> </ul>	<ul> <li>recognise, find, name and</li> </ul>	• count up and down in tenths;
	half as one of two equal parts	write fractions 1/3, 1/4, 2/4	recognise that tenths arise
	of an object, shape or quantity	and 3 4 of a length, shape, set	from dividing an object into 10
	<ul> <li>recognise, find and name a</li> </ul>	of objects or quantity	equal parts and in dividing

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	quarter as one of four equal parts of an object, shape or quantity		<ul> <li>one-digit numbers or quantities by 10</li> <li>recognise, find and write fractions of a discrete set of objects: unit fractions and non-unit fractions with small denominators</li> <li>recognise and use fractions as numbers: unit fractions with small</li> </ul>
compare		Recognise the equivalence	• recognise and show, using
		of 2/4 and 1/2	<ul> <li>diagrams, equivalent fractions</li> <li>with small denominators</li> <li>compare and order unit fractions, and fractions with the same denominators</li> </ul>
calculations		• write simple fractions for ex-	add and subtract fractions     with the same denominator
			within one whole [for example, $5/7 + 1/7 = 6/7$
Solve problems			<ul> <li>solve problems that involve all of the above</li> </ul>
Recognise, write, compare			
Combined			



Fractions, Decimals and	Year Four	Year Five	Year
Percenatges			
Recognise and write	• count up and down in hun- dredths; recognise that hun- dredths arise when dividing an object by one hundred and di- viding tenths by ten.	<ul> <li>identify, name and write equivalent fractions of a given fraction, represented visually, including tenths and hun- dredths</li> <li>recognise mixed numbers and improper fractions and convert from one form to the other and write mathematical statements &gt; 1 as a mixed number [for example, 2/5 + 4/5 = 6/5 = 1 1/5]</li> </ul>	
compare	<ul> <li>recognise and show, using diagrams, families of common equivalent fractions</li> </ul>	• compare and order fractions whose denominators are all multiples of the same number	<ul> <li>use common factors to simplify fractions; use common multiples to express fractions in the same denomination</li> <li>compare and order fractions, including fractions &gt; 1</li> </ul>
calculations	<ul> <li>add and subtract fractions with the same denominator</li> </ul>	<ul> <li>add and subtract fractions with the same denominator and denominators that are multiples of the same number</li> <li>multiply proper fractions and</li> </ul>	<ul> <li>add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions</li> <li>multiply simple pairs of</li> </ul>



		mixed numbers by whole num- bers, supported by materials and diagrams	proper fractions, writing the answer in its simplest form [for example, $1/4 \times 1/2 = 1/8$ ] • divide proper fractions by whole numbers [for example $1/3 \div 2 = 1/6$ ]
Solve problems	• solve problems involving in- creasingly harder fractions to calculate quantities, and frac- tions to divide quantities, in- cluding non-unit fractions where the answer is a whole number		
Recognise, write, compare	<ul> <li>recognise and write decimal equivalents of any number of tenths or hundredths</li> <li>recognise and write decimal equivalents to 1/4, 1/2, 3/4</li> <li>round decimals with one decimal place to the nearest whole number</li> <li>compare numbers with the same number of decimal places up to two decimal places</li> </ul>	<ul> <li>read and write decimal numbers as fractions [for example, 0.71 = 71/100]</li> <li>recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents</li> <li>round decimals with two decimal places to the nearest whole number and to one decimal place</li> <li>read, write, order and compare numbers with up to three decimal places</li> </ul>	<ul> <li>identify the value of each digit in numbers given to three decimal places</li> </ul>



Combined	solve simple measure and money problems involving fractions and decimals to two decimal places	<ul> <li>recognise the per cent symbol (%) and understand that per cent relates to 'number of parts per hundred', and write percentages as a fraction with denominator 100, and as a decimal</li> <li>solve problems which require knowing percentage and decimal equivalents of 1/2, 1/4, 1/5, 2/5, 4/5 and those fractions with a denominator of a multiple of 10 or 25</li> </ul>	<ul> <li>associate a fraction with division and calculate decimal fraction equivalents [for example, 0.375] for a simple fraction [for example, 3/8]</li> <li>recall and use equivalences between simple fractions, decimals and percentages, including in different contexts</li> </ul>

