

Maths Progression Map

<p>Early Learning Areas: Children should be able to count confidently, develop a deep understanding of the numbers to 10, the relationships between them and the patterns within those numbers.</p>		<p>NC Alignment Develop confidence and mental fluency with whole numbers, counting and place value. Pupils become increasingly fluent with whole numbers and the 4 operations, including number facts and the concept of place value. Pupils extend their understanding of the number system and place value to include larger integers.</p>						
<p>Place value: Count (integers) EYFS end points:</p> <ul style="list-style-type: none"> understand that the cardinal value of a number refers to the quantity it represents. Count in sequence forward to backward (from 5 to 10), and extending to larger numbers that include crossing boundaries. Count in irregular arrangements 		<p>Year 6 End points:</p> <ul style="list-style-type: none"> Able to count in steps of powers of 10 for any given numbers up to 1,000,000 Able to count forwards and backwards with both positive and negative numbers, including through zero understand the concept of moving below zero on a number line and recognizing the sequence of negative numbers. 						
	Nursery (3 to 4 years old)	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Place Value: Count	<ul style="list-style-type: none"> Recite numbers past 5. Say one number name for each item in order: 1, 2, 3, 4, 5. Know that the last number reached when counting a small set of objects tells you how many there are in total ('cardinal principle'). 	<ul style="list-style-type: none"> Count beyond ten. Can say how many there are after counting (cardinality). Is becoming familiar with two-digit numbers and notices patterns within them. 	<ul style="list-style-type: none"> -count to and across 100, forwards and backwards, beginning with 0 or 1, or from any given number -Count numbers to 100 in numerals; count in multiples of twos, fives and tens 	<ul style="list-style-type: none"> count in steps of 3, 2, 10, and 5 from 0, and in tens from any number, forward and backward 	<ul style="list-style-type: none"> count from 0 in multiples of 4, 8, 50 and 100; find 10 or 100 more or less than a given number 	<ul style="list-style-type: none"> count in multiples of 6, 7, 9, 25 and 1000 	<ul style="list-style-type: none"> count forwards or backwards in steps of powers of 10 for any given number up to 1 000 000 count forwards and backwards with positive and negative whole numbers, including through zero 	

Place value: Represent (integers) EYFS end point: <ul style="list-style-type: none"> Perceptually subitise numbers to ten Develop conceptual subitising of numbers to 10 Represent numbers up to 10 using materials, including fingers 				Year 6 End points: <ul style="list-style-type: none"> Understand the place value of each digit in large numbers, including the relationship between digits and powers of ten Able to say any number up to 1,000,000 and reason where it fits on the numberline Represent numbers up to 1,000 in Roman numerals 				
Place Value: Represent	<ul style="list-style-type: none"> Fast recognition of up to 3 objects, without having to count them individually ('subitising') E.g. two dots on a dice, 3 Numicon piece Show 'finger numbers' up to 5. Begins to link numerals and amounts: for example, showing the right number of objects to match the numeral, up to 5. Experiment with their own symbols and marks as well as numerals. 	<ul style="list-style-type: none"> Understands how to use a 5 frame and a 10 frame. Subitise. Link the number symbol (numeral) with its cardinal number value Link the number symbol (numeral) with its cardinal number value. is able to record a quantity using numerals record quantities in different ways. 	<ul style="list-style-type: none"> Identify and represent numbers using objects and pictorial representations read and write numbers to 100 in numerals read and write numbers from 1 to 20 in numerals and word 	<ul style="list-style-type: none"> read and write numbers to at least 100 in numerals and in words identify, represent and estimate numbers using different representations, including the number line 	<ul style="list-style-type: none"> identify, represent and estimate numbers using different representations read and write numbers up to 1000 in numerals and in words 	<ul style="list-style-type: none"> identify, represent and estimate numbers using different representations read Roman numerals to 100 (I to C) and know that over time, the numeral system changed to include the concept of zero and place value 	<ul style="list-style-type: none"> read, write, (order and compare) numbers to at least 1 000 000 and determine the value of each digit read Roman numerals to 1000 (M) and recognise years written in Roman numerals 	<ul style="list-style-type: none"> read, write, (order and compare) numbers up to 10 000 000 and determine the value of each digit

