



Mathematics – Medium Term Plan

Purpose of Study – National Curriculum

Mathematics is a creative and highly inter-connected discipline that has been developed over centuries, providing the solution to some of history's most intriguing problems. It is essential to everyday life, critical to science, technology and engineering, and necessary for financial literacy and most forms of employment. A high-quality mathematics education therefore provides a foundation for understanding the world, the ability to reason mathematically, an appreciation of the beauty and power of mathematics, and a sense of enjoyment and curiosity about the subject.

Aims

The National Curriculum for mathematics aims to ensure that all pupils:

- become **fluent** in the fundamentals of mathematics, including through varied and frequent practice with increasingly complex problems over time, so that pupils have conceptual understanding and are able to recall and apply their knowledge rapidly and accurately to problems
- **Reason mathematically** by following a line of enquiry, conjecturing relationships and generalisations, and developing an argument, justification or proof using mathematical language
- can **solve problems** by applying their mathematics to a variety of routine and non-routine problems with increasing sophistication, including breaking down problems into a series of simpler steps and persevering in seeking solutions.

<u>Year 1 Medium Term Plan- Autumn 1</u>	<u>Year 1 Medium Term Plan-Autumn 2</u>	<u>Year 1 Medium Term Plan- Spring 1</u>
<u>Counting</u> ● To count to and across 100, forwards and backwards, beginning with 0 or 1, or from any given number. ● To identify and represent numbers using objects and pictorial representations including the number line, and use the language of: equal to, more than, less than (fewer), most, least.	<u>Counting and number order:</u> ● To count to and across 100, forwards and backwards, beginning with 0 or 1, or from any given number. ● To count, read and write numbers to 100 in numerals, count in multiples of twos, fives and tens. ● To identify and represent numbers using objects and pictorial representations including the number line, and use the language of: equal to, more than, less than (fewer), most, least. ● To read and write numbers from 1 to 20 in numerals and words.	<u>Counting, reading and writing number patterns</u> ● To count to and across 100, forwards and backwards, beginning with 0 or 1, or from any given number. ● To count, read and write numbers to 100 in numerals, count in multiples of twos, fives and tens. ● When given a number, identify one more and one less. ● To read and write numbers from 1 to 20 in numerals and words.
<u>Addition and subtraction to 5 or more (part 1)</u> ● To read and write numbers from 1 to 20 in numerals and words. ● When given a number, identify one more and one less. ● To read, write and interpret mathematical statements involving addition (+), subtraction (–) and equals (=) signs. ● To add and subtract one-digit and two-digit numbers to 20, including zero.	<u>Place value and comparing quantities and numbers:</u> ● When given a number, identify one more and one less. ● To identify and represent numbers using objects and pictorial representations including the number line, and use the language of: equal to, more than, less than (fewer), most, least. ● To read and write numbers from 1 to 20 in numerals and words.	<u>Doubles and near doubles</u> ● To represent and use number bonds and related subtraction facts within 20. ● To add and subtract one-digit and two-digit numbers to 20, including zero. ● To solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems.

<u>Addition and subtraction to 5 or more (part 2)</u> ● To add and subtract one-digit and two-digit numbers to 20, including zero. ● To solve simple one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems.	<u>Developing mental strategies for addition:</u> ● To read, write and interpret mathematical statements involving addition (+), subtraction (–) and equals (=) signs. ● To represent and use number bonds and related subtraction facts within 20. ● To solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems.	<u>Grouping and sharing</u> ● To solve one-step problems involving multiplication and division, calculating the answer using concrete objects, pictorial representations and arrays with the support of the teacher.
<u>Addition totals to 10</u> ● To read, write and interpret mathematical statements involving addition (+), subtraction (–) and equals (=) signs. ● To represent and use number bonds and related subtraction facts within 20. ● To add and subtract one-digit and two-digit numbers to 20 ($9 + 9$, $18 - 9$), including zero.	<u>Subtraction as difference:</u> ● To read, write and interpret mathematical statements involving addition (+), subtraction (–) and equals (=) signs. ● To represent and use number bonds and related subtraction facts within 20. ● To add and subtract one-digit and two-digit numbers to 20, including zero. ● To solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems.	<u>Fractions</u> ● To recognise, find and name a half as one of two equal parts of an object, shape or quantity.
<u>Properties of shape</u> ● To recognise and name common 2D and 3D shapes, including: ● 2D shapes (rectangles (including squares), circles and triangles) ● 3D shapes (cuboids (including cubes), pyramids and spheres).	<u>Measures:</u> ● To compare, describe and solve practical problems for: ● lengths and heights (long/short, longer/shorter, tall/short, double/half) ● mass or weight (heavy/light, heavier than, lighter than) ● capacity/volume (full/empty, more than, less than, quarter)	<u>Measures, including time</u> ● To sequence events in chronological order using language such as: before and after, next, first, today, yesterday, tomorrow, morning, afternoon and evening. ● To tell the time to the hour and half past the hour and draw the hands on a clock face to show these times.

	● Time (quicker, slower, earlier, later). ● To recognise and know the value of different denominations of coins and notes.	● To measure and begin to record the following: ● lengths and heights ● mass/weight ● capacity and volume ● Time (hours, minutes, seconds).
<u>Addition and subtraction to 10</u> ● To represent and use number bonds and related subtraction facts within 20. ● To solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as $7 = - 9$	<u>Addition and subtraction using money:</u> ● To read, write and interpret mathematical statements involving addition (+), subtraction (−) and equals (=) signs. ● To represent and use number bonds and related subtraction facts within 20. ● To add and subtract one-digit and two-digit numbers to 20, including zero. ● To solve one-step problems that involve addition and subtraction, using concrete Objects and pictorial representations, and missing number problems.	<u>Addition and subtraction to 15</u> ● To add and subtract one-digit and two-digit numbers to 20, including zero. ● To solve one-step problems that involve addition and subtraction, using objects And pictorial representations, and missing number problems.

<u>Year 1 Medium Term Plan- Spring 2</u>	<u>Year 1 Medium Term Plan- Summer 1</u>	<u>Year 1 Medium Term Plan- Summer 2</u>
<u>Counting and place value</u> ● To count, read and write numbers to 100 in numerals, count in different multiples including ones, twos, fives and tens. ● When given a number, identify one more and one less. ● To identify and represent numbers using objects and pictorial representations including the number line, and use the language of: equal to,	<u>Addition to totals to 10</u> ● To count to and across 100, forwards and backwards, beginning with 0 or 1, or from any given number. ● To count, read and write numbers to 100 in numerals, count in multiples of twos, fives and tens. ● To identify and represent numbers using objects and pictorial representations including the number line, and use the	<u>Number and place value</u> ● When given a number, identify one more and one less. ● To identify and represent numbers using objects and pictorial representations including the number line, and use the language of: equal to, more than, less than (fewer), most, least.

more than, less than (fewer), most, least.	language of: equal to, more than, less than (fewer), most, least. ● To read and write numbers from 1 to 20 in numerals and words.	
<u>Addition and subtraction beyond totals of 10</u> ● To add and subtract one-digit and two-digit numbers to 20, including zero. ● To solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems.	<u>Addition and subtraction to 20</u> ● To represent and use number bonds and related subtraction facts within 20. ● To add and subtract one-digit and two-digit numbers to 20, including zero. ● To solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems.	<u>Addition and subtraction</u> ● To add and subtract one-digit and two-digit numbers to 20, including zero. ● To solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems.
<u>Grouping and sharing</u> ● To solve one-step problems involving multiplication and division, calculating the answer using concrete objects, pictorial representations and arrays with the support of the teacher.	<u>Fractions</u> ● To recognise, find and name a half as one of two equal parts of an object, shape or quantity. ● To recognise, find and name a quarter as one of four equal parts of an object, shape or quantity.	<u>Fractions</u> ● To recognise, find and name a half as one of two equal parts of an object, shape or quantity. ● To recognise, find and name a quarter as one of four equal parts of an object, shape or quantity.
<u>Shape, position and movement</u> ● To recognise and name common 2D and 3D shapes, including: ● 2D shapes (rectangles (including squares), circles and triangles) ● 3D shapes (cuboids (including cubes), pyramids and spheres). ● To describe position, directions and movements, including half, quarter and three- quarter turns.	<u>Multiplication and division</u> ● To solve one-step problems involving multiplication and division, calculating the answer using concrete objects, pictorial representations and arrays with the support of the teacher.	<u>Multiplication and division</u> ● To solve one-step problems involving multiplication and division, calculating the answer using concrete objects, pictorial representations and arrays with the support of the teacher.

<u>Measuring and time</u> ● To compare, describe and solve practical problems for: ● lengths and heights (long/short, longer/shorter, tall/short, double/half) ● mass or weight (heavy/light, heavier than, lighter than) ● capacity/volume (full/empty, more than, less than, quarter) ● time (quicker, slower, earlier, later). ● To measure and begin to record the following: ● lengths and heights ● mass/weight ● capacity and volume ● Time (hours, minutes, seconds). ● To sequence events in chronological order using language such as: before and after, next, first, today, yesterday, tomorrow, morning, afternoon and evening.	<u>Measuring</u> ● To measure and begin to record the following: ● lengths and heights ● mass/weight ● capacity and volume ● Time (hours, minutes, seconds).	<u>Time and using standard units</u> ● To measure and begin to record the following: ● lengths and heights ● mass/weight ● capacity and volume ● Time (hours, minutes, seconds). ● To recognise and use language relating to dates, including days of the week, weeks, months and years. ● To tell the time to the hour and half past the hour and draw the hands on a clock face to show these times.
<u>Addition and subtraction totals to 10</u> ● To add and subtract one-digit and two-digit numbers to 20, including zero. ● To solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems.	<u>Moving and turning</u> ● To describe position, directions and movements, including half, quarter and three- quarter turns.	<u>Addition to totals to 10</u> ● To order and arrange combinations of objects and shapes in patterns. ● To recognise and name common 2D and 3D shapes, including: ● 2D shapes (rectangles (including squares), circles and triangles) ● 3D shapes (cuboids (including cubes), pyramids and spheres).

<u>Year 2 Medium Term Plan -Autumn 1</u>	<u>Year 2 Medium Term Plan -Autumn 2</u>	<u>Year 2 Medium Term Plan - Spring 1</u>
<u>Number and place value: counting, reading and writing</u> 2-digit numbers, place value ● To count in steps of 2, 3, and 5 from 0, and count in tens from any number, forward or backward. ● To recognise the place value of each digit in a two-digit number (tens, ones). ● To identify, represent and estimate numbers using different representations, including the number line. ● To compare and order numbers from 0 up to 100; use <, > and = signs. ● To read and write numbers to at least 100 in numerals and in words. ● To use place value and number facts to solve problems.	<u>Number and place value: comparing, ordering two-digit numbers and knowing their place value</u> ● To count in steps of 2, 3, and 5 from 0, and count in tens from any number, forward or backward. ● To recognise the place value of each digit in a two-digit number (tens, ones). ● To identify, represent and estimate numbers using different representations, including the number line. ● To compare and order numbers from 0 up to 100; use <, > and = signs. ● To read and write numbers to at least 100 in numerals and in words. ● To use place value and number facts to solve problems.	<u>Number and place value: estimating, counting and comparing quantities</u> ● To count in steps of 2, 3, and 5 from 0, and count in tens from any number, forward or backward. ● To recognise the place value of each digit in a 2-digit number (tens, ones). ● To identify, represent and estimate numbers using different representations, including the number line. ● To compare and order numbers from 0 up to 100; use <, > and = signs. ● To read and write numbers to at least 100 in numerals and in words. ● To use place value and number facts to solve problems.
<u>Addition: concrete, visual and number facts</u> ● To solve problems with addition and subtraction: ● Using concrete objects and pictorial representations, including those involving numbers, quantities and measures ● Applying their increasing knowledge of mental and written methods. ● To recall and use addition and subtraction facts to 20 fluently, and	<u>Addition and subtraction: using recall of addition and subtraction facts and mental calculation strategies</u> ● To solve problems with addition and subtraction: ● Using concrete objects and pictorial representations, including those involving numbers, quantities and measures ● Applying their increasing knowledge of mental and written methods. ● To add and subtract using concrete	<u>Addition and subtraction: using recall of addition and subtraction facts and mental calculation strategies</u> ● To solve problems with addition and subtraction: ● Using concrete objects and pictorial representations, including those involving numbers, quantities and measures ● Applying their increasing knowledge of mental and written methods. ● To recall and use addition and

derive and use related facts up to 100. ● To add and subtract using concrete objects, pictorial representations, and mentally, including: a two-digit number and ones; a two-digit number and tens; two two-digit numbers; adding three one-digit numbers. ● To show that addition can be done in any order (commutative) and subtraction cannot. ● To recognise and use the inverse relationship between addition and subtraction and use this to check calculations and missing number problems.	objects, pictorial representations, and mentally, including: a two-digit number and ones; a two-digit number and tens; two two-digit numbers; adding three one-digit numbers. ● To show that addition can be done in any order (commutative) and subtraction cannot. ● To recognise and use the inverse relationship between addition and subtraction and use this to check calculations and missing number problems.	subtraction facts to 20 fluently, and derive and use related facts up to 100. ● To add and subtract using concrete objects, pictorial representations, and mentally, including: a two-digit number and ones; a 2-digit number and tens; two 2-digit numbers; adding three one-digit numbers. ● To show that addition can be done in any order (commutative) and subtraction cannot. ● To recognise and use the inverse relationship between addition and subtraction and use this to check calculations and missing number problems.
<u>Subtraction: concrete, visual and number facts</u> ● To solve problems with addition and subtraction: ● Using concrete objects and pictorial representations, including those involving numbers, quantities and measures ● Applying their increasing knowledge of mental and written methods. ● To recall and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100. ● To add and subtract using concrete objects, pictorial representations, and mentally, including: a two-digit number and ones; a 2-digit number and tens; two two-digit numbers; adding three one-digit numbers.	<u>Multiplication and division: repeated addition and subtraction, arrays, grouping and using times tables facts</u> ● To recall and use multiplication and division facts for the 2,5 and 10 multiplication tables, including recognising odd and even numbers. ● To calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication ($\times$), division ($\div$) and equals (=) signs. ● To recognise and use the inverse relationship between multiplication and division in calculations. ● To show that multiplication of two numbers can be done in any order (Commutative) and division for one number by another cannot. ● To solve one-step problems involving	<u>Addition and subtraction: using partitioning and counting on strategies</u> ● To solve problems with addition and subtraction: ● Using concrete objects and pictorial representations, including those involving numbers, quantities and measures ● Applying their increasing knowledge of mental and written methods. ● To add and subtract using concrete objects, pictorial representations, and mentally, including: a two-digit number and ones; a 2-digit number and tens; two 2-digit numbers; adding three one-digit numbers. ● To show that addition can be done in any order (commutative) and subtraction

● To recognise and use the inverse relationship between addition and subtraction and use this to check calculations and missing number problems.	multiplication and division, using materials, arrays, repeated addition, mental methods and multiplication and division facts, including problems in contexts.	cannot. ● To recognise and use the inverse relationship between addition and subtraction and use this to check calculations and missing number problems.
<u>Multiplication and division: repeated addition and repeated subtraction</u> ● To recall and use multiplication and division facts for the 2,5 and 10 multiplication tables, including recognising odd and even numbers. ● To calculate mathematical statements for multiplication and division within the multiplication tables and write them using multiplication, division and equals signs. ● To recognise and use the inverse relationship between multiplication and division in calculations. ● To show that multiplication of two numbers can be done in any order (Commutative) and division for one number by another cannot. ● To solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods and multiplication and division facts, including problems in contexts.	<u>Fractions: finding fractions of quantities, shapes and sets of objects</u> ● To recognise, find, name and write fractions $\frac{1}{3}$, $\frac{1}{4}$, $\frac{2}{4}$ and $\frac{3}{4}$. ● To write simple fractions for example, $\frac{1}{2}$ of $6 = 3$ and recognise the equivalence of two quarters and one half.	<u>Multiplication and division: repeated addition and subtraction, arrays, grouping and using times tables facts</u> ● To recall and use multiplication and division facts for the 2,5 and 10 multiplication tables, including recognising odd and even numbers. ● To calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication ($\times$), division ($\div$) and equals (=) signs. ● To recognise and use the inverse relationship between multiplication and division in calculations. ● To show that multiplication of two numbers can be done in any order (Commutative) and division for one number by another cannot. ● To solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods and multiplication and division facts, including problems in contexts.

<u>Geometry: properties of 3D and 2D shape</u> ● To identify and describe the properties of 2D shapes, including the number of sides and symmetry in a vertical line. ● To identify and describe the properties of 3D shapes including the number of edges, vertices and faces. ● To identify 2D shapes on the surface of 3D shapes, for example circle on a cylinder and a triangle on a pyramid. ● To compare and sort common 2D and 3D shapes and everyday objects.	<u>Geometry: position, direction, motion</u> <u>Measures: time</u> ● To order and arrange combinations of mathematical objects in patterns. ● To use mathematical vocabulary to describe position, direction and movement, including distinguishing between rotation as a turn and in terms of right angles for quarter, half and three quarter turns (clockwise and anti-clockwise) and movement in a straight line. ● To compare and sequence intervals of time. ● To 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.	<u>Geometry: properties of 3D and 2D shape</u> ● To identify and describe the properties of 2D shapes, including the number of sides and symmetry in a vertical line. ● To identify and describe the properties of 3D shapes including the number of edges, vertices and faces. ● To identify 2D shapes on the surface of 3D shapes, for example circle on a cylinder and a triangle on a pyramid.
<u>Measures: length, mass, capacity, money</u> ● To choose and use appropriate standard units to estimate and measure length/ height in any direction; mass; temperature; volume and capacity to the nearest appropriate unit using rulers, scales, thermometers and measuring vessels. ● To compare and order lengths, mass, volume/capacity and record the results using $>$, $<$ and $=$. ● To recognise and use the symbols for pounds and pence; combine amounts to make a particular value ● To find different combinations of coins that equal the same amounts of money ● To solve simple problems in a practical	<u>Data: solving problems that involve collecting data in tallies, tables and pictograms</u> ● To interpret and construct simple pictograms, tally charts, block diagrams and simple tables. ● To ask and answer simple questions by counting the number of object in each category and sorting the categories by quantity. ● To ask and answer questions about totalling and compare categorical data.	<u>Measures: length, mass, capacity and money</u> ● To choose and use appropriate standard units to estimate and measure length/ height in any direction (m/cm/mm); mass (kg/g); temperature ($^{\circ}\text{C}$); volume and capacity (litres/ml) to the nearest appropriate unit using rulers, scales, thermometers and measuring vessels. ● To compare and order lengths, mass, volume/capacity and record the results using $>$, $<$ and $=$.