Algebra and Ratio and Pro- portion	Year One	Year Two	Year Three
Ratio and proportion			
Algebra	• solve one-step problems that involve addition and subtrac- tion, using concrete objects and pictorial representations,	<ul> <li>recognise and use the in- verse relationship between ad- dition and subtraction and use this to check calculations and</li> </ul>	• solve problems, including missing number problems



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and missing number problems	solve missing number prob-	
such as $7 = \chi - 9$	lems	

Algebra and Ratio and Pro- portion	Year Four	Year Five	Year Six
Ratio and proportion			<ul> <li>solve problems involving the relative sizes of two quantities where missing values can be found by using integer multiplication and division facts</li> <li>solve problems involving the calculation/use of percentages for comparison</li> <li>solve problems involving similar shapes where the scale factor is known or can be found</li> <li>solve problems involving unequal sharing and grouping using knowledge of fractions and multiples</li> </ul>
Algebra			<ul> <li>use simple formulae</li> <li>generate and describe linear number sequences</li> </ul>



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	<ul> <li>express missing number</li> <li>problems algebraically</li> <li>find pairs of numbers that</li> </ul>
	satisfy an equation with two unknowns
	<ul> <li>enumerate possibilities of combinations of two variables</li> </ul>

Measurement	Year One	Year Two	Year Three
Using measures	<ul> <li>compare, describe and solve practical problems for:</li> <li>lengths and heights</li> <li>mass/weight</li> <li>capacity and volume</li> <li>time • measure and begin to record the following:</li> <li>lengths and heights</li> <li>mass/weight</li> </ul>	• choose and use appropriate standard units to estimate and measure length/height in any direction (m/cm); mass (kg/g); temperature (°C); capacity (li- tres/ml) to the nearest appro- priate unit, using rulers, scales, thermometers and measuring vessels	• measure, compare, add and subtract: lengths (m/cm/mm); mass (kg/g); volume/capacity (l/ml)



	<ul> <li>capacity and volume</li> <li>time (hours, minutes, seconds)</li> </ul>	• compare and order lengths, mass, volume/capacity and record the results using >, < and =	
Money	recognise and know the value of different denomina- tions of coins and notes	<ul> <li>recognise and use symbols for pounds (£) and pence (p); combine amounts to make a particular value</li> <li>find different combinations of coins that equal the same amounts of money</li> <li>solve simple problems in a practical context involving ad- dition and subtraction of money of the same unit, in- cluding giving change</li> </ul>	<ul> <li>add and subtract amounts of money to give change, using both £ and p in practical con- texts</li> </ul>
Time	<ul> <li>sequence events in chronological order using language [for example, before and after, next, first, today, yesterday, tomorrow, morning, afternoon and evening]</li> <li>recognise and use language relating to dates, including days of the week, weeks, months and years</li> </ul>	<ul> <li>compare and sequence in- tervals of time</li> <li>tell and write the time to five minutes, including quarter past/to the hour and draw the hands on a clock face to show these times</li> <li>know the number of minutes in an hour and the number of hours in a day</li> </ul>	<ul> <li>tell and write the time from an analogue clock, including using Roman numerals from I to XII, and 12- hour and 24- hour clocks</li> <li>estimate and read time with increasing accuracy to the nearest minute; record and compare time in terms of sec- onds, minutes and hours; use vocabulary such as o'clock,</li> </ul>



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	• tell the time to the hour and half past the hour and draw the hands on a clock face to show these times	<ul> <li>a.m./p.m., morning, afternoon, noon and midnight</li> <li>know the number of seconds in a minute and the number of days in each month, year and leap year</li> <li>compare durations of events [for example to calculate the time taken by particular events or tasks]</li> </ul>
Perimeter, Area, Volume		<ul> <li>measure the perimeter of simple 2-D shapes</li> </ul>