<p>Place Value: Use and compare (integers)</p> <p>EYFS End points:</p> <ul style="list-style-type: none"> • Able to compare groups of objects, recognising which group has more, fewer, or the same number of item • Begin to develop a sense of magnitude and understand the relative size of numbers and their position on numberline (8 is a lot more than 2, but 4 is only a little more than 2; 8 larger than 3 but closer to 10). • Use language related to comparison, such as "greater than," "less than," "more," and "fewer." 		<p>Year 6 end points</p> <ul style="list-style-type: none"> • Able to use inequality symbols to compare values or make statements • Understand that each column value is a power of ten and that multiplying or dividing by ten shifts digits from one column to an adjacent one when making comparison 						
Place Value: Use and compare	<ul style="list-style-type: none"> • identify which number is more or less than another number with the support of objects. • match the objects in two groups to find out that they have an equal number of things. • Compare quantities using language: 'more than', 'fewer than' compare two groups (when the amounts are obviously different and the objects are of a similar size) saying where there is more and where there is less. 	<ul style="list-style-type: none"> • Say which number is one more or one less than a given number • Can use the vocabulary of 'more than', 'less than', 'fewer', 'the same as', 'equal to'. Understands one more than/one less than. • Compare two groups (when the amounts are less obviously different and the objects are not of a similar size) saying where there is more and where there is less. • Describe a number as a lot bigger or a little bigger by looking at their positions on a number track. • Describe a number as a lot smaller or a little smaller by looking at their positions on a number track. 	<ul style="list-style-type: none"> • given a number, identify one more and one less 	<ul style="list-style-type: none"> • recognise the place value of each digit in a two-digit number (tens, ones) • compare and order numbers from 0 up to 100; use <, > and = signs 	<ul style="list-style-type: none"> • recognise the place value of each digit in a three-digit number (hundreds, tens, ones) • compare and order numbers up to 1000 	<ul style="list-style-type: none"> • find 1000 more or less than a given number • recognise the place value of each digit in a four-digit number (thousands, hundreds, tens, and ones) • order and compare numbers beyond 1000 	<ul style="list-style-type: none"> • (read, write) order numbers to at least 1 000 000 and determine the value of each digit 	<ul style="list-style-type: none"> • (read, write), order and compare numbers up to 10 000 000 and determine the value of each digit

Place value: Problems and Rounding (integers) EYFS: <ul style="list-style-type: none"> • NA for rounding numbers • Problem solving: demonstrate concepts learned through real- world activities (eg: identifying more and less through toys/snacks) 				Year 6 end points: <ul style="list-style-type: none"> • Round any whole number up to 10,000,000 to the nearest 10, 100, 1,000, 10,000, 100,000, or 1,000,000 • Use rounding appropriately in problem-solving and real-life situations, such as estimating calculations and interpreting numerical data 				
Place Value: Problems/ Rounding	<ul style="list-style-type: none"> • Solve real world mathematical problems with numbers up to 5. 	<ul style="list-style-type: none"> • Solve real world mathematical problems with numbers up to 10. 	<ul style="list-style-type: none"> • use place value and number facts to solve problems up to 50 	<ul style="list-style-type: none"> • use place value and number facts to solve problems up to 100 	<ul style="list-style-type: none"> • solve number problems and practical problems involving these ideas. 	<ul style="list-style-type: none"> • round any number to the nearest 10, 100 or 1000 • solve number and practical problems that involve all of the above and with increasingly large positive numbers 	<ul style="list-style-type: none"> • interpret negative numbers in context • round any number up to 1 000 000 to the nearest 10, 100, 1000, 10 000 and 100 000 • solve number problems and practical problems that involve all of the above 	<ul style="list-style-type: none"> • round any whole number to a required degree of accuracy • use negative numbers in context, and calculate intervals across zero • solve number and practical problems that involve all of the above