context involving addition and subtraction of money of the same unit, including giving change		
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<u>Year 2 Medium Term Plan- Spring 2</u>	<u>Year 2 Medium Term Plan- Summer 1</u>	<u>Year 2 Medium Term Plan- Summer 2</u>
<u>Number and place value: estimating, counting, comparing and ordering quantities</u> ● To count in steps of 2, 3, and 5 from 0, and count in tens from any number, forward or backward. ● To recognise the place value of each digit in a 2-digit number (tens, ones). ● To identify, represent and estimate numbers using different representations, including the number line. ● To compare and order numbers from 0 up to 100; use <, > and = signs. ● To read and write numbers to at least 100 in numerals and in words. ● To use place value and number facts to solve problems.	<u>Number and place value: estimating, counting, comparing and ordering quantities</u> ● To recognise the place value of each digit in a 2-digit number (tens, ones). ● To identify, represent and estimate numbers using different representations, including the number line. ● To compare and order numbers from 0 up to 100; use <, > and = signs. ● To read and write numbers to at least 100 in numerals and in words.	<u>Number and place value: estimating, counting, comparing and ordering quantities</u> ● To recognise the place value of each digit in a 2-digit number (tens, ones). ● To identify, represent and estimate numbers using different representations, including the number line. ● To compare and order numbers from 0 up to 100; use <, > and = signs. ● To read and write numbers to at least 100 in numerals and in words. ● To use place value and number facts to solve problems.
<u>Addition and subtraction: using mental calculation strategies</u> ● To solve problems with addition and subtraction: ● Using concrete objects and pictorial representations, including those involving numbers, quantities and measures ● Applying their increasing knowledge of mental and written methods. ● To recall and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100. ● To add and subtract using concrete	<u>Addition and subtraction: using mental calculation strategies</u> ● To solve problems with addition and subtraction: ● Using concrete objects and pictorial representations, including those involving numbers, quantities and measures ● Applying their increasing knowledge of mental and written methods. ● To add and subtract using concrete objects, pictorial representations, and mentally, including: a two-digit number and ones; a 2-digit number and tens; two 2-digit	<u>Addition and subtraction: using partitioning and sequencing</u> ● To solve problems with addition and subtraction: ● Using concrete objects and pictorial representations, including those involving numbers, quantities and measures ● Applying their increasing knowledge of mental and written methods. ● To add and subtract using concrete objects, pictorial representations, and mentally, including: a two-digit number and ones; a 2-digit number and tens; two 2-digit

objects, pictorial representations, and mentally, including: a two-digit number and ones; a 2-digit number and tens; two 2-digit numbers; adding three one-digit numbers. To show that addition can be done in any order (commutative) and subtraction cannot. ● To recognise and use the inverse relationship between addition and subtraction and use this to check calculations and missing number problems.	numbers; adding three one-digit numbers. ● To show that addition can be done in any order (commutative) and subtraction cannot. ● To recognise and use the inverse relationship between addition and subtraction and use this to check calculations and missing number problems.	numbers; adding three one-digit numbers. ● To recognise and use the inverse relationship between addition and subtraction and use this to check calculations and missing number problems.
<u>Multiplication and division: repeated addition and subtraction, arrays, grouping and using times tables facts</u> ● To recall and use multiplication and division facts for the 2,5 and 10 multiplication tables, including recognising odd and even numbers. ● To calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication ($\times$), division ($\div$) and equals (=) signs. ● To recognise and use the inverse relationship between multiplication and division in calculations. ● To show that multiplication of two numbers can be done in any order (commutative) and division for one number by another cannot. ● To solve problems involving multiplication and division, using materials, arrays, repeated addition,	<u>Multiplication and division: repeated addition and subtraction, arrays, grouping and using times tables facts</u> ● To recall and use multiplication and division facts for the 2,5 and 10 multiplication tables, including recognising odd and even numbers. ● To calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication ($\times$), division ($\div$) and equals (=) signs. ● To recognise and use the inverse relationship between multiplication and division in calculations. ● To solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods and multiplication and division facts, including problems in contexts.	<u>Fractions: finding fractions of quantities, shapes and sets of objects</u> ● To recall and use multiplication and division facts for the 2,5 and 10 multiplication tables, including recognising odd and even numbers. ● To calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication ($\times$), division ($\div$) and equals (=) signs. ● To recognise and use the inverse relationship between multiplication and division in calculations. ● To solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods and multiplication and division facts, including problems in contexts.

mental methods and multiplication and division facts, including problems in contexts.		
<u>Fractions: finding fractions of quantities, shapes and sets of objects</u> ● To recognise, find, name and write fractions $\frac{1}{3}$, $\frac{1}{4}$, $\frac{2}{4}$ and $\frac{3}{4}$. ● To write simple fractions for example, $\frac{1}{2}$ of 6 = 3 and recognise the equivalence of two quarters and one half.	<u>Fractions: finding fractions of quantities, shapes and sets of objects</u> ● To recognise, find, name and write fractions $\frac{1}{3}$, $\frac{1}{4}$, $\frac{2}{4}$ and $\frac{3}{4}$. ● To write simple fractions for example, $\frac{1}{2}$ of 6 = 3 and recognise the equivalence of two quarters and one half.	<u>Finding fractions of quantities, shapes and sets of objects</u> ● To recognise, find, name and write fractions $\frac{1}{3}$, $\frac{1}{4}$, $\frac{2}{4}$ and $\frac{3}{4}$. ● To write simple fractions for example, $\frac{1}{2}$ of 6 = 3 and recognise the equivalence of two quarters and one half.
<u>Geometry: position and direction</u> <u>Measures: time</u> ● To use mathematical vocabulary to describe position, direction and movement, including distinguishing between rotation as a turn and in terms of right angles for quarter, half and three quarter turns (clockwise and anti-clockwise) and movement in a straight line. ● To 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.	<u>Geometry: properties of 3D and 2D shape</u> ● To identify and describe the properties of 2D and 3D shapes, including the number of sides, symmetry in a vertical line, edges, vertices, and faces. ● To identify 2D shapes on the surface of 3D shapes, for example circle on a cylinder and a triangle on a pyramid. ● To compare and sort common 2D and 3D shapes and everyday objects. ● To solve one-step problems involving multiplication and division, using materials, arrays, repeated addition, mental methods and multiplication and division facts, including problems in contexts.	<u>Geometry: position and direction</u> <u>Measures: time</u> ● To order and arrange combinations of mathematical objects in patterns. ● To use mathematical vocabulary to describe position, direction and movement, including distinguishing between rotation as a turn and in terms of right angles for quarter, half and three quarter turns (clockwise and anti-clockwise) and movement in a straight line. ● To compare and sequence intervals of time. ● To 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.

<u>Statistics: solving problems that involve collecting data in tallies, tables and pictograms</u> ● To interpret and construct simple pictograms, tally charts, block diagrams and simple tables. ● To ask and answer simple questions by counting the number of object in each category and sorting the categories by quantity. ● To ask and answer questions about totalling and compare categorical data.	<u>Measures: length, mass (weight), capacity and money</u> ● To choose and use appropriate standard units to estimate and measure length/ height in any direction; mass; temperature; volume and capacity to the nearest appropriate unit using rulers, scales, thermometers and measuring vessels. ● To compare and order lengths, mass, volume/capacity and record the results using $>$, $<$ and $=$. ● To recognise and use symbols for pounds (£) and pence (p); combine amounts to make a particular value. ● To find different combinations of coins to equal the same amounts of money ● To solve simple problems in a practical context involving addition and subtraction of money of the same unit, including giving change.	<u>Solving problems by gathering data and representing in tallies, tables, pictograms and block diagrams</u> ● To interpret and construct simple pictograms, tally charts, block diagrams and simple tables. ● To ask and answer simple questions by counting the number of objects in each category and sorting the categories by quantity. ● To ask and answer questions about totalling and compare categorical data.
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<u>Year 3 Medium Term Plan- Autumn 1</u>	<u>Year 3 Medium Term Plan- Autumn 2</u>	<u>Year 3 Medium Term Plan- Spring 1</u>
<u>Reading, writing and ordering two- and three-digit numbers</u> ● To recognise the place value of each digit in a three-digit number (hundreds, tens, ones). ● To compare and order numbers up to 1000. ● To read and write numbers up to 1000 in numerals and in words.	<u>Counting and estimating</u> ● To add and subtract numbers mentally, including: ● a three-digit number and ones ● a three-digit number and tens ● a three-digit number and hundreds. ● To solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction.	<u>Number, place value and rounding</u> ● To count from 0 in multiples of 4, 8, 50 and 100; finding 10 or 100 more or less than a given number. ● To recognise the place value of each digit in a three-digit number (hundreds, tens, ones). ● To compare and order numbers up to 1000. ● To identify, represent and estimate

		numbers using different representations. ● To read and write numbers up to 1000 in numerals and in words. ● To solve number problems and practical problems involving these ideas.
<u>Counting and estimating</u> ● To count from 0 in multiples of 4, 8, 50 and 100; finding 10 or 100 more or less than a given number. ● To identify, represent and estimate numbers using different representations.	<u>Addition and subtraction of two- and three-digit numbers, using a number line and columns</u> ● To add and subtract numbers with up to three digits, using the efficient written methods of columnar addition and subtraction. ● To estimate the answer to a calculation and use inverse operations to check answers. ● To solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction.	<u>Use partitioning to add and subtract two-digit numbers</u> ● To add and subtract numbers mentally, including: ● a three-digit number and ones ● a three-digit number and tens ● A three-digit number and hundreds. ● To estimate the answer to a calculation and use inverse operations to check answers. ● To solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction.
<u>Number facts to 20 and to 100</u> <u>Addition and Subtraction of 1 and 2-digit numbers</u> ● To add and subtract numbers mentally, including: ● a three-digit number and ones ● a three-digit number and tens ● a three-digit number and hundreds. ● To solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction.	<u>Multiplication and division: doubling, halving and $TU \times U$</u> ● To recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables. ● To write and calculate mathematical statements for multiplication and division using the multiplication tables that they know, including for two-digit numbers times one-digit numbers, using mental and progressing to formal written methods. ● To solve problems, including missing number problems, involving	<u>Multiplication and division: multiplying one- digit numbers by multiples of 10</u> ● To recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables. ● To write and calculate mathematical statements for multiplication and division using the multiplication tables that they know, including for two-digit numbers times one-digit numbers, using mental and progressing to formal written methods. ● To solve problems, including missing number problems, involving

	multiplication and division, including integer scaling problems and correspondence problems in which n objects are connected to m objects.	multiplication and division, including integer scaling problems and correspondence problems in which n objects are connected to m objects.
<u>Multiplication and division facts</u> ● To recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables. ● To write and calculate mathematical statements for multiplication and division using the multiplication tables that they know, including for two-digit numbers times one-digit numbers, using mental and progressing to formal written methods. ● To solve problems, including missing number problems, involving multiplication and division, including integer scaling problems and correspondence problems in which n objects are connected to m objects.	<u>Fractions: representing, comparing and ordering unit fractions of shapes and numbers</u> ● To recognise, find and write fractions of a discrete set of objects: unit fractions and non-unit fractions with small denominators. ● To recognise and use fractions as numbers: unit fractions and non-unit fractions with small denominators. ● To compare and order unit fractions, and fractions with the same denominators. ● To solve problems that involve all of the above.	<u>Multiplication and division: practical and informal written methods</u> ● To recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables. ● To write and calculate mathematical statements for multiplication and division using the multiplication tables that they know, including for two-digit numbers times one-digit numbers, using mental and progressing to formal written methods. ● To solve problems, including missing number problems, involving multiplication and division, including integer scaling problems and correspondence problems in which n objects are connected to m objects.
<u>Measuring using mm, cm and metres</u> ● To measure, compare, add and subtract: lengths (m/cm/mm); mass (kg/g); volume/capacity (l/ml). ● To measure the perimeter of simple 2D shapes.	<u>Read and write time to 5 minute intervals</u> ● To tell and write the time from an analogue clock, including using Roman numerals from I to XII, and 12-hour and 24-hour clocks. ● To estimate and read time with increasing accuracy to the nearest minute; record and compare time in terms of seconds, minutes, hours and	<u>Measures: adding and subtracting money</u> ● To add and subtract amounts of money to give change, using both £ and p in practical contexts.

	o'clock; use vocabulary such as am/pm, morning, afternoon, noon and midnight. ● To know the number of seconds in a minute and the number of days in each month, year and leap year. ● To compare durations of events, for example to calculate the time taken by particular events or tasks.	
<u>Recognising, describing and making 2D and 3D shapes</u> ● To draw 2D shapes and make 3D shapes using modelling materials; recognise 3D Shapes in different orientations and describe them with increasing accuracy. ● To identify horizontal, vertical, perpendicular and parallel lines in relation to other lines.	<u>Read, present and interpret pictograms and tables</u> ● To interpret and present data using bar charts, pictograms and tables ● To solve one-step and two-step questions such as 'How many more?' and 'How many fewer?' using information presented in scaled bar charts and pictograms and tables.	<u>Recognising and drawing right angles in 2D shapes</u> ● To recognise angles as a property of shape and associate angles with turning. ● To 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.

<u>Year 3 Medium Term Plan- Spring 2</u>	<u>Year 3 Medium Term Plan-Summer 1</u>	<u>Year 3 Medium Term Plan- Summer 2</u>
<u>Addition and subtraction of two- digit numbers using columns</u> ● To add and subtract numbers with up to three digits, using the efficient written methods of columnar addition and subtraction. ● To estimate the answer to a calculation and use inverse operations to check answers. ● To solve problems, including missing number problems, using number facts,	<u>Read, write and order and round two- and three- digit numbers</u> ● To count from 0 in multiples of 4, 8, 50 and 100; finding 10 or 100 more or less than a given number. ● To recognise the place value of each digit in a three-digit number (hundreds, tens, ones). ● To compare and order numbers up to 1000. ● To identify, represent and estimate	<u>Addition and subtraction of two- and three-digit numbers using and columns</u> ● To add and subtract numbers with up to three digits, using the efficient written methods of columnar addition and subtraction. ● To estimate the answer to a calculation and use inverse operations to check answers. ● To solve problems, including missing number problems, using number facts,

place value, and more complex addition and subtraction.	numbers using different representations. ● To read and write numbers up to 1000 in numerals and in words. ● To solve number problems and practical problems involving these ideas.	place value, and more complex addition and subtraction.
<u>Multiplication and division: multiplying by multiples of 10, and dividing with remainders</u> ● To recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables. ● To write and calculate mathematical statements for multiplication and division using the multiplication tables that they know, including for two-digit numbers times one-digit numbers, using mental and progressing to formal written methods. ● To solve problems, including missing number problems, involving multiplication and division, including integer scaling problems and correspondence problems in which n objects are connected to m objects.	<u>Multiplication and division problems</u> ● To recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables. ● To write and calculate mathematical statements for multiplication and division using the multiplication tables that they know, including for two-digit numbers times one-digit numbers, using mental and progressing to formal written methods. ● To solve problems, including missing number problems, involving multiplication and division, including integer scaling problems and correspondence problems in which n objects are connected to m objects.	<u>Multiplication and division problems: written methods</u> ● To recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables. ● To write and calculate mathematical statements for multiplication and division using the multiplication tables that they know, including for two-digit numbers times one-digit numbers, using mental and progressing to formal written methods. ● To solve problems, including missing number problems, involving multiplication and division, including integer scaling problems and correspondence problems in which n objects are connected to m objects.
<u>Multiplication and division: multiplying and dividing larger numbers</u> ● To recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables. ● To write and calculate mathematical statements for multiplication and division using the multiplication tables that they	<u>Addition and subtraction of three-digit numbers and 1s, 10s and 100s</u> ● To add and subtract numbers mentally, including: ● a three-digit number and ones ● a three-digit number and tens ● a three-digit number and hundreds. ● To estimate the answer to a	<u>Short multiplication and division</u> ● To recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables. ● To write and calculate mathematical statements for multiplication and division using the multiplication tables that they know, including for two-digit numbers times one-digit numbers, using mental

know, including for two-digit numbers times one-digit numbers, using mental and progressing to formal written methods. ● To solve problems, including missing number problems, involving multiplication and division, including integer scaling problems and correspondence problems in which n objects are connected to m objects.	calculation and use inverse operations to check answers. ● To solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction.	and progressing to formal written methods. ● To solve problems, including missing number problems, involving multiplication and division, including integer scaling problems and correspondence problems in which n objects are connected to m objects.
Measuring using grams and kilograms ● To measure, compare, add and subtract: lengths (m/cm/mm); mass (kg/g); volume/capacity (l/ml).	Addition and subtraction of two- and three-digit numbers using columns ● To add and subtract numbers with up to three digits, using the efficient written methods of columnar addition and subtraction. ● To estimate the answer to a calculation and use inverse operations to check answers. ● To solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction.	Fractions: equivalence, addition and subtraction within 1, finding tenths ● To count up and down in tenths; recognise that tenths arise from dividing an object into 10 equal parts and in dividing one-digit numbers or quantities by 10. ● To recognise and use fractions as numbers: unit fractions and non-unit fractions with small denominators. ● To recognise and show, using diagrams, equivalent fractions with small denominators. ● To add and subtract fractions with the same denominator within one whole ($\frac{5}{7} + \frac{1}{7} = \frac{6}{7}$). ● To solve problems that involve all of the above.

Fractions: representing, comparing and ordering unit and non-unit fractions of shapes and numbers ● To count up and down in tenths; recognise that tenths arise from dividing an object into 10 equal parts and in dividing one-digit numbers or quantities by 10. ● To recognise, find and write fractions of a discrete set of objects: unit fractions and non-unit fractions with small denominators. ● To recognise and use fractions as numbers: unit fractions and non-unit fractions with small denominators. ● To recognise and show, using diagrams, equivalent fractions with small denominators. ● To compare and order unit fractions, and fractions with the same denominators. ● To solve problems that involve all of the above.	Shape: identifying horizontal, vertical, and curved lines ● To draw 2D shapes and make 3D shapes using modelling materials; recognise 3D Shapes in different orientations and describe them with increasing accuracy. ● To recognise angles as a property of shape and associate angles with turning. ● To 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. ● To identify horizontal, vertical, perpendicular and parallel lines in relation to other lines.	Read and write time using 12 and 24 hour ● To tell and write the time from an analogue clock, including using Roman numerals from I to XII, and 12-hour and 24-hour clocks. ● To estimate and read time with increasing accuracy to the nearest minute; record and compare time in terms of seconds, minutes, hours and o'clock; use vocabulary such as am/pm, morning, afternoon, noon and midnight. ● To know the number of seconds in a minute and the number of days in each month, year and leap year. ● To compare durations of events, for example to calculate the time taken by particular events or tasks.
<u>Read and interpret bar charts, using scales</u> ● To interpret and present data using bar charts, pictograms and tables. ● To solve one-step and two-step questions such as 'How many more?' and 'How many fewer?' using information presented in scaled bar charts and pictograms and tables.	<u>Measuring using millilitres and litres</u> ● To measure, compare, add and subtract: lengths (m/cm/mm); mass (kg/g); volume/capacity (l/ml).	<u>Construct and interpret bar charts using scales</u> ● To interpret and present data using bar charts, pictograms and tables. ● To solve one-step and two-step questions such as 'How many more?' and 'How many fewer?' using information presented in scaled bar charts and pictograms and tables.