Measurement	Year Four	Year Five	Year Six
Using measures	<ul> <li>Convert between different</li> </ul>	<ul> <li>convert between different</li> </ul>	<ul> <li>solve problems involving the</li> </ul>
	units of measure [for example,	units of metric measure	calculation and conversion of
	kilometre to metre; hour to mi-	• understand and use approxi-	units of measure, using deci-
	nute]	mate equivalences between	mal notation up to 3 d.p.
	• estimate, compare and cal-	metric units and common im-	where appropriate
	culate different measures	perial units such as inches,	<ul> <li>use, read, write and convert</li> </ul>
		pounds and pints	between standard units, con-
		<ul> <li>use all four operations to</li> </ul>	verting measurements of
		solve problems involving	length, mass, volume and time
		measure [for example, length,	from a smaller unit of measure



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		mass, volume, money] using decimal notation, including scaling	to a larger unit, and vice versa, using decimal notation to up to 3 d.p. • convert between miles and kilometres
Money	• estimate, compare and cal- culate different measures, in- cluding money in pounds and pence]	use all four operations to solve problems involving measure [for example, money	
Time	<ul> <li>read, write and convert time between analogue and digital 12- and 24-hour clocks</li> <li>solve problems involving converting from hours to minutes; minutes to seconds; years to months; weeks to days</li> </ul>	<ul> <li>solve problems involving converting between units of time</li> </ul>	<ul> <li>use, read, write and convert between standard units, con- verting measurements of time from a smaller unit of measure to a larger unit, and vice versa</li> <li>Note – In the WRM schemes, time conversions are covered in Y5; the Y6 block concen- trates on metric units.</li> </ul>
Perimeter, Area, Volume	<ul> <li>measure and calculate the perimeter of a rectilinear figure (including squares) in centimetres and metres</li> <li>find the area of rectilinear shapes by counting squares</li> </ul>	<ul> <li>measure and calculate the perimeter of composite rectilinear shapes in centimetres and metres</li> <li>calculate and compare the area of rectangles (including squares) and including using standard units, square centi-</li> </ul>	<ul> <li>recognise that shapes with the same areas can have dif- ferent perimeters and vice versa</li> <li>recognise when it is possible to use formulae for area and volume of shapes</li> <li>calculate the area of parallel- ograms and triangles</li> </ul>



metres (cm2) and square me- tres (m2) and estimate the area of irregular shapes • estimate volume [for exam- ple, using blocks to build cu- boids] and capacity [for exam- ple, using water]	• calculate, estimate and com- pare volume of cubes and cu- boids using standard units, in- cluding cubic centimetres (cm3) and cubic metres (m3), and extending to other units

Geometry	Year One	Year Two	Year Three
2-D shapes	• recognise and name com- mon 2- D shapes [for exam- ple, rectangles (including squares), circles and triangles]	<ul> <li>identify and describe the properties of 2-D shapes, including the number of sides and line symmetry in a vertical line</li> <li>identify 2-D shapes on the surface of 3-D shapes, [for example, a circle on a cylinder and a triangle on a pyramid]</li> </ul>	• draw 2-D shapes



		<ul> <li>compare and sort common</li> <li>2-D shapes and everyday objects</li> </ul>	
3-D shapes	<ul> <li>recognise and name com- mon 3- D shapes [for exam- ple, cuboids (including cubes), pyramids and spheres]</li> </ul>	<ul> <li>recognise and name common 3- D shapes [for example, cuboids (including cubes), pyramids and spheres]</li> <li>compare and sort common 3-D shapes and everyday objects</li> </ul>	<ul> <li>make 3-D shapes using modelling materials; recognise 3-D shapes in different orien- tations and describe them</li> </ul>
Angles and Lines			<ul> <li>recognise angles as a property of shape or a description of a turn</li> <li>identify right angles, recognise that two right angles make a half-turn, three make three quarters of a turn and four a complete turn; identify whether angles are greater than or less than a right angle</li> <li>identify horizontal and vertical lines and pairs of perpendicular and parallel lines</li> </ul>
Position and Direction	describe position, direction and movement, including whole, half, quarter and three-	<ul> <li>order and arrange combina- tions of mathematical objects in patterns and sequences</li> </ul>	i i i i i i i i i i i i i i i i i i i