<p>Early Learning Areas: Children will develop a secure base of knowledge and vocabulary from which mastery of mathematics is built.</p>		<p>NC Alignment Working with numerals, words and the 4 operations. By the end of year 2, pupils should know the number bonds to 20. This should ensure that pupils develop efficient written and mental methods and perform calculations accurately with increasingly large whole numbers. Pupils should develop their ability to solve a wider range of problems, including increasingly complex properties of numbers and arithmetic, and problems demanding efficient written and mental methods of calculation. By the end of year 6, pupils should be fluent in written methods for all 4 operations, including long multiplication and division</p>						
<p>Addition and subtraction: Recall, represent and calculation EYFS end points:</p> <ul style="list-style-type: none"> Recall number bonds to 5, and some to 10. Begin to generalise 'one more than', and 'one less than' numbers within 10 		<p>Year 6 end points:</p> <ul style="list-style-type: none"> Use number facts and estimation to add and subtract numbers Use estimation and inverse operations to check accuracy of calculation Select and use efficient strategies when adding and subtracting large numbers (mental and written) 						
<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Addition and Subtraction: Recall, Represent, use</p>	<ul style="list-style-type: none"> Begin to automatically recall number bonds for numbers 0-5 	<ul style="list-style-type: none"> Automatically recall (without reference to rhymes, counting or other aids) number bonds up to 5 (including subtraction facts) and some number bonds to 10, including double facts 	<p>Represent and use number bonds and related subtraction facts within 20</p> <ul style="list-style-type: none"> Read, write and interpret mathematical statements involving addition (+), subtraction (-) and equals (=) signs. - 	<ul style="list-style-type: none"> Recall and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100. Show that addition of two numbers can be done in any order (commutative) and subtraction of one number from another cannot. Recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems 	<ul style="list-style-type: none"> Recall and use addition and subtraction facts for 100 (multiples of 5 and 10) Derive and use addition and subtraction facts for 100 Derive and use addition and subtraction facts for multiples of 100 totalling 1000 Estimate the answer to a calculation and use inverse operations to check answers. 	<ul style="list-style-type: none"> Estimate and use inverse operations to check answers to a calculation. 	<ul style="list-style-type: none"> Use rounding to check answers to calculations and determine in the context of a problem levels of accuracy 	

Addition and Subtraction: Calculations	<ul style="list-style-type: none"> • know that a group of 5 objects is still a group of 5 objects even when rearranged. ➢ partition numbers up to 5 into two groups, and recognise these groups can be recombined to make the same total. 	<ul style="list-style-type: none"> • know that 10 objects is still a group of 10 objects even when rearranged • Understands the parts within a whole to 10. ➢ partition numbers up to 10 into two groups, and recognise these groups can be recombined to make the same total. • remember the number bonds that total 5 and some number bonds that total up to 10. 	<ul style="list-style-type: none"> • add and subtract one-digit and two-digit numbers to 20, including zero 	<ul style="list-style-type: none"> • add and subtract numbers using concrete objects, pictorial representations, and mentally, including: <ul style="list-style-type: none"> ➢ a two-digit number and ones ➢ a two-digit number and tens ➢ two two-digit numbers ➢ adding three one digit numbers 	<ul style="list-style-type: none"> • add and subtract numbers mentally, including: <ul style="list-style-type: none"> ➢ a three-digit number and ones ➢ a three-digit number and tens ➢ a three-digit number and hundreds • add and subtract numbers with up to three digits, using formal written methods of columnar addition and subtraction 	<ul style="list-style-type: none"> • add and subtract numbers with up to 4 digits using the formal written methods of columnar addition and subtraction where appropriate 	<ul style="list-style-type: none"> • add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction) • add and subtract numbers mentally with increasingly 	<ul style="list-style-type: none"> • perform mental calculations, including with mixed operations and large numbers • use their knowledge of the order of operations to carry out calculations involving the four operations
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Addition and subtraction: Problems EYFS: Refer to Addition and subtraction calculations			Year 6 end points <ul style="list-style-type: none"> Solve multi-step addition and subtraction problems in a variety of contexts, deciding which operations and methods to use and explaining their choices. 					
Addition and Subtraction: Problems	Refer to Addition & Subtraction: calculations	Refer to Addition & Subtraction: calculations	<ul style="list-style-type: none"> solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as $7 = \square - 9$ 	<ul style="list-style-type: none"> solve problems with addition and subtraction: <ul style="list-style-type: none"> using concrete objects and pictorial representations, including those involving numbers, quantities and measures applying their increasing knowledge of mental and written methods 	<ul style="list-style-type: none"> solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction 	<ul style="list-style-type: none"> solve addition and subtraction twostep problems in contexts, deciding which operations and methods to use and why 	<ul style="list-style-type: none"> solve addition and subtraction multistep problems in contexts, deciding which operations and methods to use and why solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign 	<ul style="list-style-type: none"> solve addition and subtraction multistep problems in contexts, deciding which operations and methods to use and why