<u>Year 4 Medium Term Plan- Autumn 1</u>	<u>Year 4 Medium Term Plan- Autumn 2</u>	<u>Year 4 Medium Term Plan- Spring 1</u>
<u>Number, place value and rounding</u> ● To recognise the place value of each digit in a four-digit number (thousands, hundreds, tens, and ones). ● To identify, represent and estimate numbers using different representations. ● To order and compare numbers beyond 1000. ● To round any number to the nearest 10, 100 or 1000. ● To count in multiples of 6, 7, 9, 25, 1000. ● To find 1000 more or less than a given number.	<u>Mental and written addition and subtraction</u> ● To add and subtract numbers with up to four digits using the efficient written methods of columnar addition and subtraction where appropriate. ● To estimate and use inverse operations to check answers to a calculation. ● To solve addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why.	<u>Number, place value and rounding</u> ● To find 1000 more or less than a given number. ● To recognise the place value of each digit in a four-digit number (thousands, hundreds, tens, and ones). ● To order and compare numbers beyond 1000. ● To identify, represent and estimate numbers using different representations. ● To round any number to the nearest 10, 100 or 1000. ● To solve number and practical problems that involve all of the above and with increasingly large positive numbers. ● To read Roman numerals to 100 (I to C) and understand how, over time, the numeral system changed to include the concept of zero and place value.
<u>Mental addition and subtraction</u> ● To add and subtract numbers with up to four digits using the efficient written methods of columnar addition and subtraction where appropriate. ● To solve addition and subtraction two-step problems in contexts, deciding which operations and	<u>Multiplication</u> ● To recall multiplication facts for multiplication tables up to 12×12. ● To use place value, known and derived facts to multiply and divide mentally, including: multiplying by 0 and 1; dividing by 1; multiplying together three numbers. ● To recognise and use factor pairs and	<u>Mental and written addition and subtraction</u> ● To add and subtract numbers with up to four digits using the efficient written methods of columnar addition and subtraction where appropriate. ● To estimate and use inverse operations to check answers to a

methods to use and why.	commutativity in mental calculations. ● To multiply two-digit and three-digit numbers by a one-digit number using formal written layout. ● To solve problems involving multiplying and adding, including using the distributive law and harder multiplication problems such as which n objects are connected to m objects.	calculation. ● To solve addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why. ● To estimate, compare and calculate different measures, including money in pounds and pence.
<u>Mental addition and subtraction</u> ● To add and subtract numbers with up to four digits using the efficient written methods of columnar addition and subtraction where appropriate. ● To solve addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why.	<u>Multiplication and division</u> ● To recall multiplication facts for multiplication tables up to 12×12 . ● To use place value, known and derived facts to multiply and divide mentally, including: multiplying by 0 and 1; dividing by 1; multiplying together three numbers. ● To solve problems involving multiplying and adding, including using the distributive law and harder multiplication problems such as which n objects are connected to m objects.	<u>Mental and written multiplication</u> ● To recall multiplication and division facts for multiplication tables up to 12×12 . ● To use place value, known and derived facts to multiply and divide mentally, including: multiplying by 0 and 1; dividing by 1; multiplying together three numbers. ● To multiply two-digit and three-digit numbers by a one-digit number using formal written layout. ● To solve problems involving multiplying and adding, including using the distributive law and harder multiplication problems such as which n objects are connected to m objects.
<u>Multiplication</u> ● To recall multiplication facts for multiplication tables up to 12×12 . ● To use place value, known and derived facts to multiply and divide mentally, including: multiplying by 0 and 1; dividing by 1; multiplying together three numbers. ● To solve problems involving multiplying and adding,	<u>Fractions</u> ● To count up and down in hundredths; recognise that hundredths arise when dividing an object by a hundred and dividing tenths by ten. ● To solve problems involving increasingly harder fractions to calculate quantities, and fractions to divide quantities, including non-unit fractions	<u>Mental and written division</u> ● To recall multiplication and division facts for multiplication tables up to 12×12 . ● To use place value, known and derived facts to multiply and divide mentally, including: multiplying by 0 and 1; dividing by 1; multiplying together three numbers.

including using the distributive law and harder multiplication problems such as which n objects are connected to m objects.	where the answer is a whole number. ● To recognise and show, using diagrams, families of common equivalent fractions.	
<u>Multiplication and division</u> ● To recall multiplication facts for multiplication tables up to 12×12. ● To use place value, known and derived facts to multiply and divide mentally, including: multiplying by 0 and 1; dividing by 1; multiplying together three numbers.	<u>Geometry</u> ● To describe positions on a 2D grid as coordinates in the first quadrant. ● To plot specified points and draw sides to complete a given polygon. ● To compare and classify geometric shapes, including quadrilaterals and triangles, based on their properties and sizes. ● To identify acute and obtuse angles and compare and order angles up to two right angles by size.	<u>Fractions</u> ● To count up and down in hundredths; recognise that hundredths arise when dividing an object by a hundred and dividing tenths by ten. ● To solve problems involving increasingly harder fractions to calculate quantities, and fractions to divide quantities, including non-unit fractions where the answer is a whole number. ● To recognise and show, using diagrams, families of common equivalent fractions.
<u>Geometry: properties of shapes</u> ● To compare and classify geometric shapes, including quadrilaterals and triangles, based on their properties and sizes. ● To identify lines of symmetry in 2D shapes presented in different orientations. ● To complete a simple symmetric figure with respect to a specific line of symmetry. ● To convert between different units of measure (for example, kilometre to metre; hour to minute). ● To measure and calculate the perimeter of a rectilinear figure (including squares) in centimetres and	<u>Data handling and time</u> ● To read, write and convert time between analogue and digital 12- and 24-hour clocks. ● To solve problems involving converting from hours to minutes; minutes to seconds; years to months; weeks to days. ● To interpret and present discrete and continuous data using appropriate graphical methods, including bar charts and time graphs. ● To solve comparison, sum and difference problems using information presented in bar charts, pictograms, tables and simple line graphs.	<u>Fractions and decimals</u> ● To recognise and write decimal equivalents of any number of tenths or hundredths. ● To recognise and write decimal equivalents to $\frac{1}{4}$; $\frac{1}{2}$; $\frac{3}{4}$. ● To find the effect of dividing a one- or two-digit number by 10 and 100, identifying the value of the digits in the answer as units, tenths and hundredths. ● To round decimals with one decimal place to the nearest whole number. ● To compare numbers with the same number of decimal places up to two decimal places.

metres. ● To solve problems involving converting from hours to minutes; minutes to seconds; years to months; weeks to days. ● To estimate, compare and calculate different measures, including money in pounds and pence.		● To solve simple measure and money problems involving fractions and decimals to two decimal places.
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<u>Year 4 Medium Term Plan- Spring 2</u>	<u>Year 4 Medium Term Plan- Summer 1</u>	<u>Year 4 Medium Term Plan- Summer 2</u>
<u>Mental calculation</u> ● To estimate and use inverse operations to check answers to a calculation. ● To solve addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why. ● To recall multiplication and division facts for multiplication tables up to 12×12. ● To recognise and use factor pairs and commutativity in mental calculations. ● To solve problems involving multiplying and adding, including using the distributive law and harder multiplication problems such as which n objects are connected to m objects.	<u>Place value ideas</u> ● To count in multiples of 6, 7, 9, 25 and 1000. ● To find 1000 more or less than a given number. ● To count backwards through zero to include negative numbers. ● To recognise the place value of each digit in a four-digit number (thousands, hundreds, tens, and ones). ● To order and compare numbers beyond 1000. ● To identify, represent and estimate numbers using different representations. ● To round any number to the nearest 10, 100 or 1000. ● To solve number and practical problems that involve all of the above and with increasingly large positive numbers.	<u>Mental calculations</u> ● To estimate and use inverse operations to check answers to a calculation. ● To solve addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why. ● To recall multiplication and division facts for multiplication tables up to 12×12. ● To recognise and use factor pairs and commutativity in mental calculations. ● To solve problems involving multiplying and adding, including using the distributive law and harder multiplication problems such as which n objects are connected to m objects.

<u>Written addition and subtraction</u> ● To add and subtract numbers with up to four digits using the efficient written methods of columnar addition and subtraction where appropriate. ● To estimate and use inverse operations to check answers to a calculation. ● To solve addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why.	<u>Mental addition and subtraction and measures (use measures as a context for problems)</u> ● To estimate and use inverse operations to check answers to a calculation. ● To solve addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why. ● To estimate, compare and calculate different measures, including money in pounds and pence.	<u>Measures</u> ● To convert between different units of measure (kilometre to metre; hour to minute). ● To measure and calculate the perimeter of a rectilinear figure (including squares) in centimetres and metres. ● To find the area of rectilinear shapes by counting. ● To estimate, compare and calculate different measures, including money in pounds and pence. ● To read, write and convert time between analogue and digital 12- and 24-hour clocks. ● To solve problems involving converting from hours to minutes; minutes to seconds; years to months; weeks to days.
<u>Time</u> ● To read, write and convert time between analogue and digital 12- and 24-hour clocks. ● To solve problems involving converting from hours to minutes; minutes to seconds; years to months; weeks to days.	<u>Written addition and subtraction and measures</u> ● To add and subtract numbers with up to four digits using the efficient written methods of columnar addition and subtraction where appropriate. ● To estimate and use inverse operations to check answers to a calculation. ● To solve addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why.	<u>Written addition and subtraction</u> ● To add and subtract numbers with up to four digits using the efficient written methods of columnar addition and subtraction where appropriate. ● To estimate and use inverse operations to check answers to a calculation. ● To solve addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why.

<u>Written multiplication and division</u> ● To recall multiplication and division facts for multiplication tables up to 12×12. ● To use place value, known and derived facts to multiply and divide mentally, including: multiplying by 0 and 1; dividing by 1; multiplying together three numbers. ● To multiply two-digit and three-digit numbers by a one-digit number using formal written layout. ● To solve problems involving multiplying and adding, including using the distributive law and harder multiplication problems such as which n objects are connected to m objects.	<u>Mental and written multiplication and division</u> ● To recall multiplication and division facts for multiplication tables up to 12×12. ● To use place value, known and derived facts to multiply and divide mentally, including: multiplying by 0 and 1; dividing by 1; multiplying together three numbers. ● To recognise and use factor pairs and commutativity in mental calculations. ● To multiply two-digit and three-digit numbers by a one-digit number using formal written layout. ● To solve problems involving multiplying and adding, including using the distributive law and harder multiplication problems such as which n objects are connected to m objects.	<u>Mental and written multiplication and division</u> ● To recall multiplication and division facts for multiplication tables up to 12×12. ● To use place value, known and derived facts to multiply and divide mentally, including: multiplying by 0 and 1; dividing by 1; multiplying together three numbers. ● To recognise and use factor pairs and commutativity in mental calculations. ● To multiply two-digit and three-digit numbers by a one-digit number using formal written layout. ● To solve problems involving multiplying and adding, including using the distributive law and harder multiplication problems such as which n objects are connected to m objects.
<u>Geometry</u> ● To compare and classify geometric shapes, including quadrilaterals and triangles, based on their properties and sizes. ● To identify acute and obtuse angles and compare and order angles up to two right angles by size. ● To describe positions on a 2D grid as coordinates in the first quadrant. ● To describe movements between positions as translations of a given unit to the left/right and up/down. ● To plot specified points and draw sides to complete a given polygon.	<u>Fractions</u> ● To count up and down in hundredths; recognise that hundredths arise when dividing an object by a hundred and dividing tenths by ten. ● To solve problems involving increasingly harder fractions to calculate quantities, and fractions to divide quantities, including non-unit fractions where the answer is a whole number. ● To recognise and show, using diagrams, families of common equivalent fractions. ● To add and subtract fractions with the same denominator.	<u>2D shape, angles and coordinates</u> ● To compare and classify geometric shapes, including quadrilaterals and triangles, based on their properties and sizes. ● To identify acute and obtuse angles and compare and order angles up to two right angles by size. ● To identify lines of symmetry in 2D shapes presented in different orientations. ● To describe positions on a 2D grid as coordinates in the first quadrant. ● To describe movements between positions as translations of a given unit to the left/right and up/down.

		● To plot specified points and draw sides to complete a given polygon.
<u>Data handling and measurement</u> ● To interpret and present discrete data using bar charts and continuous data using time graphs. ● To solve comparison, sum and difference problems using information presented in bar charts, pictograms, tables and simple line graphs. ● To convert between different units of measure (kilometre to metre; hour to minute). ● To estimate, compare and calculate different measures, including money in pounds and pence.	<u>Area and perimeter of rectilinear shapes and capacity</u> ● To convert between different units of measure (kilometre to metre; hour to minute). ● To measure and calculate the perimeter of a rectilinear figure (including squares) in centimetres and metres. ● To find the area of rectilinear shapes by counting. ● To estimate, compare and calculate different measures, including money in pounds and pence.	<u>Statistics</u> ● To interpret and present discrete and continuous data using appropriate graphical methods, including bar charts and time graphs. ● To solve comparison, sum and difference problems using information presented in bar charts, pictograms, tables and simple line graphs.

<u>Year 5 Medium Term Plan- Autumn 1</u>	<u>Year 4 Medium Term Plan- Autumn 2</u>	<u>Year 5 Medium Term Plan - Spring 1</u>
<u>Place value to 1,000,000</u> ● To read, write, order and compare numbers at least to 1,000,000 and determine the value of each digit. ● To count forwards or backwards in steps of powers of 10 for any given number up to 1,000,000.	<u>Written methods for multiplication</u> ● To multiply and divide whole numbers and those involving decimals by 10, 100 and 1000. ● To multiply numbers up to 4 digits by a one- or two-digit number using an efficient written method, including long multiplication for two-digit numbers. ● To solve problems involving multiplication and division, including scaling by simple fractions and	<u>Negative numbers, and solving problems involving numbers</u> ● To read, write, order and compare numbers at least to 1,000,000 and determine the value of each digit. ● To count forwards or backwards in steps of powers of 10 for any given number up to 1,000,000. ● To interpret negative numbers in context, count forwards and backwards with positive and negative

	problems involving simple rates.	whole numbers through zero. ● To round any number up to 1,000,000 to the nearest 10, 100, 1000, 10,000 and 100,000. ● To solve number problems and practical problems that involve all of the above.
<u>Mental addition and subtraction</u> ● To add and subtract whole numbers with more than 4 digits, including using efficient written methods (columnar addition and subtraction). ● To add and subtract numbers mentally with increasingly large numbers. ● To solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why.	<u>Divide 4-digit numbers</u> ● To divide numbers up to 4 digits by a one-digit number using the efficient written method of short division and interpret remainders appropriately for the context. ● To multiply and divide numbers mentally drawing upon known facts. ● To solve problems involving multiplication and division, including scaling by simple fractions and problems involving simple rates.	<u>Addition and subtraction of large numbers and money</u> ● To add and subtract whole numbers with more than 4 digits, including using efficient written methods (columnar addition and subtraction). ● To add and subtract numbers mentally with increasingly large numbers. ● To solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why. ● To use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy. ● To solve problems involving numbers up to three decimal places.
<u>Factors of numbers and prime numbers</u> ● To identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers. ● To multiply and divide whole numbers and those involving decimals by 10, 100 and 1000. ● To solve problems involving	<u>Fractions and decimals: tenths and hundredths</u> ● To compare and order fractions whose denominators are all multiples of the same number. ● To identify, name and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths.	<u>Long multiplication, square numbers and cube numbers</u> ● To multiply and divide numbers mentally drawing upon known facts. ● To multiply and divide whole numbers and those involving decimals by 10, 100 and 1000. ● To solve problems involving multiplication and division, including

multiplication and division where larger numbers are used by decomposing them into factors. ● To know and use the vocabulary of prime numbers, prime factors and composite (non-prime) numbers. ● To establish whether a number up to 100 is prime and recall prime numbers up to 19.	● To read and write decimal numbers as fractions (for example, $0.71 = 71/100$).	scaling by simple fractions and problems involving simple rates. ● To multiply numbers up to 4 digits by a one- or two-digit number using an efficient written method, including long multiplication for two-digit numbers. ● To recognise and use square numbers and cube numbers, and the notation for squared (2) and cubed (3). ● To calculate and compare the area of squares and rectangles including using standard units, square centimetres (cm²) and square metres (m²) and estimate the area of irregular shapes.
<u>Using multiplication and division facts</u> ● To multiply and divide numbers mentally drawing upon known facts. ● To multiply and divide whole numbers and those involving decimals by 10, 100 and 1000. ● To solve problems involving multiplication and division, including scaling by simple fractions and problems involving simple rates.	<u>Decimals: tenths, hundredths, thousandths</u> ● To read, write, order and compare numbers with up to three decimal places. ● To read and write decimal numbers as fractions (for example, $0.71 = 71/100$). ● To round decimals with two decimal places to the nearest whole numbers and to one decimal place. ● To recognise and use thousandths and relate them to tenths, hundredths and decimals equivalents. ● To solve problems involving number up to three decimal places.	<u>Adding and subtracting fractions</u> ● To recognise mixed numbers and improper fractions and convert from one form to the other; write mathematical statements > 1 as a mixed number: $2/5 + 4/5 = 6/5 = 11/5$. ● To add and subtract fractions with the same denominator and multiples of the same number.

<u>Angles</u> ● To know angles are measured in degrees; estimate and compare acute, obtuse and reflex angles ● To draw given angles, and measure them in degrees ($^{\circ}$). ● To identify: ● angles at a point and one whole turn (total 360°) ● angles at a point on a straight line and $1/2$ a turn (total 180°) ● Other multiples of 90°.	<u>2D and 3D shapes</u> ● To distinguish between regular and irregular polygons based on reasoning about equal sides and angles. ● To use the properties of rectangles to deduce related facts and find missing lengths and angles. ● To identify 3D shapes including cubes and cuboids from 2D representations.	<u>Reflections and translations</u> ● To 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.
<u>Length, perimeter and area</u> ● To convert between different units of measure (for example, kilometre and metre; metre and centimetre; centimetre and millimetre; kilogram and gram; litre and millilitre). ● To understand and use equivalences between metric units and common imperial units such as inches, pounds and pints. ● To use all four operations to solve problems involving measure (e.g. length, mass, volume, money) using decimal notation including scaling. ● To measure and calculate the perimeter of composite rectilinear shapes in centimetres and metres. ● To calculate and compare the area of squares and rectangles including using standard units, square centimetres (cm^2) and square metres (m^2) and estimate the area of irregular shapes.	<u>Tables and bar charts</u> ● To complete, read and interpret information in tables, including timetables.	<u>Mass</u> ● To convert between different units of measure (kilometre and metre; metre and centimetre; centimetre and millimetre; kilogram and gram; litre and millilitre). ● To understand and use basic equivalences between metric units and common imperial units such as inches, pounds and pints. ● To use all four operations to solve problems involving measure (e.g. length, mass, volume, money) using decimal notation including scaling.

<u>Year 5 Medium Term Plan-Spring 2</u>	<u>Year 5 Medium Term Plan- Summer 1</u>	<u>Year 5 Medium Term Plan- Summer 2</u>
<u>Addition and subtraction: mental and written methods for large numbers</u> ● To add and subtract whole numbers with more than 4 digits, including using efficient written methods (columnar addition and subtraction). ● To add and subtract numbers mentally with increasingly large numbers. ● To solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why. ● To use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy.	<u>Negative numbers and Roman numerals</u> ● To count forwards or backwards in steps of powers of 10 for any given number up to 1,000,000. ● To interpret negative numbers in context, count forwards and backwards with positive and negative whole numbers through zero. ● To round any number up to 1,000,000 to the nearest 10, 100, 1000, 10,000 and 100,000. ● To solve number problems and practical problems that involve all of the above. ● To read numerals to 1000 (M) and recognise years written in Roman numerals.	<u>Addition and subtraction of money</u> ● To add and subtract whole numbers with more than 4 digits, including using efficient written methods (columnar addition and subtraction). ● To add and subtract numbers mentally with increasingly large numbers. ● To solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why.
<u>Multiplication and division: written methods</u> ● To multiply and divide whole numbers and those involving decimals by 10, 100 and 1000. ● To multiply numbers up to 4 digits by a one- or two-digit number using an efficient written method, including long multiplication for two-digit numbers. ● To divide numbers up to 4 digits by a one-digit number using the efficient written method of short division and interpret remainders appropriately for the context. ● To solve problems involving addition, subtraction,	<u>Adding and subtracting large and small numbers</u> ● To add and subtract whole numbers with more than 4 digits, including using efficient written methods (columnar addition and subtraction). ● To add and subtract numbers mentally with increasingly large numbers. ● To solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why. ● To use rounding to check answers to calculations and determine, in the	<u>Multiplication and division of money</u> ● To multiply numbers up to 4 digits by a one- or two-digit number using an efficient written method, including long multiplication for two-digit numbers. ● To multiply and divide numbers mentally drawing upon known facts. ● To identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers. ● To solve problems involving multiplication and division where larger numbers are used by decomposing them into factors.

multiplication and division and a combination of these, including understanding the meaning of the equals sign.	context of a problem, levels of accuracy. ● To solve problems involving numbers up to three decimal places.	● To solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign.
<u>Calculating with fractions</u> ● To recognise mixed numbers and improper fractions and convert from one form to the other; write mathematical statements > 1 as a mixed number: $2/5 + 4/5 = 6/5 = 11/5$. ● To add and subtract fractions with the same denominator and multiples of the same number. ● To multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams.	<u>Long multiplication and division with remainders</u> ● To multiply numbers up to 4 digits by a one- or two-digit number using an efficient written method, including long multiplication for two-digit numbers. ● To divide numbers up to 4 digits by a one-digit number using the efficient written method of short division and interpret remainders appropriately for the context. ● To solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign.	<u>Decimals and fractions</u> ● To read, write, order and compare numbers with up to three decimal places. ● To read and write decimal numbers as fractions (for example, $0.71 = 71/100$). ● To recognise and use thousandths and relate them to tenths, hundredths and decimals equivalents. ● To round decimals with two decimal places to the nearest whole numbers and to one decimal place.
<u>Percentages</u> ● To 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 hundred, and as a decimal fraction.	<u>Working with fractions</u> ● To recognise mixed numbers and improper fractions and convert from one form to the other; write mathematical statements > 1 as a mixed number: $2/5 + 4/5 = 6/5 = 11/5$. ● To add and subtract fractions with the same denominator and multiples of the same number	<u>Problems involving percentages</u> ● To 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 hundred, and as a decimal fraction. ● To solve problems which require knowing percentage and decimal equivalents of $1/2$, $1/4$, $1/5$, $4/5$ and those with a denominator of a multiple of 10 or 25.