<ul> <li>use mathematical vocabulary</li> </ul>	
to describe position, direction	
and movement, including	
movement in a straight line	
and distinguishing between ro-	
tation as a turn and in terms of	
right angles for guarter, half	
and three-guarter turns (clock-	
wise and anticlockwise)	

Geometry	Year Four	Year Five	Year Six
2-D shapes	<ul> <li>compare and classify geo- metric shapes, including quad- rilaterals and triangles, based on their properties and sizes</li> <li>identify lines of symmetry in 2-D shapes presented in dif- ferent orientations</li> </ul>	<ul> <li>distinguish between regular and irregular polygons based on reasoning about equal sides and angles.</li> <li>use the properties of rectan- gles to deduce related facts and find missing lengths and angles</li> </ul>	<ul> <li>draw 2-D shapes using given dimensions and angles</li> <li>compare and classify geometric shapes based on their properties and sizes</li> <li>illustrate and name parts of circles, including radius, diameter and circumference and know that the diameter is twice the radius</li> </ul>



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3-D shapes		<ul> <li>identify 3-D shapes, includ- ing cubes and other cuboids, from 2-D representations</li> </ul>	• recognise, describe and build simple 3-D shapes, in- cluding making nets
Angles and Lines	<ul> <li>identify acute and obtuse angles and compare and order angles up to two right angles by size</li> <li>identify lines of symmetry in 2-D shapes presented in different orientations</li> <li>complete a simple symmetric figure with respect to a specific line of symmetry</li> </ul>	<ul> <li>know angles are measured in degrees: estimate and compare acute, obtuse and reflex angles</li> <li>draw given angles, and measure them in degrees</li> <li>identify:</li> <li>&gt; angles at a point and one whole turn (total 360°)</li> <li>&gt; angles at a point on a straight line and 1 2 a turn (to- tal 180°)</li> <li>&gt; other multiples of 90°</li> </ul>	<ul> <li>find unknown angles in any triangles, quadrilaterals, and regular polygons</li> <li>recognise angles where they meet at a point, are on a straight line, or are vertically opposite, and find missing angles</li> </ul>
Position and Direction	<ul> <li>describe positions on a 2-D grid as coordinates in the first quadrant</li> <li>describe movements be- tween positions as translations of a given unit to the left/right and up/down</li> <li>plot specified points and draw sides to complete a given polygon</li> </ul>	• identify, describe and repre- sent the position of a shape following a reflection or trans- lation, using the appropriate language, and know that the shape has not changed	<ul> <li>describe positions on the full coordinate grid (all four quadrants)</li> <li>draw and translate simple shapes on the coordinate plane, and reflect them in the axes</li> </ul>



Statistics	Year One	Year Two	Year Three
Present and interpret data		<ul> <li>interpret and construct sim- ple pictograms, tally charts, block diagrams and simple ta- bles</li> </ul>	<ul> <li>interpret and present data using bar charts, pictograms and tables</li> </ul>
Solving Problems		<ul> <li>ask and answer simple questions by counting the number of objects in each category and sorting the categories by quantity</li> <li>ask and answer questions about totalling and comparing categorical data</li> </ul>	• solve one-step and two-step questions [for example, 'How many more?' and 'How many fewer?'] using information pre- sented in scaled bar charts and pictograms and tables

Statistics	Year Four	Year Five	Year Six
Present and interpret data	<ul> <li>interpret and present dis-</li> </ul>	<ul> <li>complete, read and interpret</li> </ul>	<ul> <li>interpret and construct pie</li> </ul>
	crete and continuous data us- ing appropriate graphical methods, including bar charts and time graphs	information in tables, including timetables	charts and line graphs and use these to solve problems

Working Together to be the Best we can be.



Solving Problems	• solve comparison, sum and difference problems using in- formation presented in bar charts, pictograms, tables and other graphs	<ul> <li>solve comparison, sum and difference problems using in- formation presented in a line graph</li> </ul>	<ul> <li>calculate and interpret the mean as an average</li> </ul>