<p>Multiplication and Division: Recall, Represent and Use, and calculations</p> <p>EYFS end points</p> <ul style="list-style-type: none"> Recognise two sets that are equal and unequal Recognise that two equal groups can also be called double Represent doubles using 10 frame 		<p>Year 6 end points</p> <ul style="list-style-type: none"> Represent multi-digit numbers up to 4 digits by a two-digit number using long multiplication, and explain the connection to the partial products resulting from the application of distributive law. Divide any whole number with up to 4 digits by a 2-digit number, recording using either short or long division, applying knowledge of multiples of the divisor to calculate these Express remainders (in division) suitable to its context Use estimation and begin to use a calculator to check calculation Identify prime numbers up to 100, and understand the concept of prime factorisation Identify common factors and multiples between two or more numbers 						
<p>Multiplication and Division: Recall, Represent and Use</p>	<p>Shares out a small number of objects with friends. Eg: share 2 teddies between 2 friends.</p> <p>Replicate sorting of objects into groups Eg: Replicate group of 2 objects.</p>	<ul style="list-style-type: none"> Know what the word doubling and halving mean. Use concrete materials to demonstrate doubling and halving. Develops knowledge of doubles for number 0-5. Share up to 10 objects equally (a puppet to be used to show unfairness of sharing). 	<ul style="list-style-type: none"> Count in 2s, 5s and 10s. Make equal groups using concrete materials Share up to 20 objects equally. Develops understanding of the word 'grouping.' 	<ul style="list-style-type: none"> recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot 	<ul style="list-style-type: none"> recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables 	<ul style="list-style-type: none"> recall multiplication and division facts for multiplication tables up to 12×12 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 recognise and use factor pairs and commutativity in mental calculations 	<ul style="list-style-type: none"> identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers know and use the vocabulary of prime numbers, prime factors and composite (nonprime) numbers establish whether a number up to 100 is prime and recall prime numbers up to 19 recognise and use square numbers and cube numbers, and the notation for squared (2) and cubed (3) 	<ul style="list-style-type: none"> identify common factors, common multiples and prime numbers use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy

Multiplication & Division: Calculations				<ul style="list-style-type: none"> • calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication (\times), division (\div) and equals (=) signs 	<ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • multiply two-digit and three-digit numbers by a one-digit number using formal written layout 	<ul style="list-style-type: none"> • multiply numbers up to 4 digits by a one- or two-digit number using a formal written method, including long multiplication for two digit numbers • multiply and divide numbers mentally drawing upon known facts • divide numbers up to 4 digits by a one-digit number using the formal written method of short division and interpret remainders appropriately for the context • multiply and divide whole numbers and those involving decimals by 10, 100 and 1000 	<ul style="list-style-type: none"> • multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication • divide numbers up to 4 digits by a two-digit whole number using the formal written method of long division, and interpret remainders as whole number remainders, fractions, or by rounding, as appropriate for the context • divide numbers up to 4 digits by a two-digit number using the formal written method of short division where appropriate, interpreting remainders according to the context • perform mental calculations, including with mixed operations and large numbers
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Multiplication & Division: Solve Problem and combined operations EYFS: <ul style="list-style-type: none"> • Demonstrate doubling and halving • Demonstrate sharing into equal groups 				Year 6 end points <ul style="list-style-type: none"> • Interpreting contextual problems to decide when multiplication or division is the appropriate operation to use, including as part of multi-step problems. • Able to identify the multiplicative and additive relationships between two given numbers (related to whole-number multiplier) • Connect division by the whole number to scaling by a unit fraction 				
Multiplication & Division: Solve Problems		•Solve simple problems, including doubling, halving and sharing.	• solve one-step problems involving multiplication and division, by calculating the answer using concrete objects, pictorial representations and arrays with the support of the teacher	• solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts	• solve problems, including missing number problems, involving multiplication and division, including positive integer scaling problems and correspondence problems in which n objects are connected to m objects	• solve problems involving multiplying and adding, including using the distributive law to multiply two digit numbers by one digit, integer scaling problems and harder correspondence problems such as n objects are connected to m objects	• solve problems involving multiplication and division including using their knowledge of factors and multiples, squares and cubes • solve problems involving multiplication and division, including scaling by simple fractions and problems involving simple rates	• solve problems involving addition, subtraction, multiplication and division
							• solve problems involving addition, subtraction, multiplication and division and a combination of these, incorporating prior knowledge of the meaning of the equals sign	• use their knowledge of the order of operations to carry out calculations involving the four operations
Multiplication and Division: Combined Operations								

NC Alignment
 Pupils should develop their ability to solve a range of problems, including with simple fractions.
 Pupils should be fluent in working with fractions, decimals and percentages.

Fractions:
Year 6 end points

- Recognise when fractions can be simplified, and use common factors to simply fractions
- Express fractions in common denomination and use this to compare fractions that are similar in value
- Compare fractions with different denominators, including fractions greater than 1, using reasoning, and choose between reasoning and common denomination as a comparison strategy.
- Apply concepts of equivalence to convert fractions into decimals and percentages

Fractions: Recognise and Write			<ul style="list-style-type: none"> • recognise, find and name a half as one of two equal parts of an object, shape or quantity • recognise, find and name a quarter as one of four equal parts of an object, shape or quantity 	<ul style="list-style-type: none"> • recognise, find, name and write fractions $\frac{1}{3}, \frac{1}{4}, \frac{2}{4}, \frac{3}{4}$ of a length, shape, set of objects or quantity 	<ul style="list-style-type: none"> • 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 • recognise, find and write fractions of a discrete set of objects: unit fractions and nonunit fractions with small denominators • recognise and use fractions as numbers: unit fractions and nonunit fractions with small denominators 	<ul style="list-style-type: none"> • count up and down in hundredths; recognise that hundredths arise when dividing an object by one hundred and dividing tenths by ten. 	<ul style="list-style-type: none"> • identify, name and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths • recognise mixed numbers and improper fractions and convert from one form to the other and write mathematical statements > 1 as a mixed number [for example, $\frac{2}{5} + \frac{4}{5} = \frac{6}{5} = 1 \frac{1}{5}$] 	

Fractions: Compare				<ul style="list-style-type: none"> Recognise the equivalence of $\frac{2}{4}$ and $\frac{1}{2}$ 	<ul style="list-style-type: none"> recognise and show, using diagrams, equivalent fractions with small denominators compare and order unit fractions, and fractions with the same denominators 	<ul style="list-style-type: none"> recognise and show, using diagrams, families of common equivalent fractions 	<ul style="list-style-type: none"> compare and order fractions whose denominators are all multiples of the same number 	<ul style="list-style-type: none"> use common factors to simplify fractions; use common multiples to express fractions in the same denomination compare and order fractions, including fractions > 1