<u>Capacity</u> ● To convert between different units of measure (kilometre and metre; metre and centimetre; centimetre and millimetre; kilogram and gram; litre and millilitre). ● To understand and use basic equivalences between metric units and common imperial units such as inches, pounds and pints. ● To estimate volume and capacity ● To use all four operations to solve problems involving measure (e.g. length, mass, volume, money) using decimal notation including scaling	<u>Diagonals and problems involving angles</u> ● To know angles are measured in degrees; estimate and compare acute, obtuse and reflex angles ● To draw given angles, and measure them in degrees ($^{\circ}$). To identify: ● angles at a point and one whole turn (total 360°) ● angles at a point on a straight line and $1/2$ a turn (total 180°) ● Other multiples of 90°. ● To use the properties of a rectangle to deduce related facts and find missing lengths and angles. ● To distinguish between regular and irregular polygons based on reasoning about equal sides and angles.	<u>Perimeter, area and scale drawing</u> ● To measure and calculate the perimeter of composite rectilinear shapes in centimetres and metres. ● To calculate and compare the area of squares and rectangles including using standard units, square centimetres (cm^2) and square metres (m^2) and estimate the area of irregular shapes. ● To solve problems involving multiplication and division, including scaling by simple fractions and problems involving simple rates.
<u>Line graphs/comparative graphs</u> ● To solve comparison, sum and difference problems using information presented in a line graph.	<u>Volume, time and money</u> ● To estimate volume (e.g. using 1 cm^3 blocks to build cubes and cuboids) and capacity (e.g. using water). ● To use all four operations to solve problems involving measure (e.g. length, mass, volume, money) using decimal notation including scaling ● To solve problems involving converting between units of time.	<u>Using tables, and line graphs</u> ● To complete, read and interpret information in tables, including timetables. ● To solve comparison, sum and difference problems using information presented in a line graph.

<u>Year 6 Medium Term Plan- Autumn 1</u>	<u>Year 6 Medium Term Plan- Autumn 2</u>	<u>Year 6 Medium Term Plan- Spring 1</u>
<u>Place value and rounding off</u> ● To read, write, order and compare numbers at least to 10,000,000 and determine the value of each digit. ● To round any whole number to a required degree of accuracy. ● To solve number problems and practical problems that involve all of the above.	<u>Written methods for multiplication and division</u> ● To multiply multi-digit numbers up to 4 digits by a two-digit whole number using efficient written method of long multiplication. ● To divide numbers up to 4 digits by a two-digit whole number using efficient written methods of long division and interpret remainders as whole numbers, remainders, fractions or by rounding as appropriate in the context.	<u>Negative numbers, and solving problems involving numbers</u> ● To read, write, order and compare numbers at least to 10,000,000 and determine the value of each digit. ● To round any whole number to a required degree of accuracy. ● To use negative numbers in context, and calculate intervals across zero. ● To solve number problems and practical problems that involve all of the above.
<u>Mental and written addition and subtraction of large numbers</u> ● To perform mental calculations, including with mixed operations and large numbers. ● To solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why.	<u>Comparing, ordering and simplifying fractions</u> ● To compare and order fractions, including fractions >1. ● To use common factors to simplify fractions; use common multiples to express fractions in the same denomination.	<u>Mental and written addition and subtraction of decimals and money</u> ● To perform mental calculations, including with mixed operations and large numbers. ● To solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why. ● To use estimation to check answers to calculations and determine, in the context of a problem, levels of accuracy.
<u>Multiples, factors and prime numbers</u> ● To perform mental calculations, including with mixed operations and large numbers. ● To identify common factors, common multiples and prime numbers. ● To solve problems	<u>Multiplying decimals by 10, 100 and 1000</u> ● To identify the value of each digit to three decimal places and multiply and divide numbers by 10, 100, 1000 where the answers are up to three decimal places. ● To solve problems which require	<u>Mental and written multiplication and division</u> ● To perform mental calculations, including with mixed operation and large numbers. ● To identify common factors, common multiples and prime numbers (Children

involving addition, subtraction, multiplication and division.	answers to be rounded to specified degrees of accuracy.	could practise using mental methods that involve using factors, for example.) ● To use their knowledge of the order of operations to carry out calculations involving the four operations. ● To use estimation to check answers to calculations and determine, in the context of a problem, levels of accuracy.
<u>Written methods for multiplication and division: HTU × TU and HTU × U</u> ● To multiply multi-digit numbers up to 4 digits by a two-digit whole number using efficient written method of long multiplication. ● To divide numbers up to 4 digits by a two-digit whole number using the efficient written method of long division, and interpret remainders as whole number remainders, fractions or by rounding, as appropriate for the context. ● To solve problems involving addition, subtraction, multiplication and division. ● To use estimation to check answers to calculations and determine, in the context of a problem, levels of accuracy.	<u>Order of operations</u> ● To perform mental calculations, including with mixed operations and large numbers. ● To use their knowledge of the order of operations to carry out calculations involving the four operations. ● To solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why. ● To solve problems involving addition, subtraction, multiplication and division. ● To use estimation to check answers to calculations and determine, in the context of a problem, levels of accuracy.	<u>Calculating with fractions</u> ● To add and subtract fractions with different denominators, using the concept of equivalent fractions. ● To associate a fraction with division to calculate decimal fraction equivalents (0.375) for a simple fraction (3/8). ● To multiply simple pairs of proper fractions, writing the answer in its simplest form ($1/4 \div 1/2 = 1/8$). ● To divide proper fractions by whole numbers ($1/3 \div 2 = 1/6$).
<u>Circles and angles</u> ● To illustrate and name parts of circles, including radius, diameter and circumference. ● To recognise angles where they meet at a point, are on a straight line, or are	<u>2D and 3D shapes</u> ● To draw 2D shapes using given dimensions and angles. ● To compare and classify geometric shapes based on their properties and sizes and find unknown angles in any	<u>Reflections and translations on coordinate axes</u> ● To describe positions on the full co-ordinate grid (all four quadrants). ● To draw and translate simple shapes on the co-ordinate plane, and reflect

vertically opposite, and find missing angles.	triangles, quadrilaterals and regular polygons. ● To recognise, describe and build simple 3D shapes, including making nets.	them in the axes.
<u>Units of measure</u> ● To solve problems involving the calculation and conversion of units of measure, using decimal notation to three decimal places where appropriate. ● To 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 to three decimal places. ● To convert between miles and kilometres.	<u>Pie charts</u> ● To interpret and construct pie charts and line graphs and use these to solve problems.	<u>Perimeter, area and volume</u> ● To recognise that shapes with the same area can have different perimeters and vice versa. ● To calculate the area of parallelograms and triangles. ● To recognise when it is necessary to use the formulae for area and volume of shapes. ● To calculate, estimate and compare volume of cubes and cuboids using standard units, including centimetre cubed (cm³) and cubic metres (m³) and extending to other units such as mm³ and km³.

<u>Year 6 Medium Term Plan- Spring 2</u>	<u>Year 6 Medium Term Plan- Summer 1</u>	<u>Year 6 Medium Term Planning Summer 2</u>
<u>Calculating with large numbers</u> ● To multiply multi-digit numbers up to 4 digits by a two-digit whole number using efficient written method of long multiplication. ● To divide numbers up to 4 digits by a two-digit whole number using the efficient written method of long	<u>Problems involving number</u> ● To read, write, order and compare numbers up to 10,000,000 and determine the value of each digit. ● To round any whole number to a required degree of accuracy. ● To use negative numbers in context and calculate intervals across zero. ● To	<u>Solving problems involving money</u> ● To multiply multi-digit numbers up to 4 digits by a two-digit whole number using the efficient written method of long multiplication. ● To divide numbers up to 4 digits by a two-digit whole number using the efficient written method of long

division, and interpret remainders as whole number remainders, fractions, or by rounding, as appropriate for the context. ● To perform mental calculations, including with mixed operations and large numbers. ● To use their knowledge of the order of operations to carry out calculations involving the four operations. ● To solve problems involving addition, subtraction, multiplication and division.	solve number problems and practical problems that involve all the above.	division, and interpret remainders as whole number remainders, fractions, or by rounding, as appropriate for the context. ● To perform mental calculations, including with mixed operations and large numbers. ● To use their knowledge of the order of operations to carry out calculations involving the four operations. ● To solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why. ● To solve problems involving addition, subtraction, multiplication and division. ● To use estimation to check answers to calculations and determine, in the context of a problem, levels of accuracy.
<u>Multiplying and dividing decimals</u> ● To multiply one-digit numbers with up to two decimal places by whole numbers. ● To use written division methods in cases where the answer has up to two decimal places. ● To solve problems which require answers to be rounded to specified degrees of accuracy.	<u>Adding and subtracting large and small numbers</u> ● To perform mental calculations, including with mixed operations and large numbers. ● To solve addition and subtraction multi-step problems in contexts, deciding which operations to use and why. ● To use estimation to check answers to calculations and determine, in the context of a problem, levels of accuracy.	<u>Number puzzles</u> ● To express missing number problems algebraically. ● To use simple formulae expressed in words. ● To generate and describe linear number sequences. ● To find pairs of numbers that satisfy number sentences involving two unknowns. ● To enumerate all possibilities of combinations of two variables.

Percentages, decimals and fractions ● To solve problems involving the calculation of percentages of whole numbers or measures and the use of percentages for comparison. ● To recall and use equivalences between simple fractions, decimals and percentages, including different contexts.	Long multiplication and division ● To multiply multi-digit numbers up to 4 digits by a two-digit whole number using the efficient written methods of long multiplication. ● To divide numbers up to 4 digits by two digit whole numbers using the efficient written method of long division and interpret remainders as whole number remainders, fractions or by rounding, as appropriate for the context. ● To use estimation to check answers to calculations and determine, in the context of a problem, levels of accuracy.	Fractions with different denominators ● To multiply simple pairs of proper fractions, writing the answer in its simplest form ($\frac{1}{4} \div \frac{1}{2} = \frac{1}{8}$). ● To use common factors to simplify fractions; use common multiples to express fractions in the same denomination. ● To add and subtract fractions with different denominators and mixed numbers using the concept of equivalent fractions.
Simple formulae ● To express missing number problems algebraically. ● To use simple formulae expressed in words. ● To find pairs of numbers that satisfy number sentences involving two unknowns. ● To enumerate all possibilities of combinations of two variables.	Working with fractions ● To add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions. ● To multiply simple pairs of proper fractions, writing the answer in its simplest form. ● To divide proper fractions by whole numbers.	Problems involving percentages and decimals ● To solve problems involving the calculation of percentages of whole numbers or measures such as 15% of 360 and the use of percentages for comparison. ● To recall and use equivalences between simple fractions, decimals and percentages, including in different contexts.
Area and volume ● To solve problems involving the calculation and conversion of units of measure, using decimal notation to three decimal places, where appropriate. ● To 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	Problems involving percentages, fractions and decimals ● To solve problems involving the calculation of percentages of whole numbers or measures and the use of percentages for comparison. ● To recall and use equivalences between simple fractions, decimals and percentages including in different contexts.	Problems involving measures ● To solve problems involving the calculation and conversion of units of measure, using decimal notation to three decimal places where appropriate. ● To use, read, write and convert between standard units, converting measurements of length, mass, volume and time from a smaller unit of measure to a large unit and vice versa, using

decimal notation to three decimal places. ● To calculate the area of parallelograms and triangles. ● To recognise when it is necessary to use the formulae for area and volume of shapes.		decimal notation to three decimal places.
Line graphs ● To interpret and construct pie charts and line graphs and use these to solve problems.	Ratio and proportion ● To solve problems involving the relative size of two quantities where missing values can be found by using integer multiplication and division facts. ● To solve problems involving unequal sharing and grouping using knowledge of fractions and multiples. ● To solve problems involving similar shapes where the scale factor is known or can be found.	Using data ● To interpret and construct pie charts and line graphs and use these to solve problems. ● To calculate and interpret the mean as an average.

Overview of Progression in Year 1

Number and place value

During the Foundation Stage, children counted and estimated groups of up to 10 objects. In Year 1, children extend their use of counting numbers to at least 100. They develop recognition of patterns in the number system (including odd and even numbers) by counting in ones, twos, fives and tens. Children use first, second, third for example when ordering items.

Children do not need to recognise the place value of each digit in a two-digit number as they will do this in Year 2. However, they should understand that they can tell whether a number is larger than another by looking at the first digit as well as the second digit.

Addition and subtraction

During the Foundation Stage, children related addition to combining two groups and subtraction to taking away when doing practical activities. In Year 1, children use mathematical statements to record addition and subtraction. They read, interpret and write the symbols +, – and =.

Through practice of addition and subtraction, children learn the number trios for numbers to 20 ($8 + 5 = 13$, $13 - 8 = 5$, $13 - 5 = 8$). They use different strategies to help them derive number facts, such as adding numbers in any order, or finding a difference by counting up.

Multiplication and division

In Year 1, children are introduced to the concepts of multiplication and division, although they will not use the standard signs ($\times$ and $\div$) until Year 2. In practical activities, using arrays and physical objects such as blocks, children solve multiplication and division problems using small quantities. With support, children investigate the links between arrays, number patterns and their experience of counting in twos, fives and tens.

Fractions

Children learn to identify halves and quarters by solving practical problems – for example, finding half of a set of ten blocks or a quarter of a square. They learn that the concepts of a half and a quarter apply to objects and quantities as well as to shapes. They link the idea of halves and quarters back to the concepts of sharing and grouping, which they use in their work on multiplication and division. They will build on this in Year 2 when they learn to write simple fractions.

Measurement

In Year 1, children begin to use some common standard units, including measuring objects using rulers, weighing scales and jugs. They accurately use comparative language for length, weight, volume and time, such as longer/shorter, heavier than/lighter than, more/less, and quicker/slower. Children read the time on analogue clocks to the hour and half-hour, and they learn to recognise different coins and notes. In Year 2, children will use standard units more independently and gain experience in telling the time and doing simple calculations with money.

Geometry: properties of shapes

In Year 1, children become familiar with a range of common 2D and 3D shapes, including rectangles, circles and triangles, cuboids,

pyramids and spheres. They recognise these shapes in different orientations, sizes and contexts.

Geometry: position and direction

Children continue to use positional language accurately when describing where people or objects are in the environment. They experience the differences between half, quarter and three-quarter turns by practising making these turns in a clockwise direction.

Key Maths Concepts in Year 1

Using practical activities to reinforce concepts of number, place value and calculation

In Year 1, children begin to extend their understanding of number, building on concrete, exploratory approaches used in the Foundation Stage. Practical activities and the physical exploration of concepts continue to play an important part in children's mathematical work in Year 1 and beyond. Children start to use more abstract approaches to mathematical problem solving, including using mathematical statements that involve symbols such as +, – and =.

Working with numbers to 100 and beyond

It can be difficult for young children to grasp larger numbers. They will have learned to work with numbers and groups of objects up to 10, but envisaging numbers greater than this can prove more challenging. Providing children with opportunities to see larger numbers in different contexts will help them to become more familiar with the names and relative values. For example, noticing house numbers as they walk along the street will help them to recognise that number 12 is a long way from number 78. They can also be encouraged to use numbers for practical purposes, such as recording and comparing the numbers of children at school on different days, or comparing the number of paint brushes in a pot to the number of writing pencils, for example.

Place value

By comparing numbers, children will begin to see that it is helpful to look at the first digit in two-digit numbers when comparing numbers for size – for example, 23 is less than 32, because 23 has the first digit 2, whereas 32 has the first digit 3. Using hundred squares and number lines to compare numbers will help children identify the decades that numbers belong to, and so build their understanding of how numbers compare in size. This will help build a firm foundation for the further work on place value which children will undertake in Year 2.

Addition and subtraction

To help children remember the addition and subtraction number bonds to 20, provide them with opportunities to add and subtract in many different contexts, such as dice games, puzzles and differences in race times. Also, use addition and subtraction throughout the school day, for example – Have we got enough pencils for this group? How many more pencils do we need? Yes, 6 take away 4 is 2. We need two more pencils.

Overview of Progression in Year 2

Number and place value

In Year 2, children develop their understanding of place value from Year 1, learning the place value of each digit in a two-digit number; for example, 23 means two tens and three ones. They begin to understand the use of 0 as a place holder. They will build on this when they consider place value in three-digit numbers in Year 3. Children learn to count in 3s, which will help develop the concept of a third. They order numbers from 0 to 100 and use the $<$, $>$ and $=$ signs. They become more independent in partitioning numbers in different ways, and this helps to support their work in addition and subtraction.

Addition and subtraction

Children use mental methods to solve problems using addition and subtraction, as well as using objects and pictorial representations. They begin to record addition and subtraction in columns, reinforcing their knowledge of place value. They independently use addition and subtraction facts to 20, and this helps them derive number facts up to 100, such as seeing the parallels between $2 + 6 = 8$ and $20 + 60 = 80$. They add and subtract different combinations of numbers, including two two-digit numbers. They understand the inverse relationship between addition and subtraction (that one operation undoes the other), and use this to check their calculations.

Multiplication and division

In Year 2, children learn the 2, 5 and 10 multiplication tables, and use these facts in calculations. They recognise that multiplication and division have an inverse relationship, and begin to use the $\times$ and $\div$ symbols. They learn that multiplication is commutative (2×10 is the same as 10×2) whereas division is not ($10 \div 2$ is not the same as $2 \div 10$).

Fractions

Children extend their understanding of fractions to $\frac{1}{3}$ and $\frac{3}{4}$ and learn that $\frac{1}{2}$ is equivalent to $\frac{2}{4}$. They read and write the symbols $\frac{1}{2}$, $\frac{1}{4}$ for example. As well as experimenting practically with fractions and connecting unit fractions to the concepts of sharing and grouping, they begin to write simple fractions, such as $\frac{1}{4}$ of $8 = 2$. They will develop this in Year 3 when they learn about tenths and begin to find out more about non unit fractions.

Measurement

Children learn to independently choose the appropriate standard units for a particular measurement and use a range of different measuring instruments. They recognise and use the £ and p symbols for money (but do not use mixed notation, such as £5.72), and undertake addition and subtraction using money. They learn to tell the time to 5 minutes, including quarter past and quarter to the hour.

Geometry: properties of shapes

By handling common 2D and 3D shapes (including quadrilaterals and cuboids, prisms, cones and polygons) children identify their properties, using the terms *sides*, *edges*, *vertices* and *faces*. They compare and sort shapes using their properties.

Geometry: position and direction

Children experiment with making patterns using shapes and begin to use the concept of right angles to describe quarter, half and three-quarter turns. They will develop this concept further in Year 3.

Statistics

Children are introduced to pictograms, tally charts, block diagrams and tables, using these to collate and compare information, and to ask and answer simple questions (for example, finding the number of items in a category, perhaps using one-to-many correspondence, or comparing different categories by quantity).