Fractions: Calculation and problems EYFS: NA				Year 6 end points: <ul style="list-style-type: none"> Add and subtract fractions with different denominators. multiply two fractions (unit and non-unit fractions) and divide unit fractions by whole numbers, and apply concept to solve problems in various contexts, including multi-step problems 				
Fractions: Calculations				write simple fractions for example, $\frac{1}{2}$ of 6 is 3.	<ul style="list-style-type: none"> add and subtract fractions with the same denominator within one whole 	<ul style="list-style-type: none"> add and subtract fractions with the same denominator within one whole [for example $\frac{5}{7} + \frac{1}{7} = \frac{6}{7}$ 	<ul style="list-style-type: none"> add and subtract fractions with the same denominator and denominators that are multiples of the same number multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams 	<ul style="list-style-type: none"> add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions multiply simple pairs of proper fractions, writing the answer in its simplest form [for example, $\frac{1}{4} \times \frac{1}{2} = \frac{1}{8}$] divide proper fractions by whole numbers [for example $\frac{1}{3} \div 2 = \frac{1}{6}$]

Fractions: Solve problems					<ul style="list-style-type: none">• solve problems that involve all of the above	<ul style="list-style-type: none">• 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		
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<p>NC Alignment Pupils should develop their ability to solve a range of problems, including with decimal place value. Pupils should be fluent in working with fractions, decimals and percentages.</p>								
<p>Decimals EYFS: NA Year 6 end points</p> <ul style="list-style-type: none"> Apply concepts of equivalence to convert fractions into decimals and percentages Read, write, and understand the value of digits in numbers up to three decimal places. Partition decimals using decimal and fraction notation and identify value of each digit in terms of place value 								
Decimals: Recognise and Write, compare						<ul style="list-style-type: none"> recognise and write decimal equivalents of any number of tenths or hundredths recognise and write decimal equivalents to $\frac{1}{4}$, $\frac{1}{2}$, $\frac{3}{4}$ round decimals with one decimal place to the nearest whole number compare numbers with the same number of decimal places up to two decimal places 	<ul style="list-style-type: none"> read and write decimal numbers as fractions [for example, $0.71 = \frac{71}{100}$] recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents round decimals with two decimal places to the nearest whole number and to one decimal place read, write, order and compare numbers with up to three decimal places 	<ul style="list-style-type: none"> identify the value of each digit in numbers given to three decimal places
	<p>Year 6 end points</p> <ul style="list-style-type: none"> multiply and divide numbers by 10, 100, and 1,000, understanding that digits move to the left when multiplying and to the right when dividing apply concept of multiplying and dividing by powers of ten to conversions between metric units Apply FDP knowledge to solve problems 							

Decimals: Calculations and Problems						<ul style="list-style-type: none"> - 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 ones, tenths and hundredths. 	<ul style="list-style-type: none"> - Solve problems involving numbers up to three decimal places. 	<ul style="list-style-type: none"> - Multiply and divide numbers by 10, 100 and 1000 giving answers up to three decimal places. - Multiple one-digit numbers with up to two decimal places by whole numbers. - Use written division methods in cases where the answer has up to two decimal places. - Solve problems which require answers to be rounded to specified degrees of accuracy
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Year 6 end points

- Apply concepts of equivalence to convert fractions into decimals and percentages
- Calculate common percentages of a number, such as 50%, 25%, 10%, and 1% and apply knowledge finding percentage of given quantity such as calculating discounts
- Solve problems where the percentage part, the whole, or the size of the part is known

Fractions, Decimals and Percentages						<ul style="list-style-type: none"> • solve simple measure and money problems involving fractions and decimals to two decimal places 	<ul style="list-style-type: none"> • recognise the per cent symbol (%) and understand that per cent relates to 'number of parts per hundred', and write percentages as a fraction with denominator 100, and as a decimal • solve problems which require knowing percentage and decimal equivalents of $\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{5}$, $\frac{2}{5}$, $\frac{4}{5}$ and those fractions with a denominator of a multiple of 10 or 25 	<ul style="list-style-type: none"> • associate a fraction with division and calculate decimal fraction equivalents [for example, 0.375] for a simple fraction [for example, $\frac{3}{8}$] • recall and use equivalences between simple fractions, decimals and percentages, including in different contexts
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NC Alignment
Pupils extend their understanding of the number system and place value to include larger integers. This should develop the connections that pupils make between multiplication and division with fractions, decimals, percentages and ratio.