Key Maths Concepts in Year 2

Commutative and non-commutative operations

Commutative operations are those where changing the order of the numbers in the calculation doesn't affect the answer (for example, $2 + 4 = 6$, and $4 + 2 = 6$). In Year 2, children meet the idea that some mathematical operations are commutative, whereas others are not. It's helpful to give children lots of examples so that they can begin to understand and make this connection for themselves, using objects and pictorial representations as well as written calculations.

Addition and multiplication are commutative:

- $6 + 5 = 11$, and $5 + 6 = 11$
- $4 \times 3 = 12$, and $3 \times 4 = 12$

Children can be encouraged to check that this is true for a wide range of multiplication and addition facts. Using concrete objects such as blocks is a good way to demonstrate that the outcome of addition is always the same, whether you start with for example with 6 blocks and add 5 blocks or vice versa. Similarly, for multiplication, make an array of 4 rows of 3 blocks and then walk around it to see that it is also 3 rows of 4 blocks.

Subtraction and division are non-commutative:

- $5 - 3$ does not come to the same as $3 - 5$
- $6 \div 2$ does not come to the same as $2 \div 6$

As children haven't met negative numbers yet, it isn't necessary to go into detail about the results which give answers in negative numbers – you could say *oh, we haven't got enough to take away five* or *we'll have to cut the sweets up as we want to divide two sweets between six people*.

Inverse relationships

If two mathematical operations have an inverse relationship, this means that one operation 'undoes' the other (for example, $3 \times 6 = 18$ can be undone by performing the operation $18 \div 6 = 3$). This is a concept which children first meet in Year 2, when the idea is introduced that there is an inverse relationship between addition and subtraction, and between multiplication and division. Children should become familiar with the idea that, for example, you can check the answer to a statement like $2 \times 10 = 20$ by calculating $20 \div 2 = 10$, or $20 \div 10 = 2$. In the same way, you could check $2 + 10 = 12$ by calculating $12 - 2 = 10$ or $12 - 10 = 2$. Plenty of practice is helpful in ensuring that children become fluent in using inverse relationships to check their calculations, and it helps to use concrete objects to demonstrate what is happening visually.

Linking division with fractions

In Year 1, children encountered the idea that division is related to the concept of grouping and sharing quantities (for example, 12 can be divided into 4 groups of 3, or 3 people can share 12 things by getting 4 things each). The idea of sharing can also be used to make a link between division and fractions – so 16 divided (or shared) by 2 is 8, and 8 is half of 16. Again, it will help to use concrete objects to demonstrate this, so children can see that dividing a number of objects by 2 is the same as splitting the group of objects into two halves.

Overview of Progression in Year 3

Number and place value

In Year 2, children learned about place value in two-digit numbers. In Year 3, they will extend their understanding to include the place value of three-digit numbers – for example, 232 is two hundreds, three tens and two ones. They learn to count in 4s, 8s, 50s and 100s, and work with numbers up to 1000. They begin to use estimation when dealing with number problems involving larger numbers.

Addition and subtraction

In Year 3, children practise mentally adding and subtracting combinations of numbers, including three-digit numbers. When using written methods for addition and subtraction, children learn to write the digits in columns, using their knowledge of place value to align the digits correctly. Children begin to use estimation to work out the rough answer to calculations in advance, and use inverse operations to check their final answers – for example, checking $312 + 43 = 355$ by working out $355 - 43 = 312$.

Multiplication and division

In Year 3, children learn the 3, 4 and 8 multiplication tables, and use their knowledge of doubling to explore links between the 2, 4 and 8 multiplication tables. They use facts from these new multiplication tables to solve multiplication and division problems. Building on their work with written mathematical statements in Year 2, they begin to develop more formal written methods of multiplication and division. They will extend this in Year 4 when they work with more complex multiplication and division problems.

Fractions

Building on work from Year 2, children learn about tenths, and confidently count up and down in tenths. They begin to make links between tenths and place value (ten units make a ten; ten tens make a hundred) and explore connections between tenths and decimal measures. Children extend their understanding of fractions to include more non-unit fractions (that is those with digits other than 1 as their numerator – for example, $\frac{1}{5}$ is a unit fraction, and $\frac{2}{5}$ is a non-unit fraction). They also begin to add and subtract fractions with the same denominator up to one whole, such as $\frac{3}{5} + \frac{3}{5} = \frac{4}{5}$, $\frac{4}{7} - \frac{2}{7} = \frac{2}{7}$.

Measurement

Children will learn to tell the time from analogue 24-hour clocks as well as 12-hour clocks. They will move on to use digital 24-hour clocks in Year 4. They will extend their work on money from Year 2, including working out correct change. They will also learn to measure the perimeter of 2D shapes and solve addition and subtraction problems involving length, mass and volume.

Geometry: properties of shapes

In Year 3, children begin to learn about angle as a property of shapes, and they connect the concept of angles with the idea of turning – for example, realising that two right angles equal a half-turn. They can identify whether a given angle is greater or less than a right angle (obtuse or acute). They can accurately describe lines as horizontal, vertical, perpendicular or parallel.

Statistics

In Year 2, children were introduced to pictograms, tally charts, block diagrams and tables, and this year they use these diagrams to answer an increasing range of questions, including two-step questions (in other words, those where there is a hidden question that needs to be answered before the main question can be tackled) For example, in order to work out how many more cupcakes did Jon eat than Janie, children first need to find out how many cakes each person ate.

Key Maths Concepts in Year 3

Adding and subtracting fractions with the same denominator within one whole

Children should begin to recognise fractions as numbers that can be used in calculations. Using practical apparatus and examples such as slices of a cake or parts of a sandwich, demonstrate how to add and subtract fractions with the same denominator. Begin with different ways of making one whole by using fractions that have the same denominator, such as a cake that is cut into 8 slices:

$$1 = \frac{1}{8} + \frac{7}{8}$$

$$1 = \frac{5}{8} + \frac{3}{8}$$

$$1 = \frac{2}{8} + \frac{6}{8}$$

$$1 = \frac{4}{8} + \frac{4}{8}$$

$$1 = \frac{3}{8} + \frac{5}{8}$$

$$1 = \frac{7}{8} + \frac{1}{8}$$

$$1 = \frac{4}{8} + \frac{4}{8}$$

Ask children to explain the pattern in the calculations in the answers. What stays the same and what changes each time? (The numerators change but the denominator stays the same.) Emphasise that we're recording how many eighths we have each time. Repeat for other fractions, such as sixths, fifths, tenths, and quarters.

In a similar way, discuss subtraction of fractions with the same denominator from one whole:

$$1 = \frac{1}{8} + \frac{7}{8}$$

$$1 = \frac{5}{8} + \frac{3}{8}$$

$$1 = 1$$

$$7 = \text{VII} (5 + 2)$$

$$1 = \frac{2}{8} + \frac{6}{8}$$

$$1 = \frac{4}{8} + \frac{4}{8}$$

$$2 = \text{II}$$

$$8 = \text{VIII} (5 + 3)$$

$$1 = \frac{3}{8} + \frac{5}{8}$$

$$1 = \frac{7}{8} + \frac{1}{8}$$

$$3 = \text{III}$$

$$9 = \text{IX} (10 - 1)$$

$$1 = \frac{4}{8} + \frac{4}{8}$$

$$1 - \frac{8}{8} = 0$$

$$4 = \text{IV (literally, } 5 - 1)$$

$$10 = \text{X}$$

$$5 = \text{V}$$

$$11 = \text{XI} (10 + 1)$$

$$6 = \text{VI} (5 + 1)$$

$$12 = \text{XII} (10 + 2)$$

Roman numerals from I to XII on clock faces

In Year 2, children will have had practice of telling the time to 5 minutes on analogue clock faces. When introducing Roman numerals on clock faces in Year 3, children can make the link between the number positions that they already know and the new symbols. The Roman numerals for numbers 1 to 12 are:

However, many clock faces use IIII for 4. Discuss with children why this might be.

Also, bear in mind that whereas 1, 2, 3 are usually shown upright all around a clock face, Roman numerals tend to be shown with their bases pointing towards the centre of the clock face. This can be confusing for children as the symbols can appear to be reversed. For example, 6 = VI, but is often shown upside down on a clock face as I. You could demonstrate how the numbers radiate out from the centre of the clock face by turning the clock around to show the symbols right way up.

Overview of Progression in Year 4

Number and place value

In Year 4, children use place value in four-digit numbers, such as 3742 is three thousands, seven hundreds, four tens and two ones. They learn to count in 6s, 7s, 9s, 25s and 1000s, and say 1000 more or less than a specific number. They encounter negative numbers by counting back past zero on number lines, and continue work on rounding (to the nearest 10, 100 or 1000) and estimation. Children are introduced to Roman numerals to 100 and find out how the number system has changed over time.

Addition and subtraction

Children extend previous years' work by adding and subtracting numbers with up to four digits, using mental and written methods, including columnar addition and subtraction. They keep practising mental methods of addition and subtraction as well as written methods, performing calculations increasingly quickly and confidently. They continue using estimation as well as inverse operations to help check answers.

Multiplication and division

Children learn the remaining multiplication tables up to the 12 multiplication table, and use facts from the tables to solve increasingly complex multiplication and division problems. They build on their work with mental methods of calculation in Year 3, using their knowledge of place value and number facts to multiply and divide confidently. They begin to use a formal written layout for multiplication when multiplying two-digit and three-digit numbers by one-digit numbers.

Fractions (including decimals)

Developing ideas from Year 3, children confidently count up and down in hundredths. They learn about and recognise equivalent fractions, simplifying them when necessary (for example, understanding that $\frac{1}{3} = \frac{2}{6} = \frac{4}{12}$). They move on to understand and show families of equivalent fractions. They build on earlier work, practising adding and subtracting fractions with the same denominator ($\frac{2}{3} + \frac{7}{9} = \frac{11}{9}$). Children also work with decimal equivalents of tenths and hundredths and of $\frac{1}{2}$, $\frac{1}{4}$, $\frac{3}{4}$, understanding that decimals and fractions are different ways of expressing numbers. They round numbers with one decimal place to the nearest whole number, and compare numbers with the same number of decimal places, up to two decimal places. They use fractions and decimals to solve straightforward money and measure problems.

Measurement

In Year 3, children learned to measure the perimeter of 2D shapes; they now extend this, calculating the perimeter of rectilinear shapes including squares. They work out the area of rectilinear shapes by counting. Children compare digital clocks and analogue clocks, reading, writing and converting time between the two systems. They begin using £ and p notation to record money.

Geometry: properties of shapes

Children learn about a wider range of geometric shapes, including different types of triangles and quadrilaterals. They develop work on acute and obtuse angles from Year 3, comparing and ordering angles up to two right angles. They work with lines of symmetry in 2D shapes.

Geometry: position and direction

Children begin to work with a coordinate grid (first quadrant only), using coordinates to describe positions on a grid.

Statistics

Children are introduced to the difference between discrete and continuous data, using bar charts for discrete data (numbers of children travelling to school by different methods) and line graphs for continuous data (children's heights). Children will build further on their work with line graphs in Year 5.

Key Maths Concepts in Year 4

Introducing Roman numerals and the history of the number system

In Year 4, children will learn more about Roman numerals (which they first met in Year 3, in the context of analogue clock faces with Roman numerals). By this stage, children will be familiar with the concept of place value, and the way that our number system allows us to represent any number using only the ten digits 0 to 9. Children will learn that most ancient civilisations (including the Greeks, Romans and Egyptians) used different number systems to ours, which is called the Hindu-Arabic number system. In the Roman number system, letters were used to represent numbers, with I standing for units, V for fives, X for tens, C for hundreds and M for thousands. Because these letters were repeated to show quantity (such as, III represents 3, XXXVII represents 37 and CCCXXXIII represents 333) many numbers were represented by long and cumbersome chains of letters which are relatively hard to compare and use in written calculations. The Roman system did not include a concept of zero. Our understanding of zero within our current number system was originally developed in India. The Hindu word for zero is 'sunya'. Children do not need to learn in detail about the different number systems that have prevailed in different times and places throughout history, but it is very helpful for them to get a sense that our current system is a relatively recent development. It's now used throughout the world, however, because of the efficient way it represents larger numbers and can enable us to record mathematical operations efficiently.

Understanding the difference between discrete and continuous data

In Year 3, children met a range of different formats for recording data, including bar charts. They now extend this to include line graphs, and they will need to begin to understand the different circumstances when it is appropriate to use line graphs rather than bar charts. This involves understanding the difference between discrete data (which can be effectively recorded using bar charts) and continuous data (which is more effectively shown on line graphs). As a rule of thumb, discrete data can be counted, whereas continuous data can be measured. So the number of spots on a ladybird would be discrete data (since ladybirds can only have a whole number of spots) and children could use a bar chart to record the number of spots observed on a group of ladybirds. The chart would clearly show that, for example, 7 ladybirds had five spots, 4 had two spots, 3 had three spots and none had four spots or one spot. Discrete data has units that cannot be split up. Continuous data is data that can take any value within a range. So, for example, a person could be 152 cm, 152.1 cm, and 152.17 cm and so on. Continuous data could be shown on a number line, and every point on the line would have meaning (whereas with discrete data, only certain points have meaning). Continuous data is shown best on a line graph (or time graph) because it usually shows how a quantity changes over time. For example, children might use a time graph to record how a kitten's weight increased over time, or to record the height of a sunflower plant from seedling to full height.

Overview of Progression in Year 5

Number and place value

Children work with numbers up to at least 1,000,000, using knowledge of place value to work out the value of digits. They continue working with negative numbers in different contexts, and practise reading Roman numerals to 1000 (M), which helps them work out years written in Roman numerals. They continue using techniques introduced in earlier years for approximation and estimation.

Addition and subtraction

Children use columns in written addition and subtraction, accurately adding and subtracting numbers with more than four digits. They use mental methods to add and subtract increasingly large numbers, and use rounding to check their answers. With support they choose appropriate operations and methods, and work out the level of accuracy required to answer a particular problem. They will continue to develop this work in Year 6.

Multiplication and division

Children identify multiples and factors, and find all the factor pairs of a given number. With support, they use factors to help solve multiplication and division problems involving larger numbers, and they confidently use written methods to multiply and divide large numbers. They extend their mathematical vocabulary and understanding, beginning to work with prime numbers, prime factors, composite (non-prime) numbers, square and cubed numbers.

Fractions (including decimals and percentages)

Children compare fractions with denominators that are multiples of the same number (comparing $\frac{3}{7}$ with $\frac{6}{14}$). They also identify equivalent fractions of a given fraction including tenths and hundredths. They learn about mixed numbers and improper fractions, and understand how mixed numbers could be converted to improper fractions, and vice versa. With support and using practical equipment and diagrams, they multiply proper fractions and mixed numbers by whole numbers. Children convert decimal numbers into fractions ($0.65 = \frac{65}{100}$). Extending their work from previous years, they use thousandths and make connections between these and tenths, hundredths and their decimal equivalents. They round decimals to the nearest whole number, and to one decimal place, and begin to work with numbers with three decimal places. Children begin to work with percentages and find solutions to problems using percentage and decimal equivalents of $\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{5}$, $\frac{2}{5}$, $\frac{4}{5}$, for example. This forms a basis for further work on percentages in Year 6.

Measurement

In Year 4, children calculated the perimeter of rectilinear shapes; they now extend this to composite (or compound) rectilinear shapes, and calculate the area of squares and rectangles. They begin to understand and estimate volume and capacity, and compare metric with common imperial units. They will build on this work in Year 6.

Geometry: properties of shapes

Children extend their work on angles from Year 4, estimating, measuring, comparing and drawing a variety of angles using degrees. They use given dimensions to help them draw shapes accurately, and use techniques learnt in the context of missing number problems to help

them work out missing angles.

Geometry: position and direction

Building on work with coordinate grids from Year 4, children work out the position of shapes following reflection or translation, in the first quadrant.

Statistics

In Year 4, children were introduced to line graphs; now they use information from line graphs to solve problems. They practise completing and reading tables, including timetables

Key Maths Concepts in Year 5

Introducing negative numbers in context

Children will have encountered negative numbers during Year 4, but in Year 5 they extend their understanding, meeting negative numbers in a range of different contexts.

The idea of negative numbers may seem counterintuitive in some ways – it's clear what we mean by 3 in the context of sweets, jumpers or sheep, but what about -3 ? Fortunately, there are several everyday contexts which will give children a sense of how useful negative numbers can be. Probably the most familiar context for negative numbers in daily life is temperature. Children will see negative numbers used on a thermometer scale for values below 0° , and they will have heard weather forecasters predicting an overnight drop in temperature, for example to -2° .

Children may also be familiar with negative numbers in terms of distances above and below sea level, such as a particular location might be -8 metres (8 metres below sea level). Or they may have used a lift in a large building where the ground floor is marked as 0 on the lift buttons, in which case basement levels may be called -1 and -2 .

When introducing negative numbers, it's a good idea to use a vertical number line rather than a horizontal line, because this will help children to use accurate language to describe number relationships above and below zero – for example, they will naturally describe numbers as *falling*, *dropping* or *rising*, and will speak in terms of one number being below or above another. It can be helpful to display the vertical number line like a scale on a giant thermometer.

Refer to numbers less than zero as negative numbers, but allow children to say minus six, minus thirteen, for example.

Comparing percentages with fractions and decimals

Children will need to understand that a percentage is really a fraction with a denominator of 100, so 25% is equivalent to $\frac{25}{100}$.

Children will begin to make connections between percentages and decimals when they look at patterns such as this: $15\% = 0.15$

$43\% = 0.43$

$75\% = 0.75$

The digits are the same, but the decimal point is in a different place. 15% is the same as $\frac{15}{100}$, so drawing on their knowledge of place value, children should begin to understand why the decimal equivalent of 15% is written 0.15.

Percentages below 10% can cause problems because, for example, 5% is not written 0.5 but 0.05 (0.5 being equivalent to $\frac{1}{2}$ or 50%).

However, place value should also help children avoid giving the wrong decimal equivalent for smaller percentages and fractions.

Overview of Progression in Year 6

Number and place value

Children work with numbers up to 10,000,000, using knowledge of place value to work out the value of digits. They continue working with negative numbers in different contexts, and work out intervals across zero.

Addition, subtraction, multiplication and division

Children continue to practise using efficient written and mental methods for all four operations, working with larger numbers and increasingly complex calculations, and confidently using number facts from the multiplication and division tables. They learn about the correct order of operations, understanding that (for example) to work out $(7 + 8) \div 3$ they need to tackle the operation in brackets first.

Fractions (including decimals and percentages)

Children begin to add and subtract fractions with different denominators. They multiply pairs of simple proper fractions together, and divide proper fractions by whole numbers. Children begin to multiply and divide numbers with two decimal places by one-digit and two-digit whole numbers. They are introduced to this in practical contexts such as measures and money (for example, multiplying 1.80 metres by 2, or dividing £1.80 by 3). Children extend their work on percentage and decimal equivalents of fractions, begun in Year 5. They work out simple percentages of whole numbers, and encounter equivalences between fractions, decimals and percentages in different contexts.

Ratio and proportion

In Year 6, children are introduced to the concepts of ratio and proportion and use these to compare quantities and sizes; for example, understanding that mixing sugar and flour in a ratio of 1:2 means using 1 part of sugar for every 2 parts of flour, and that the proportion of sugar in the mixture is 1 out of 3 parts, which is $\frac{1}{3}$.

Algebra

Children begin to form an understanding of algebra by encountering the use of symbols and letters to represent unknown elements, for example using letters to represent missing numbers in missing number problems. They also describe and generate number sequences and patterns. They begin to use simple formulae expressed in words, such as 'the perimeter of a rectangle is two times the length plus two times the width.

Measurement

Children extend their Year 5 work on calculating area and estimating volume and capacity to calculate the area of parallelograms and triangles, and work out the volume of cubes and cuboids using standard units. They convert measurements from miles to kilometres.

Geometry: properties of shapes

This year, children make nets to build simple 3D shapes, and work out unknown angles in triangles, quadrilaterals and regular polygons. They draw and name the different parts of a circle (radius, diameter and circumference).

Geometry: position and direction

Extending their work with coordinate grids, children learn to describe positions on all four quadrants of the grid, including using negative numbers. They translate simple shapes on the coordinate plan, reflecting them in the axes.

Statistics

Children continue working with line graphs and also learn how to use pie charts, linking this with their work on angles, percentages and fractions. Children learn how to work out the mean of a set of data and understand when it might be appropriate to calculate the mean, and why.

Key Maths Concepts in Year 6

Ratio and Proportion: solving problems involving unequal sharing

Children will already know that if they want to work out how to share, for example, 20 sweets equally between two people, they can use straightforward division: they can calculate $20 \div 2 = 10$. However, what if they need to find out how to share 20 sweets between two people in a ratio of 1:3; in other words, where Person A receives three sweets for every one sweet received by Person B? Children will need to understand that the ratio 1:3 implies that there are 4 'shares' to be parcelled out between the two people ($1 + 3 = 4$). If 20 sweets = 4 shares, then each share is worth 5 sweets ($20 \div 4 = 5$), so Person A gets one share, consisting of 5 sweets in total, and lucky Person B gets three shares, consisting of 15 ($3 \times 5 = 15$) sweets in total.

When working with ratios and proportions, children will need to understand the distinction between ratio and proportion. A ratio compares part of the whole with another part of the whole; for instance, shortbread might be made using flour, butter and sugar in a ratio of 4:3:2, with four parts of flour and three parts of sugar for every two parts of butter. However a proportion is used to describe a part of the whole in relation to the whole itself; so in this fictional shortbread, the proportion of butter is 3 out of 9 parts, or one third.

Working out the size of the sectors in pie charts

Children will need to understand that in order to create a pie chart, they first need to work out the fraction of the total that each sector represents. They can then convert this fraction to an angle, and draw sectors with the correctly sized angles. So, for example, imagine the following data set needs to be represented by a pie chart:

- Number of children travelling to school by car: 15
- Number of children travelling to school by bike: 10
- Number of children walking to school: 5

Children would need first to work out the total number of children in the group (30). They can then work out the fraction of the total which makes up each category – so 'car' accounts for 15 out of the 30 children, or $\frac{1}{2}$ of the total; 'bike' accounts for 10 out of 30, or $\frac{1}{3}$; and 'walk' accounts for 5 out of 30, or $\frac{1}{6}$ of the total.

Children will know that there are 360° in a full turn, and this means they can work out the angle needed for each segment by multiplying the fraction by 360° . (In this example, since the numerator of each fraction is 1, you can just divide 360 by the denominator of each fraction.) This gives the following angles for each segment of the pie:

- Car 180°
- Bike 120°
- walk 60°

Children can then use these angles to draw the sectors on the pie chart.

Mathematical Vocabulary

Mathematical vocabulary is organised according to its four strands:

- Number
- Measurement
- Geometry
- Statistics

Plus additionally for Year 6:

- Ratio & Proportion
- Algebra

Using and Applying Mathematics is integrated throughout.

The words listed for each year include vocabulary from the previous year, with new words for the year printed in purple from Year 2 onwards. Some words may appear under different strands in different years, as their meaning is expanded or made more specific. Class teachers can use these lists to identify the vocabulary relating to a series of lessons they are planning. They can make provision for the introduction of new vocabulary and the consolidation of familiar terms. They can ask support staff and parents to emphasise this vocabulary for an appropriate period.

Spoken Language

The national curriculum for mathematics reflects the importance of spoken language in pupils' development across the whole curriculum – cognitively, socially and linguistically. The quality and variety of language that pupils hear and speak are key factors in developing their mathematical vocabulary and presenting a mathematical justification, argument or proof. They must be assisted in making their thinking clear to themselves as well as others and teachers should ensure that pupils build secure foundations by using discussion to probe and remedy their misconceptions. There are clear expectations set out in the National Curriculum in relation to the use of the vocabulary, its link to spelling and standards to be met by the end of each stage of learning (Year 2, Year 4 and Year 6).

MATHEMATICS VOCABULARY

How do children develop their understanding of mathematical vocabulary?

Teachers often use informal, everyday language in mathematics lessons before or alongside technical mathematical vocabulary. Although this can help children to grasp the meaning of different words and phrases, you will find that a structured approach to the teaching and learning of vocabulary is essential if children are to move on and begin using the correct mathematical terminology as soon as possible. Some children may start at Sandgate Primary School with a good understanding of mathematical words when used informally, either in English or their home language. Find out the extent of their mathematical vocabulary and the depth of their understanding, and build on this.

You need to plan the introduction of new words in a suitable context, for example, with relevant real objects, mathematical apparatus, pictures and/or diagrams. Explain their meanings carefully and rehearse them several times. Referring to new words only once will do little to promote learning. Encourage their use in context in oral sessions, particularly through your questioning. You can help sort out any ambiguities or misconceptions your pupils may have through a range of open and closed questions. Use every opportunity to draw attention to new words or symbols with the whole class, in a group or when talking to individual pupils. The final stages are learning to read and write new mathematical vocabulary in a range of circumstances, ultimately spelling the relevant words correctly.

Regular, planned opportunities for development

It is not just younger children who need regular, planned opportunities to develop their mathematical vocabulary. All children throughout Key Stages 1 and 2 needs to experience a cycle of oral work, reading and writing as outlined below.

Oral work based on practical work:

- so that they have visual images and tactile experience of what mathematical words mean in a variety of contexts

Other forms of oral work

So that they have opportunities to:

- listen to adults and other children using the words correctly
- acquire confidence and fluency in speaking, using complete sentences that include the new words and phrases, sometimes in chorus with others and sometimes individually
- describe, define and compare mathematical properties, positions, methods, patterns, relationships, rules
- discuss ways of tackling a problem, collecting data, organising their work
- hypothesise or make predictions about possible results
- present, explain and justify their methods, results, solutions or reasoning, to the whole class or to a group or partner
- generalise, or describe examples that match a general statement

Reading aloud and silently, sometimes as a whole class and sometimes individually for example, reading:

- numbers, signs and symbols, expressions and equations in blackboard presentations
- instructions and explanations in workbooks, textbooks, CD-ROMs
- texts with mathematical references in fiction and non-fiction books and books of rhymes during the literacy hour as well as mathematics lessons
- labels and captions on classroom displays, in diagrams, graphs, charts and tables
- definitions in illustrated dictionaries, including dictionaries that they themselves have made, in order to discover synonyms, origins of words, words that start with the same group of letters (such as triangle, tricycle, triplet, trisect)

Writing and recording in a variety of ways, progressing from words, phrases and short sentences to paragraphs and longer

pieces of writing, for example: • writing prose in order to describe, compare, predict, interpret, explain, justify...

- writing formulae, first using words, then symbols
- sketching and labelling diagrams in order to clarify their meaning
- drawing and labelling graphs, charts or tables, and interpreting and making predictions from the data in them, in mathematics and other subjects

MATHEMATICS VOCABULARY

The Skill of Questioning

Children cannot learn the meanings of words in isolation. The use of questions is crucial in helping them to understand mathematical ideas and use mathematical terms correctly.

It is important to ask questions in different ways so that children who do not understand the first time may pick up the meaning subsequently. Pupils for whom English is an additional language benefit and so will others who are not always familiar with the vocabulary and grammatical structures used in school.

It is easy to use certain types of questions — those that ask the listener to recall and apply facts — more often than those that require a higher level of thinking. If you can use the full range of question types you will find that children begin to give more complex answers in which they explain their thinking.

Types of Question

Recalling Facts

-  What is 3 add 7?
-  How many days are there in a week?
-  How many centimetres are there in a metre?
-  Is 31 a prime number?

Applying Facts

-  Tell me two numbers that have a difference of 12.
-  What unit would you choose to measure the width of the table?
 -  What are the factors of 42?

Hypothesising or Predicting

-  Estimate the number of marbles in this jar.
-  If we did our survey again on Friday, how likely is it that our graph would be the same? Roughly, what is 51 times 47?
How many rectangles in the next diagram?
And the next?

Designing and Comparing Procedures

- How might we count this pile of sticks?
- How could you subtract 37 from 82?
- How could we test a number to see if it is divisible by 6?

MATHEMATICS VOCABULARY

On this and the following page are further examples of questions to help you promote good dialogue and interaction in

How could we find the 20th triangular number?
Are there other ways of doing it?

Interpreting Results

So what does that tell us about numbers that end in 5 or 0?
What does the graph tell us about the most common shoe size?
So what can we say about the sum of the angles in a triangle?

Applying Reasoning

The seven coins in my purse total 23p. What could they be?
In how many different ways can four children sit at a round table?
Why is the sum of two odd numbers always even?

mathematics lessons.

Below are examples of closed questions with just one correct answer and open questions which have a number of different correct answers. Open questions give more children a chance to respond and they often provide a greater challenge for higher attaining pupils, who can be asked to think of alternative answers and, in suitable cases, to count all the different possibilities.

Closed Questions

- Count these cubes.
- A chew costs 3p. A lolly costs 7p. What do they cost altogether?
- What is $6 - 4$?
- What is $2 + 6 - 3$?
- Is 16 an even number?
- Write a number in each box so that it equals the sum of the two numbers on each side of it.
- Copy and complete this addition table:
- What are four threes?
- What is 7×6 ?
- How many centimetres are there in a metre?
- Continue the sequence 1, 2, 4...
- What is one fifth add four fifths?
- What is 10% of 300?
- What is this shape called?
- This graph shows the room temperature on 19th May. What was the temperature at 10.00am?

- How could we count these cubes?
- A chew and a lolly cost 10p altogether. What could each sweet cost?
- Tell me two numbers with a difference of 2.
- What numbers can you make with 2, 3 and 6? • What even numbers lie between 10 and 20? • Write a number in each circle so that the number in each box equals the sum of the two numbers on each side. Find different ways of doing it.
- Find different ways of completing this table:
- Tell me two numbers with a product of 12.
- If $7 \times 6 = 42$, what else can you work out?
- Tell me two lengths that together make one metre. • Find ways of continuing this sequence: 1, 2, 4... • Write eight different ways of adding two numbers to make one.
- Find ways of completing: ____% of ____ = 30
- Sketch some different triangles.
- This graph shows the room temperature on 19th May. Can you explain it?

Open Questions

Year 1 Mathematics Vocabulary

Number & Place Value

number

zero, one, two, three... to twenty and beyond zero, ten, twenty... one hundred

none

how many...?

count, count (up) to

count on (from, to)

count back (from, to)

count in ones, twos... tens...

more, less, many, few

odd, even

every other

how many times?

pair

its, ones

tens

exchange

digit

'teens' number

the same number as, as many as
equal to

Of two objects/amounts:

greater, more, larger, bigger

less, fewer, smaller

Of three or more objects/amounts:

greatest, most, biggest, largest

least, fewest, smallest
one more, ten more
one less, ten less
compare
order
size
first, second, third... tenth, eleventh...
twentieth last, last but one
before, after
next
 between, half-way between

Number – Addition & Subtraction +, add,
more, plus
make, sum, total
altogether, =, equals
score
double, near double
one more, two more... ten more... how
many more to make...? how many more
is... than...? how much more is...?
-, subtract, take (away)
minus, leave
how many are left/
how many have gone?
one less, two less, ten less... how many
fewer is... than...? how much less is...?
difference between
half, halve

number bonds

Number – Multiplication & Division array
=, equals, sign
is the same as

grouping, sharing
doubling
fraction
Estimating
guess how many
estimate
nearly, roughly, close to
about the same as
just over, just under
too many, too few,

enough, not enough

Solving Problems

put together
add
altogether
total
take away
distance between, difference between
more than, less than
puzzle
answer
right, wrong
what could we try next?
how did you work it out?
count out, share out, left, left over number
sentence
sign, operation

Number – Fractions

half, $\frac{1}{2}$
quarter, $\frac{1}{4}$
half a length, quantity, set of objects, shape
two equal parts
four equal parts

whole
Measurement- General
measure
size
compare
guess, estimate
enough, not enough
too much, too little, too many, too few
nearly, roughly
close to, about the same as
just over, just under
Measurement - Capacity
full
half full
empty
holds

container

Year 1 Mathematics Vocabulary

Measurement - Time

time
days of the week: Monday, Tuesday...
seasons: spring, summer, autumn, winter
day, week, month, year
weekend, birthday, holiday
morning, afternoon, evening
night, midnight
bedtime, dinnertime, playtime
today, yesterday, tomorrow
before, after
next, last
now, soon, early, late
quick, quicker, quickest, quickly
fast, faster, fastest
slow, slower, slowest, slowly

old, older, oldest
 new, newer, newest
 takes longer, takes less time
 hours, minutes, seconds
 o'clock, half past
 clock, watch, hands
 how long ago?
 how long will it be to...?
 how long will it take to...?
 how often?
 always, never, often, sometimes, usually
 once, twice

Measurement- Length

Length, width, height, depth
 Long, short, tall
 High, low
 Wide, narrow
 Deep, shallow
 Thick, thin
 Longer, shorter, taller, higher... and so on
 Longest, shortest, tallest, highest...
 and so on Far, near, close

Position, Direction & Movement

Position
 Over, under, underneath
 Above, below
 Top, middle, bottom, side
 On, in
 Outside, inside
 Around

In front, behind
 Front, back
 Before, after
 Beside, next to
 Opposite
 Apart
 Between
 Middle, edge
 Centre
 Corner
 Direction
 Journey
 Left, right
 Up, down
 Forwards, backwards, sideways
 Across
 Close, far, near
 Along
 Through
 To, from, towards, away from
 Movement
 Slide
 Roll
 Turn, whole turn, half turn, quarter
 turn, three quarter turn
 Stretch, bend

Measurement- Shape & Space

Shape, pattern
 Flat
 Curved, straight
 Round
 Hollow, solid

Corner
 Point, pointed
 Face, side, edge, end
 Sort
 Make, build, draw
3D Shapes
 Cube
 Cuboid
 Pyramid
 Sphere
 Cone
 Cylinder
2D Shapes
 circle
 triangle
 square
 rectangle
 star

Measurements - Mass

Weigh, weighs, balances
 Heavy/light, heavier/lighter,
 heaviest/lightest Balance, scales,
 weight

Patterns & Symmetry

Size
 Bigger, larger, smaller
 Symmetrical
 Pattern
 Repeating patter
 Match

Listen
Join in
Say
Think
Imagine
Remember
Start from
Start with
Start at
Look at
Point to
Show me
Put, place
Fit
Arrange, rearrange
Change, change over
Split, separate
Carry on, continue
Repeat
What comes next?
Find
Choose
Collect
Use
Make
Build
Tell me
Describe
Pick out
Talk about
Explain
Show me
Read
Write
Record

Trace
Copy
Complete

Instructions- Continued Finish, end

Fill in
Shade
Colour
Tick, cross
Draw
Draw a line between
Join (up)
Ring
Arrow
Cost
Count
Work out
Answer
check

General

Same number /s
Different number / s
Missing number /s
Number facts
Number line, number track Number
square
Number cards
Abacus
Counters, cubes, blocks, rods Die,
dice
Dominoes
Pegs, peg board
Same way, different way Best way,

another way In order, in a different All, every, each
order Not

Year 2 Mathematics Vocabulary

Round, nearest, round to the nearest ten

Counting, Properties of Numbers and Number Sequences

Number

zero, one, two, three... to twenty and
beyond zero, ten, twenty... one
hundred

zero, one hundred, two hundred.....one
thousand none

how many...?

count, count (up) to

count on (from, to)

count back (from, to)

count in ones, twos, threes, fours,

fives..... count in tens

more, less, many, few

tally

odd, even

every other

how many times?

Multiple of

Sequence

Continue

Predict

Pattern, pair, rule

Estimating

Guess how many, estimate

Nearly, roughly, close to

About the same as

Just over, just under

Exact, exactly

Too many, too few, enough, not enough

Calculations - Addition & Subtraction

+, add, addition, more, plus

Make, sum, total

Altogether

Score

Double, near double

One more, two more..... ten more.....

one hundred more

How many more to make?

How many more is ... than ?

How much more is?

-, subtract, subtraction, take

(away), minus Leave, how many are
left / left over?

One less, two less..... ten less.....

One hundred less

How many fewer is Than?

How much less is?

Difference between

Half, halve

=, equals, sign, is the same as

Tens boundary

Calculations- Multiplication & Division

Lots of, groups of

Multiplication / division facts

X, times, multiply, multiplied by

Multiple of

Once. Twice, three times Ten

times Times as (big, long,

wide..... and so on) Repeated

addition

Array

Row, column

Double, halve

Share, share equally

One each, two each, three each

Group in pairs, threes Tens

Equal groups of

÷, divide, divided by, divided into

Left, left over

Place value & Ordering

Units, ones

Tens, hundreds

Digit

One-, two- or three-digit number

‘teens’ number

Place, place value, place holder

Stands for, represents

Exchange

The same number as, as many as

Equal to

Of two objects/amounts:

• >, Greater, more, larger,
bigger, • <, less, fewer,
smaller

Of three of more

objects/amounts: • Greatest,
most, biggest, largest • Least,
fewest, smallest

• One more, ten more

• One less, ten less

- Compare
- Order
- Size
- First, second, third.....tenth.....twentieth •
- Twenty-first, twenty-second..... •
- Last, last but one
- Before, after
- Next
- Between, half-way between
- Above, below

Fractions

Part, equal parts
 Fraction
 One whole
 One half, two halves
 One quarter, two.... Three.....four
 quarter
 One third
 Non-unit fraction

Year 2 Mathematics Vocabulary

Solving Problems – Making Decisions and Reasoning Pattern, puzzle

Calculate, calculation
 Mental calculation
 Jotting
 Answer
 Right, correct, wrong
 What could we try next?
 How did you work it out?
 Number sentence
 Sign, operation, symbol
Organising & Using Data
 Count, tally, sort vote

Graph, block graph, pictogram
 Represent
 Group, set
 Same, different
 List, table
 Label, title
 Most popular, most common
 Least popular, least common
 Totalling

Simple ratios 2,5,10

Measurement- General

Measure
 Size
 Compare
 Measuring scale
 Guess, estimate
 Enough, not enough
 Too much, too little
 Too many, too few
 Nearly, roughly, about, close to, about the same as
 Just over, just under
 Temperature (°c)
 Thermometer

Measurement - Time

Time
 Days of the week: Monday, Tuesday...
 Months of the year: January, February, March... Seasons: spring, summer, autumn, winter
 Day, week, fortnight, month, year
 Weekend, birthday, holiday
 Morning, afternoon, evening, night, midnight

Bedtime, dinnertime, playtime
 Today, yesterday, tomorrow
 Before, after
 Next, last
 Now, soon, early, late
 Quick, quicker, quickest, quickly
 Fast, faster, slowest, slowly
 Old, older, oldest
 New, newer, newest
 Takes longer, takes less time
 How long ago? How long will it be to....? How long will it take to.....?
 Hour, minute, second
 O'clock, half past, quarter to, quarter past
 Clock, watch, hands
 Digital/analogue clock/watch, timer How often?
 Always, never, often, sometimes, usually
 Once, twice

Measurement- Mass

Weigh, weighs, balances
 Heavy/light, heavier/lighter, heaviest/lightest
 Kilogram (kg), half-kilogram, gram (g)
 Balance, scales, weight
 Scales

Measurement- Length

Length, width, height, depth
 Long, short, tall, high, low
 Wide, narrow, deep, shallow, thick, thin
 Longer, shorter, taller, higher..... and so on
 Longest, shortest, tallest, highest And so on
 Far, further, furthest, near, close, Metre (m),

centimetre (cm)

Ruler, metre stick, tape measure

twice as wide

Measurement- Capacity

Full, half full

Empty

Holds, contains

Litre (l), half-litre, millilitre (ml)