- Year 6 end points**
- Understand relationship between two quantities by identifying the multiplicative relationships between two given numbers (related to whole-number multiplier), and connect division by the whole number to scaling by a unit fraction to explain how quantities increase and decrease proportionally
 - Apply ratios to solve problems that involve comparing quantities and determine how many times one quantity fits into another
 - Use knowledge of scale factors to interpret maps, drawing and models

Ration and Proportion								<ul style="list-style-type: none"> • solve problems involving the relative sizes of two quantities where missing values can be found by using integer multiplication and division facts • solve problems involving the calculation/use of percentages for comparison • solve problems involving similar shapes where the scale factor is known or can be found • solve problems involving unequal sharing and grouping using knowledge of fractions and multiples
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<p>NC Alignment Pupils are introduced to the language of algebra as a means for solving a variety of problems</p>								
<p>Year 6 end points</p> <ul style="list-style-type: none"> • should be familiar with using symbols (e.g., x or y) to represent unknowns and should understand how to manipulate these symbols within equations to find the value of an unknown variable. • Apply understanding of equal sign and balance method to solve simple linear equations • Use algebra to solve problems involving missing values, including multi-step where more than one operation is required 								
Algebra			<ul style="list-style-type: none"> • solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as $7 = \chi - 9$ 	<ul style="list-style-type: none"> • recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems 	<ul style="list-style-type: none"> • solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction 	<p><i>solve problems, including missing number problems, involving multiplication and division, including integer scaling</i></p> <p><i>Perimeter can be expressed algebraically as $2(a + b)$ where a and b are the dimensions in the same unit.</i></p>	<p><i>use the properties of rectangles to deduce related facts and find missing lengths and angles</i></p>	<ul style="list-style-type: none"> • use simple formulae • generate and describe linear number sequences • express missing number problems algebraically • find pairs of numbers that satisfy an equation with two unknowns • enumerate possibilities of combinations of two variables

Early Learning Areas Rich opportunities for children to develop their spatial reasoning skills across all areas of mathematics including shape, space and measures.		NC Alignment Using a range of measures to describe and compare different quantities such as length, mass, capacity/volume, time and money. Use measuring instruments with accuracy and make connections between measure and number. Teaching in geometry and measures should consolidate and extend knowledge developed in number.						
Measurements EYFS <ul style="list-style-type: none"> • Able to recognise and link attributes to what is being measured • Able to contextualise measurement (mass/ capacity/ length) • Able to make direct and indirect comparison and use context-specific vocabulary • Sequence events using 'first', 'then' 		Year 6 end points <ul style="list-style-type: none"> • apply concept of multiplying and dividing by powers of ten to conversions between metric units, and using decimal notation up to three decimal places where necessary • read, write, and convert between standard units of measurement, and convert measurements of length, mass, volume, and time from a smaller unit to a larger unit • Calculate and compare the perimeter of various shapes, including composite rectilinear shapes. • Calculate and compare the area of rectangles and use standard units, and estimate area of irregular shapes • Calculate and compare volume using standards unit and estimate volume 						
Measurement: Using Measures	<ul style="list-style-type: none"> • Make comparisons between objects relating to size, length, weight and capacity. ➢ use general comparative phrases such as too much, a lot more <p>Use gestures or words to point or compare amounts continuous quantities; points to items which are big, tall, full or heavy.</p>	<ul style="list-style-type: none"> • Compare length, weight and capacity ➢ use more specific terms such as taller than, shorter than, heavier than, lighter than • utilise strategies such as direct comparison (eg: placing items side by side). • Can record quantities in different ways • Begins to recognise the relationship between size and number of units 	<ul style="list-style-type: none"> • compare, describe and solve practical problems for: ➢ lengths and heights ➢ mass/weight ➢ capacity and volume ➢ time • measure and begin to record the following: <ul style="list-style-type: none"> ➢ lengths and heights ➢ mass/weight ➢ capacity and volume ➢ time (hours, minutes, seconds) 	<ul style="list-style-type: none"> • choose and use appropriate standard units to estimate and measure length/height in any direction (m/cm); mass (kg/g); temperature (°C); capacity (litres/ml) to the nearest appropriate unit, using rulers, scales, thermometers and measuring vessels • compare and order lengths, mass, volume/capacity and record the results using 	<ul style="list-style-type: none"> • measure, compare, add and subtract: lengths (m/cm/mm); mass (kg/g); volume/capacity (l/ml) 	<ul style="list-style-type: none"> • Convert between different units of measure [for example, kilometre to metre; hour to minute] • estimate, compare and calculate different measures 	<ul style="list-style-type: none"> • convert between different units of metric measure • understand and use approximate equivalences between metric units and common imperial units such as inches, pounds and pints • use all four operations to solve problems involving measure [for example, length, mass, volume, money] using decimal notation, including scaling 	<ul style="list-style-type: none"> • solve problems involving the calculation and conversion of units of measure, using decimal notation up to 3 d.p. where appropriate • use, read, write and convert between standard units, converting measurements of length, mass, volume and time from a smaller unit of measure to a larger unit, and vice versa, using decimal notation to up to 3 d.p. • convert between miles and kilometres