Container

Volume

Measurements – Patterns & Symmetry

Bigger, larger, smaller

Symmetrical

Line of symmetry

Fold

Match

Mirror line, reflection

Pattern, repeating pattern

Money

Coin

Penny, pence (p), pound (£)

Price, cost

But, bought, sell, sold

Spend, spent

Pay

Change

Cheap, costs less, cheaper

How much.....? How many.....?

total

Year 2 Mathematics Vocabulary

Measurement - Shape & Space

Shape, pattern

Flat, curved, straight

Round

Hollow, solid

Corner

Point, pointed

Face, side, edge, end, vertices

Sort

Make, build, and draw

Surface

Quadrilateral, polygon,

3D Shapes

Cube

Cuboid

Pyramid

Sphere

Cone

Cylinder

Prism

2D Shapes

Circle, circular

Triangle, triangular

Square

Rectangle, rectangular

Star

Pentagon

Hexagon

octagon

Position, Direction & Movement

Position

Direction

Over, under, underneath

Above, below

Top, bottom, side

On, in

Outside, inside

Around

In front, behind

P, D & M Continued

Front, back

Before, after

Beside, next to

Opposite

Apart

Between

Middle, edge

Centre

Corner

Direction

Journey, route

Left, right

Up, down

Higher, lower

Forwards, backwards, sideways

Across

Close, far, near

Along

Through

To, from, towards, away from

Clockwise,

anti-clockwise

Movement

Slide

Roll

Whole turn, half turn, quarter turn, three-

quarter turn

Right angle

Straight line

Stretch, bend

Rotation

Instructions

Listen
Join in
Say
Recite
Think
Imagine
Remember

Put, place
Fit
Arrange, rearrange
Change, change over Split
Separate
Carry on, continue
Repeat
What comes next?
Predict
Describe the pattern Describe the rule
Find, find all, and find different Investigate
Choose
Decide
Collect
Use make build

Tell me
Describe
Name
Pick out
Discuss
Talk about
Explain
Explain your method explain how you got
your answer
Give an example of
Show how you
read
write
record

Instructions- Continued Start from
Start with
Start at
Look at
Point to
Show me

Year 2 Mathematics Vocabulary

Instructions- Continued write in
figures
present
represent
trace
copy
complete
finish, end
fill in
shade, colour
label
tick, cross
draw
draw a line between join (up)
ring arrow
cost, count, tally
calculate
work out
solve

answer
check
recognise
combine
order
interpret
collate
General
Same, different
Missing number/s
Number facts
Number pairs
Number bonds
Number line, number track
Number square, hundred square
Number cards
Number grid
Abacus
Counters, cubes, blocks, rods Die,

dice	In order, in a different order	Not
Dominoes	All, every, each	
Pegs, peg boards	Partition	
Geo-strips	Commutative	
Same way, different way	Best way,	Equivalence
another way		

Year 3 Mathematics Vocabulary

Counting, Properties of Numbers & Number Sequences Number

zero, one, two, three... to twenty and beyond zero, ten, twenty... one hundred
 zero, one hundred, two hundred.....one thousand none
 how many...?
 count, count (up) to
 count on (from, to)
 count back (from, to)
 count in ones, twos, threes, fours, fives.....
 count in tens, hundreds
 count in multiples of 4, 8, 50, 100
 more, less, many, few
 tally
 odd, even
 every other
 how many times?
 Multiple of
 Sequence
 Continue
 Predict
 Pattern, pair, rule
 Relationship

Estimating

Guess how many, estimate

Nearly, roughly, close to
 Approximate, approximately
 About the same as
 Just over, just under
 Exact, exactly
 Too many, too few, enough, not enough
 Round (up or down)
 Nearest, round to the nearest ten

Place value & Ordering

Units, ones
 Tens, hundreds
 Digit
 One-, two- or three-digit number
 'teens' number
 Place, place value
 Stands for, represents
 Exchange
 The same number as, as many as
 Equal to
Of two objects/amounts:
 • >, Greater, more, larger, bigger,
 • <, less, fewer, smaller

Of three of more objects/amounts: • Greatest, most, biggest, largest • Least,

fewest, smallest

- One more, ten more, one hundred more
- One less, ten less, one hundred less
- Compare
- Order
- Size
- First, second, third.....tenth.....twentieth
- Twenty-first, twenty-second.....
- Last, last but one
- Before, after
- Next
- Between, half-way between
- Above, below

Fractions

Part, equal parts
 Fraction
 One whole
 One half, two halves
 One quarter, two.... Three.....four
 quarter One third, two thirds, three thirds
 One tenth
 Unit, non-unit fractions
 Denominator

Calculations- Multiplication & Division

Lots of, groups of

X, times, multiply, multiplication,
multiplied by
Multiple of, product
Once, Twice, three times ten
times Times as (big, long,
wide..... and so on)
Repeated addition

Array
Row, column
Double, halve
Share, share equally
One each, two each, three each
Group in pairs, threes Tens
Equal groups of
 $\div$, divide, division, divided by,
divided into Left, left over,
remainder
Positive integer scaling problems

Calculations- Addition & Subtraction

+, add, addition, more, plus
Make, sum, total
Altogether
Score
Double, near double
One more, two more..... ten more..... one
hundred mHow many more to make?
How many more is ... than ?
How much more is?
Three-digit number and ones, tens,
hundreds -, subtract, subtraction,
take (away), minus Leave, how many
are left / left over?
One less, two less..... ten less..... One
hundred lessHow many fewer is Than
.....?

How much less is?
Difference between
Half, halve
=, equals, sign, is the same as
Tens boundary, hundreds boundary

Columnar addition, subtraction

Year 3 Mathematics Vocabulary

Solving Problems – Making Decisions & Reasoning

Pattern, puzzle
Calculate, calculation
Mental calculation
Method
Jotting
Answer
Right, correct, wrong
What could we try next?
How did you work it out?
Number sentence

Sign, operation, symbol, equation

Handling Data

Count, tally, sort, vote
Graph, block graph, pictogram
Represent
Group set
List, chart, bar chart
Table. Frequency table
Carroll diagram, venn diagram
Label, title, axis, axes
Diagram
Most popular, most common
Least popular, least common
How many more.....? How many fewer?

Money

Coin, note
Penny, pence, pound (£)
Price, cost
But, bought, sell, sold
Spend, spent
Pay
Change
Dear, costs more, more/most
expensive
Cheap, costs less, cheaper, less/least
expensive
How much....? How many.....?
Total, amount

Measurement- General

Measure
Size
Compare
Measuring scale, division
Guess, estimate
Enough, not enough
Too much, too little
Too many, too few
Nearly, roughly, about, close to, about the
same as, approximately

Just over, just under

Measurement - Length

Length, width, height, depth
Long, short, tall, high, low
Wide, narrow, deep, shallow, thick, thin
Longer, shorter, taller, higher..... and so on
Longest, shortest, tallest, highest And so on
Far, further, furthest, near, close, Distance
apart/between, distance to...../from.....

Kilometre (km), Metre (m), centimetre (cm)
millimetre (mm), mile

Ruler, metre stick, tape measure

Measurements - Capacity

Capacity, volume

Full, half full

Empty

Holds, contains

Litre (l), half-litre, millilitre (ml)

container

Measurements- Mass

Weigh, weighs, balances

Heavy / light, heavier / lighter, heaviest /
lightest

Kilogram (kg), half kilogram, gram (g) Balance,

scales, weight

Measurements- Time

Time

Days of the week: Monday, Tuesday.....

Months of the year: January, February,
March... Seasons: spring, summer, autumn,

winter Day, week, fortnight, month, year, leap
year Weekend, birthday, holiday

Calendar, date

Morning, afternoon, evening, night, noon,
midnight

Am, pm

Bedtime, dinnertime, playtime

Today, yesterday, tomorrow

Before, after

Next, last

Now, soon, early, late, earliest, latest Quick,
quicker, quickest, quickly

Fast, faster, fastest

Slow, slower, slowest, slowly

Old, older, oldest

New, newer, newest

Takes longer, takes less time

How long ago? How long will it be to....? How
long will it take to.....?

Hour, minute, second

O'clock, half past, quarter to, quarter past

Clock, watch, hands

Digital/analogue clock/watch, timer Roman
numerals

How often?

Always, never, often, sometimes, usually

Once, twice

Year 3 Mathematics Vocabulary

Measurements – Shape &

Space Shape, pattern

Flat, curved, straight

Round

Hollow, solid

Corner

Point, pointed

Face, side, edge, end

Sort

Make, build, draw

Surface

Right-angled

Vertex, vertices

Layer, diagram

Perimeter

Turn

Perpendicular, parallel

Acute, obtuse

Polygon, polyhedra

3D Shapes

Cube

Cuboid

Pyramid

Sphere, hemi - sphere

Cone

Cylinder

Prism

2D Shapes

Circle, circular, semi -

circle Triangle,

triangular

Square

Rectangle, rectangular

Star

Pentagon, pentagonal

Hexagon, hexagonal

Octagon, octagonal

Quadrilateral

Measurements- Patterns &

Symmetry Size

Bigger, larger, smaller

Symmetrical

Line of symmetry

Fold

Match

Mirror line, reflection

Pattern, repeating pattern

Position, Direction &

Movement Position
Over, under, underneath
Above, below
Top, bottom, side
On, in
Outside, inside
Around
In front, behind
Front, back
Before, after
Beside, next to
Opposite
Apart
Between
Middle, edge
Centre
Corner
Direction
Journey, route, map, plan
Left, right
Up, down
Higher, lower
Forwards, backwards,

Year 3 Mathematics Vocabulary

Instructions (Continued)

Repeat
What comes next?
Predict
Describe the pattern
Describe the rule
Find, find all, find different
Investigate
Choose
Decide

sideways Across
Close, far, near
Along
Through
To, from, towards, away
from Ascend, descend
Grid

Position, Direction & Movement (Continued)

Row, column
Clockwise, anti-clockwise
Compass point
North, south, east, west (N, S, E, W) Horizontal, vertical
diagonal
Movement
Slide
Roll
Whole turn, half turn, quarter
turn Angle,is a greater /
smaller angel than Right angle
Straight line
Stretch, bend

Collect
Use
Make
Build
Tell me
Describe
Name
Pick out
Discuss
Talk about
Explain
Explain your method

Instructions

Listen
Join in
Say
Recite
Think
Imagine
Remember
Start from
Start with
Start at
Look at
Point to
Show me
Put, place
Fit
Arrange, rearrange
Change, change over
Split
Separate
Carry on, continue

explain how you got your
answer
give an example of
show how you
show your working
read
write
record
write in figures
present
represent
interpret
identify
trace
copy
complete
finish, end

Instructions (Continued)

Label
tick, cross
draw, sketch
draw a line between
join (up)
ring
arrow
cost, count, tally

Year 4 Mathematics Vocabulary

Place value, Ordering & Rounding

Units, ones
Tens, hundreds, thousands
Ten thousand, hundred thousand, million
Digit, one-, two-, three- or four –digit number
Numeral

calculate
work out
solve
investigate
question
answer

check

General

Same, different
Missing number/s
Number facts, Number pairs, Number bonds
Greatest value, least value
Number line, number track
Number square, hundred square
Number cards
Number grid
Abacus
Counters, cubes, blocks, rods

Die, dice
Dominoes
Pegs, peg board
Geo-strips
Same way, different way
Best way, another way
In order, in a different order
Not

All, every, each
'teens' number
Place, place value
Stands for, represents
Exchange
The same number as, as many as
Equal to
Roman numerals to 100 (I to C)

Of two objects / amounts:

• >, greater than, more than, larger than, bigger than
• <, less than, fewer than, smaller than

Of three or more objects / amounts:

• Greatest, most, largest, biggest

- Least, fewest, smallest
- One.. Ten.. one hundred.. one thousand more / less
- Compare, order, size
- First..... tenth..... twentieth
- Last, last but one
- Before, after
- Next
- Between, half-way between
- Guess how many, estimate
- Nearly, roughly, close to, about the same as
- Approximate, approximately
- Just over, just under
- Exact, exactly
- Too many, too few, enough, not enough
- Round (up or down), nearest
- Round to the nearest ten
- Round to the nearest hundred
- Round to the nearest thousand
- Integer, positive, negative
- Above / below zero, minus

Properties of Numbers & Number

Sequences Number, count, how many.....?

Odd, even

Every other

How many times?

Count in multiples of 6,7,9,25 and 1000

Multiple of

Digit

Next, consecutive

Sequence

Continue

Predict

Pattern, pair, rule

Relationship

Sort, classify, property

Fractions & Decimals

part, equal parts

fraction, equivalent fraction

non-unit fraction

one whole

half, quarter, eighth

third, sixth

fifth, tenth, twentieth

ones, tenths, hundredths

proportion, in every, for every

• decimal, decimal fraction, decimal

equivalent

decimal point, decimal place

denominator

Calculations- Addition & Subtraction

Add, addition, more, plus, increase Sum, total, altogether

Score

Double, near double

How many more to make?

Subtract, subtraction, take (away), minus, decrease

Leave, how many are left / left over?

Difference between

Half, halve

How many more / fewer is..... than.....? How much more / less is.....?

Equals, sign, is the same as

Tens boundary, hundreds boundary Inverse

Columnar addition, subtraction

Calculations – Multiplication & Division

Lots of, groups of

Times, multiply, multiplication, multiplied by

Multiple of, product

Once, Twice, three times ten times

Times as (big, long, wide..... and so on)

Repeated addition

Array

Row, column

Double, halve

Share, share equally

One each, two each, three each Group in pairs, threes Tens

Equal groups of

Divide, division, divided by, divided into

Remainder

Factor, quotient, divisible by

Inverse

Inter scaling problems

Year 4 Mathematics Vocabulary

Solving Problems- Decision making &

Reasoning Pattern, puzzle

Calculate, calculation

Mental calculation

Method

Jotting

Answer

Right, correct, wrong

What could we try next?

How did you work it out?

Number sentence

Sign, operation, symbol, equation

Handling Data

Count, tally, sort, vote

Survey, questionnaire, data

Graph, block graph, pictogram, time graph

Represent

Group set

List, chart, bar chart, tally chart

Table, Frequency table

Carroll diagram, venn diagram

Label, title, axis, axes

Diagram

Most popular, most common

Least popular, least common

Solve, comparison, sum

Measurements - General

Measure, measurements

Size

Compare

Unit, standard unit

Metric unit, imperial unit

Measuring scale, division

Guess, estimate

Enough, not enough

Too much, too little

Too many, too few

Nearly, roughly, about, close to About the same as, approximately Just over, just under

Rectilinear

Measurements- Length

Length, width, height, depth, breadth

Long, short, tall, high, low Wide, narrow,

deep, shallow, thick, thin

Longer, shorter, taller, higher..... and so on

Longest, shortest, tallest, highest And so on

Far, further, furthest, near, close, Distance apart/between, distance to...../from.....

Edge, perimeter

Kilometre (km), Metre (m), centimetre (cm), millimetre (mm), mile

Ruler, metre stick, tape measure

Measurements- Mass

Mass: big, bigger, small, smaller, balances

Weigh: Heavy / light, heavier / lighter, heaviest / lightest

Weigh, weighs

Kilogram (kg), half kilogram, gram (g)

Balance, scales

Measurements- Capacity

Capacity

Full, half full

Empty

Holds, contains

Litre (l), half-litre, millilitre (ml)

pint

container, measuring cylinder

Measurements- Area

Area, covers, surface

Square centimetre (cm²)

Perimeter

Measurements- Time

Time

Days of the week: Monday, Tuesday.....

Months of the year: January, February,

March.....

Seasons: spring, summer, autumn, winter

Day, week, fortnight, month, year, leap year, century, millennium

Weekend, birthday, holiday

Calendar, date, date of birth

Morning, afternoon, evening, night

Am, pm, noon, midnight

Today, yesterday, tomorrow

Before, after, Next, last

Now, soon, early, late, earliest, latest Quick, quicker, quickest, quickly

Year 4 Mathematics Vocabulary

Measurements- Time (Continued)

Fast, faster, fastest, Slow, slower, slowest, slowly Old, older, oldest, New, newer, newest

Takes longer, takes less time

How long ago? How long will it be to....?

How long will it take to.....?

Timetable, arrive, depart

Hour, minute, second

O'clock, half past, quarter to, quarter past

Clock, watch, hands

Digital/analogue clock/watch, timer

How often?

Always, never, often, sometimes, usually

Roman numerals

Measurements- Patterns & Symmetry

Size

Bigger, larger, smaller

Symmetrical

Line of symmetry, Line symmetry

Fold
Match
Mirror line, reflection, reflect
Pattern, repeating pattern, translation

Measurements- Shape & Space

Shape, pattern
Flat, line
curved, straight
Round
Hollow, solid
Corner
Point, pointed
Face, side, edge, end
Sort
Make, build, draw, sketch
Centre, radius, diameter
net
Surface

Measurements- Shape & Space (Continued)

Angle, Right-angled
Base, square based
Vertex, vertices
Layer, diagram
Regular, irregular
Concave, convex
Open, closed
Geometric shape
Acute, obtuse
Regular/irregular

Year 4 Mathematics Vocabulary

Instructions

polygon
3D Shapes
3D, three-dimensional
Cube
Cuboid
Pyramid
Sphere, hemi – sphere, spherical Cone
Cylinder, cylindrical
Prism
Tetrahedron, polyhedron
2D Shapes
2D, two-dimensional
Circle, circular, semi - circle
Triangle, triangular
Equilateral triangle, isosceles triangle, scalene
Square
Rectangle, rectangular, oblong Pentagon, pentagonal
Hexagon, hexagonal
heptagon
Octagon, octagonal
Quadrilateral
Parallelogram, rhombus, trapezium

Position, Direction & Movement

Position
Over, under, underneath
Above, below, top, bottom, side
On, in, outside, inside, around
In front, behind, front, back

Listen, join in, say, recite

Think, imagine, remember

Start from, start with, start at

Before, after, beside, next to
Opposite, apart
Between, middle, edge, centre
Corner
Direction
Journey, route, map, plan
Left, right
Up, down, higher, lower
Forwards, backwards, sideways, across
Close, far, near
Along, through, to, from, towards, away from
Ascend, descend
Grid
Row, column
Origin, coordinates
Clockwise, anti-clockwise
Compass point, north, south, east, west (N, S, E, W)
North-east, north-west, south-east, south-west (NE, NW, SE, SW)
Horizontal, vertical, diagonal
Movement
Slide, roll
Whole turn, half turn, quarter turn, rotate
Angle,is a greater / smaller angel than
Right angle
Degree
Straight line
Stretch, bend
Ruler, set square
Angle measurer, compasses
Quadrant

Look at, point to, show me
 Put, place
 Arrange, rearrange
 Change, change over
 Split, separate
 Carry on, continue, repeat
 What comes next?, predict
 Describe the pattern, describe the rule
 Find, find all, find different
 Investigate
 Choose, decide
 Collect
 Use, make ,build, construct
 Tell me, describe, name, pick out
 Discuss, talk about
 Explain
 Explain your method
 explain how you got your answer
 give an example of
 show how you
 show your working
 justify
 make a statement
 read, write, record
 write in figures
 present, represent
 interpret
 trace, copy
 complete, finish, end
 fill in, shade, colour
 label, plot
 tick, cross

Year 5 Mathematics Vocabulary

Place Value, Ordering & Rounding

Units, ones

draw, sketch

Instructions

(Continued)

draw a line between, join (up), ring, arrow
 cost, count, tally
 calculate, work out, solve
 investigate, question
 answer
 Check

General

Same, different
 Missing number/s
 Number facts, Number pairs, Number
 bonds Greatest value, least value
 Number line, number track
 Number square, hundred square
 Number cards, number grid
 Abacus
 Counters, cubes, blocks, rods
 Die, dice
 Dominoes
 Pegs, peg board
 Geo-strips
 Same way, different way
 Best way, another way
 In order, in a different order
 Not

 All, every, each

Tens, hundreds, thousands

Ten thousand, hundred thousand, million

Digit, one-, two-, three- or four –digit

number Numeral

‘teens’ number

Place, place value

Stands for, represents

Exchange

The same number as, as many as

Equal to

Roman numerals to 1000 (M)

Of two objects / amounts:

- >, greater than, more than, larger than, bigger than
- <, less than, fewer than, smaller than,

Of three or more objects / amounts:

- Greatest, most, largest, biggest
 - Least, fewest, smallest
 - One. Ten.. one hundred.. one thousand more / less
 - Compare, order, size
 - Ascending / descending order
 - First..... tenth..... twentieth
 - Last, last but one
 - Before, after, next
 - Between, half-way between
 - Guess how many, estimate
 - Nearly, roughly, close to, about the same as
 - Approximate, approximately
 - Just over, just under
 - Exact, exactly
 - Too many, too few, enough, not enough
- Round (up or down), nearest
- Round to the nearest ten / hundred
 - Round to the nearest thousand / ten thousand
 - Round to the nearest million
 - Integer
 - Positive, negative
 - Above / below zero, minus

Properties of Numbers & Number

Sequences Number, count, how many.....?

Odd, even

Every other

How many times?

Multiple of

Digit

Next, consecutive

Sequence, linear number sequence

Continue

Predict

Pattern, pair, rule

Relationship

Sort, classify, property

Formula

Divisible (by), divisibility, factor

Square number

One squared, two squared..... (12, 22.....)

Fractions, Decimals, Percentages, Ratio & Proportion

part, equal parts

fraction, proper / improper fraction mixed number

numerator, denominator

equivalent, reduced to, cancel

• one whole

half, quarter, eighth

third, sixth, ninth, twelfth

fifth, tenth, twentieth, hundredth, thousandths

proportion, ratio

in every, for every

to every, as many as

decimal, decimal fraction

decimal point, decimal place

percentage, per cent, %

Calculations- Addition & Subtraction Add,

addition, more, plus, increase Sum, total, altogether

Score

Double, near double

How many more to make?

Subtract, subtraction, take (away), minus, decrease

Leave, how many are left / left over?

Difference between

Half, halve

How many more / fewer is..... than....? How much more / less is.....?

Equals, sign, is the same as

Tens boundary, hundreds boundary Units boundary, tenths boundary

Inverse

Columnar addition, subtraction

Calculations – Multiplication & Division

Lots of, groups of

Times, multiply, multiplication, multiplied by Multiple of, product

Once, Twice, three times ten times

Times as (big, long, wide..... and so on)

Repeated addition

Array

Row, column

Double, halve

Share, share equally

One each, two each, three each Group in pairs, threes Tens

Equal groups of

Divide, division, divided by, divided into Remainder

Factor, quotient, divisible by

Inverse
Prime number, prime factor, composite (non prime)
Square (²), cubed (³)

Year 5 Mathematics Vocabulary

Solving Problems – Making Decisions & Reasoning

Pattern, puzzle
Calculate, calculation
Mental calculation
Method
Jotting
Answer
Right, correct, wrong
What could we try next?
How did you work it out?
Number sentence
Sign, operation, symbol, equation

Money

Coin, note
Penny, pence, pound (£)
Price, cost
But, bought, sell, sold
Spend, spent
Pay
Change
Dear, costs more, more/most expensive
Cheap, costs less, cheaper, less/least expensive
How much.....? How many.....?
Total, amount, value, worth
Discount
Currency

Probability

Fair, unfair
Likely, unlikely, likelihood
Certain, uncertain
Probable, possible, impossible
Chance, good chance
Risk, doubt

Handling Data

Count, tally, sort, vote
Survey, questionnaire
Data, database
Graph, block graph, line graph, time graph
Pictogram
Represent
Group set
List, chart, bar chart, bar line chart
Tally chart
Table, Frequency table
Carroll diagram, Venn diagram
Label, title, axis, axes
Diagram
Most popular, most common
Least popular, least common
Mode, range
Maximum / minimum value
Classify, outcome
Comparison, sum

Measurements- General

Measure, measurements
Size
Compare
Unit, standard unit
Metric unit, imperial unit
Measuring scale, division
Guess, estimate

Enough, not enough
Too much, too little
Too many, too few
Nearly, roughly, about, close to
About the same as, approximately
Just over, just under

Measurements- Length

Length, width, height, depth, breadth
Long, short, tall, high, low
Wide, narrow, deep, shallow, thick, thin
Longer, shorter, taller, higher..... and so on
Longest, shortest, tallest, highest And so on
Far, further, furthest, near, close,
Distance apart/between, distance to...../from.....
Edge, perimeter
Kilometre (km), Metre (m), inches, centimetre (cm), millimetre (mm), mile,
Ruler, metre stick, tape measure

Measurements- Mass

Mass: big, bigger, small, smaller, balances
Weigh: Heavy / light, heavier / lighter, heaviest / lightest
Weigh, weighs
Kilogram (kg), half kilogram, gram (g), pounds
Balance, scales

Measurements- Capacity

Capacity, volume (³)
Full, half full
Empty
Holds, contains
Litre (l), half-litre, millilitre (ml)

Pint, gallon
container, measuring cylinder

Measurements- Area

Area, covers, surface

Square centimetre (cm²), square metre (m²)

Square millimetre (mm²)

Perimeter

Year 5 Mathematics Vocabulary

Measurements - Time

Time

Days of the week: Monday, Tuesday.....

Months of the year: January, February, March..... Seasons: spring, summer, autumn, winter

Day, week, fortnight, month, year, leap year, century, millennium

Weekend, birthday, holiday

Calendar, date, date of birth

Morning, afternoon, evening, night

Am, pm, noon, midnight

Today, yesterday, tomorrow

Before, after, Next, last

Now, soon, early, late, earliest, latest

Quick, quicker, quickest, quickly

Fast, faster, fastest, Slow, slower, slowest, slowly Old, older, oldest, New, newer, newest

Takes longer, takes less time

How long ago? How long will it be to....?

How long will it take to.....?

Timetable, arrive, depart

Hour, minute, second

O'clock, half past, quarter to, quarter past

Clock, watch, hands

Digital/analogue clock/watch, timer

24-hour clock, 12-hour clock

How often?

Always, never, often, sometimes, usually

Measurements- Patterns & Symmetry

Size

Bigger, larger, smaller

Symmetrical

Line of symmetry, axis of symmetry

Line symmetry, reflective symmetry

Fold

Match

Mirror line, reflection, reflect

Pattern, repeating pattern, translation

Measurements – Shape & Space Shape, pattern

Flat, line

curved, straight

Round

Hollow, solid

Corner

Point, pointed

Face, side, edge, end

Sort

Make, build, construct, draw, sketch

Centre, radius, diameter

net

Surface

Angle, Right-angled

Congruent

Base, square based

Vertex, vertices

Layer, diagram

Regular, irregular

Concave, convex

Open, closed

Degree (°)

3D Shapes

3D, three-dimensional

Cube

Cuboid

Pyramid

Sphere, hemi – sphere, spherical Cone

Cylinder, cylindrical

Prism

Tetrahedron, polyhedron, octahedron

Measurements – Shape & Space (Continued)

2D Shapes

2D, two-dimensional

Circle, circular, semi - circle

Triangle, triangular

Equilateral triangle, isosceles triangle, scalene triangle

Square

Rectangle, rectangular, oblong Pentagon, pentagonal

Hexagon, hexagonal

heptagon

Octagon, octagonal

Polygon

Quadrilateral

Position, Direction & Movement Position

Over, under, underneath

Above, below, top, bottom, side On, in, outside, inside, around In front, behind,

front, back
Before, after, beside, next to
Opposite, apart
Between, middle, edge, centre Corner
Direction
Journey, route, map, plan
Left, right
Up, down, higher, lower
Forwards, backwards, sideways, across
Close, far, near
Along, through, to, from, towards, away from
Ascend, descend
Grid, row, column
Origin, coordinates
Clockwise, anti-clockwise

Year 5 Mathematics Vocabulary

Position, Direction & Movement (Continued)

Compass point, north, south, east, west
(N, S, E, W)
North-east, north-west, south-east, south west (NE, NW, SE,SW)
Horizontal, vertical, diagonal
Parallel, perpendicular
x-axis, y-axis
Quadrant
Movement
Slide, roll
Whole turn, half turn, quarter turn,
Rotate, rotation
Angle,is a greater / smaller angel than
Right angle, acute, obtuse
Degree

Straight line
Stretch, bend
Ruler, set square
Angle measurer, compasses, protractor
reflection

Instructions

Listen, join in, say, recite
Think, imagine, remember
Start from, start with, start at
Look at, point to, show me
Put, place
Arrange, rearrange
Change, change over
Split, separate
Carry on, continue, repeat
What comes next?, predict
Describe the pattern, describe the rule
Find, find all, find different
Investigate
Choose, decide
Collect

Instructions (Continued)

Use, make ,build, construct, bisect Tell me,
describe, name, pick out, identify Discuss,
talk about
Explain
Explain your method / answer / reasoning
give an example of
show how you
show your working
justify
make a statement

read, write, record
write in figures
present, represent
interpret
trace, copy
complete, finish, end
fill in, shade, colour
label, plot
tick, cross
draw, sketch
draw a line between, join (up), ring, arrow
cost, count, tally
calculate, work out, solve, convert
investigate, question
answer

General

Same, different
Missing number/s
Number facts, Number pairs, Number bonds
Greatest value, least value
Number line, number track
Number square, hundred square
Number cards, number grid
Abacus
Counters, cubes, blocks, rods
Die, dice, spinner
Dominoes
Pegs, peg board, pin board
Geo-strips
Same way, different way
Best way, another way
In order, in a different order
Not

All, every, each

Year 6 Mathematics Vocabulary

Place Value, Ordering & Rounding

Units, ones

Tens, hundreds, thousands

Ten thousand, hundred thousand, million,
ten million Digit, one-, two-, three- or four –
digit number Numeral

‘teens’ number

Place, place value

Stands for, represents

Exchange

The same number as, as many as

Equal to

Of two objects / amounts:

• >, greater than, more than, larger than,
bigger than • <, less than, fewer than,
smaller than,

Of three or more objects / amounts:

• Greatest, most, largest, biggest
• Least, fewest, smallest
• One. Ten.. one hundred.. one thousand
more / less • Compare, order, size
• Ascending / descending order
• First..... tenth..... twentieth
• Last, last but one
• Before, after
• Next
• Between, half-way between
• Guess how many, estimate
• Nearly, roughly, close to, about the same
as • Approximate, approximately
• Just over, just under
• Exact, exactly

• Too many, too few, enough, not enough
Round (up or down), nearest
• Round to the nearest ten / hundred /
thousand • Integer, positive, negative
• Above / below zero, minus

Properties of Number & Number

Sequences Number, count, how many.....?

Odd, even

Every other

How many times?

Multiple of

Digit

Next, consecutive

Sequence

Continue

Predict

Pattern, pair, rule

Relationship

Sort, classify, property

Formula

Divisible (by), divisibility, factor, factorise

Square number

One squared, two squared..... (12, 22....)

Prime, prime factor

Fractions, Decimals, Percentages, Ration & Proportion

part, equal parts, unequal parts

fraction, proper / improper fraction mixed
number

numerator, denominator

equivalent, reduced to, cancel

one whole

half, quarter, eighth

• third, sixth, ninth, twelfth
fifth, tenth, twentieth, hundredth,
thousandth proportion, ratio
in every, for every
to every, as many as
decimal, decimal fraction
decimal point, decimal place
percentage, per cent, %
integer
scale factor
pie charts

Calculations- Addition & Subtraction Add,
addition, more, plus, increase Sum, total,
altogether
Score

Double, near double

How many more to make?

Subtract, subtraction, take (away), minus,
decrease

Leave, how many are left / left over?

Difference between

Half, halve

How many more / fewer is..... than.....? How
much more / less is.....?

Equals, sign, is the same as

Tens boundary, hundreds boundary Units
boundary, tenths boundary Inverse
Columnar addition, subtraction

Calculations- Multiplication & Division Lots
of, groups of
Times, multiply, multiplication, multiplied
by
Multiple of, product

Once, Twice, three times ten times
 Times as (big, long, wide..... and so on)
 Repeated addition
 Array, row, column
 Double, halve
 Share, share equally
 One each, two each, three each Group
 in pairs, threes Tens
 Equal groups of
 Divide, division, divided by, divided into
 Remainder
 Factor, quotient, divisible by
 Inverse
 Long / short multiplication, division Prime

Year 6 Mathematics Vocabulary

Algebra

Formulae
 Linear number sequence
 Equation
 Enumerate
 Variables
 Missing numbers, lengths, coordinates,
 angles
 Equivalent expressions
 Number patterns, puzzles

Solving Problems- Decision making & Reasoning

Pattern, puzzle
 Calculate, calculation
 Mental calculation
 Method, strategy
 Jotting
 Answer
 Right, correct, wrong

What could we try next?
 How did you work it out?
 Number sentence
 Sign, operation, symbol, equation

Money

Coin, note
 Penny, pence, pound (£)
 Price, cost
 But, bought, sell, sold
 Spend, spent
 Pay
 Change
 Dear, costs more, more/most expensive
 Cheap, costs less, cheaper, less/least
 expensive
 How much.....? How many.....?
 Total, amount, value, worth
 Discount, profit, loss
 currency

Probability

Fair, unfair
 Likely, unlikely, likelihood,
 equally likely Certain, uncertain
 Probable, possible, impossible
 Chance, good chance
 Poor chance, no chance
 Equal chance, even chance, fifty –
 fifty chance Risk, doubt
 Biased, random

Measurements - General

Measure, measurements
 Size
 Compare

Unit, standard unit
 Metric unit, imperial unit
 Measuring scale, division
 Guess, estimate
 Enough, not enough
 Too much, too little
 Too many, too few
 Nearly, roughly, about, close to
 About the same as, approximately
 Just over, just under

Measurements- Length

Length, width, height, depth,
 breadth Long, short, tall,
 high, low
 Wide, narrow, deep, shallow, thick,
 thin Longer, shorter, taller, higher..
 and so on Longest, shortest, tallest,
 highest . And so on Far, further,
 furthest, near, close,
 Distance apart/between, distance
 to../from... Edge, perimeter,
 circumference
 Kilometre (km), Metre (m),
 centimetre (cm), millimetre (mm)
 Mile, yard, feet, foot, inches, inch
 Ruler, metre stick, tape measure,
 compasses Cubic centimetre (cm³),
 metres (m³) millimetres (mm³)
 kilometres (km³)

Measurements - Mass

Mass: big, bigger, small, smaller,
 balances Weigh: Heavy / light, heavier
 / lighter, heaviest / lightest

Weigh, weighs
Tonne, kilogram (kg), half kilogram,
gram (g) Pound (lb), ounce (oz)
Balance, scales

Measurements – Capacity

Capacity, volume
Full, half full, empty
Holds, contains
Litre (l), half-litre, centilitre (cl),
millilitre (ml) Pint, gallon
container, measuring cylinder

Measurements- Area

Area, covers, surface
Square centimetre (cm²), square
metre (m²) Square millimetre
(mm²)
Perimeters

Measurements- Patterns &

Symmetry Size

Bigger, larger, smaller
Symmetrical
Line of symmetry, axis of symmetry
Line symmetry, reflective symmetry
Fold
Match
Mirror line, reflection, reflect
Pattern, repeating pattern,
translation Dissection

Year 6 Mathematics Vocabulary

Measurement - Time

Time
Days of the week: Monday, Tuesday.....

Months of the year: January, February,
March..... Seasons: spring, summer,
autumn, winter
Day, week, fortnight, month, year, leap year,
century, millennium
Weekend, birthday, holiday
Calendar, date, date of birth
Morning, afternoon, evening, night
Am, pm, noon, midnight
Today, yesterday, tomorrow
Before, after, Next, last
Now, soon, early, late, earliest, latest
Quick, quicker, quickest, quickly
Fast, faster, fastest, Slow, slower, slowest,
slowly Old, older, oldest, New, newer,
newest
Takes longer, takes less time
How long ago? How long will it be to....?
How long will it take to.....?
Timetable, arrive, depart
Hour, minute, second
O'clock, half past, quarter to, quarter past
Clock, watch, hands
Digital/analogue clock/watch, timer
24-hour clock, 12-hour clock
Greenwich Mean Time, British Summer
Time International Date Line
How often?
Always, never, often, sometimes, usually

Measurements – Shape & Space

Shape, pattern
Flat, line
curved, straight
Round
Hollow, solid

Corner
Point, pointed

Measurements – Shape & Space (Continued)

Face, side, edge, end
Sort
Make, build, construct, draw, sketch
Centre, radius, diameter
Circumference, concentric, arc net
Surface
Angle, Right-angled
Congruent
Intersecting, intersection
Plane
Base, square based
Vertex, vertices
Layer, diagram
Regular, irregular
Concave, convex
Open, closed
Tangram
Geometric
3D Shapes
3D, three-dimensional
Cube
Cuboid
Pyramid
Sphere, hemi – sphere, spherical Cone
Cylinder, cylindrical
Prism
Tetrahedron, polyhedron, octahedron

Measurements – Shape & Space

(Continued)

2D Shapes

2D, two-dimensional

Circle, circular, semi - circle

Triangle, triangular

Equilateral triangle, isosceles triangle,
scalene triangle

Square, rhombus

Rectangle, rectangular, oblong

Pentagon, pentagonal

Hexagon, hexagonal

heptagon

Octagon, octagonal

Polygon

Quadrilateral

Kite

Parallelogram, trapezium

Position, Direction & Movement

Position

Over, under, underneath

Above, below, top, bottom, side

On, in, outside, inside, around

In front, behind, front, back

Before, after, beside, next to

Opposite, apart

Between, middle, edge, centre

Corner

Direction

Journey, route, map, plan

Left, right

Up, down, higher, lower

Forwards, backwards, sideways, across

Close, far, near

Along, through, to, from, towards, away

from Ascend, descend

Grid, row, column

Origin, coordinates, coordinate plane

Year 6 Mathematics Vocabulary

Position, Direction & Movement (Continued)

Origin, coordinates, coordinate plane

Clockwise, anti-clockwise

Compass point, north, south, east, west (N,
S, E, W)

North-east, north-west, south-east, south
west (NE, NW, SE, SW)

Horizontal, vertical, diagonal

Parallel, perpendicular

x-axis, y-axis

Quadrant

Movement

Slide, roll

Whole turn, half turn, quarter turn, rotate,
rotation

Angle,is a greater / smaller angle than

Right angle, acute, obtuse, reflex

Degree

Straight line

Stretch, bend

Ruler, set square

Angle measurer, compasses, protractor

Instructions

Listen, join in, say, recite

Think, imagine, remember

Start from, start with, start at

Look at, point to, show me

Put, place

Arrange, rearrange

Change, change over

Adjusting, adjust

Split, separate

Carry on, continue, repeat

What comes next?, predict

Describe the pattern, describe the rule

Find, find all, find different

Investigate

Instructions (Continued)

Collect

Use, make, build, construct, bisect Tell me,
define, describe, name, pick out, identify

Discuss, talk about

Explain

Explain your method / answer / reasoning
give an example of

show how you

show your working

justify

make a statement

read, write, record

write in figures

present, represent

interpret

trace, copy

complete, finish, end

fill in, shade, colour

label, plot

tick, cross

draw, sketch

draw a line between, join (up), ring, arrow

cost, count, tally
calculate, work out, solve, convert
investigate, interrogate (data), question,
prove
answer
check

General

Same, identical, different
Missing number/s
Number facts, Number pairs, Number bonds
Greatest value, least value
Number line, number track
Number square, hundred square
Number cards, number grid
Abacus
Counters, cubes, blocks, rods
Die, dice, spinner
Dominoes
Pegs, peg board, pin board
Geo-strips
Same way, different way
Best way, another way
In order, in a different order
Not

All, every, each