Measurement: Money			<ul style="list-style-type: none"> recognise and know the value of different denominations of coins and notes 	<ul style="list-style-type: none"> recognise and use symbols for pounds (£) and pence (p); combine amounts to make a particular value find different combinations of coins that equal the same amounts of money solve simple problems in a practical context involving addition and subtraction of money of the same unit, including giving change 	<ul style="list-style-type: none"> add and subtract amounts of money to give change, using both £ and p in practical contexts 	<ul style="list-style-type: none"> estimate, compare and calculate different measures, including money in pounds and pence 	<ul style="list-style-type: none"> use all four operations to solve problems involving measure [for example, money] 	
Measurement: Perimeter, Area, Volume		<ul style="list-style-type: none"> Begins to recognise the relationship between size and number of units 	<ul style="list-style-type: none"> measure the perimeter of simple 2-D shapes 		<ul style="list-style-type: none"> measure the perimeter of simple 2-D shapes 	<ul style="list-style-type: none"> measure and calculate the perimeter of a rectilinear figure (including squares) in centimetres and metres find the area of rectilinear shapes by counting squares 	<ul style="list-style-type: none"> measure and calculate the perimeter of composite rectilinear shapes in centimetres and metres calculate and compare the area of rectangles (including squares) and including using standard units, square centimetres (cm²) and square metres (m²) and estimate the area of irregular shapes estimate volume [for example, using blocks to build cuboids] and capacity [for example, using water] 	<ul style="list-style-type: none"> recognise that shapes with the same areas can have different perimeters and vice versa recognise when it is possible to use formulae for area and volume of shapes calculate the area of parallelograms and triangles calculate, estimate and compare volume of cubes and cuboids using standard units, including cubic centimetres (cm³) and cubic metres (m³), and extending to other units

Measurement: Time	<p>Begin to describe a sequence of events, real or fictional, using words, such as 'first', 'then...'</p>	<ul style="list-style-type: none"> describe a sequence of events, real or fictional, using words, such as 'first', 'then...' begins to develop overall sense of time eg: class calendar to support certain events – 'How many sleeps ...' 	<ul style="list-style-type: none"> sequence events in chronological order using language [for example, before and after, next, first, today, yesterday, tomorrow, morning, afternoon and evening] <ul style="list-style-type: none"> recognise and use language relating to dates, including days of the week, weeks, months and years tell the time to the hour and half past the hour and draw the hands on a clock face to show these times 	<ul style="list-style-type: none"> compare and sequence intervals of time 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 know the number of minutes in an hour and the number of hours in a day 	<ul style="list-style-type: none"> tell and write the time from an analogue clock, including using Roman numerals from I to XII, and 12- hour and 24-hour clocks estimate and read time with increasing accuracy to the nearest minute; record and compare time in terms of seconds, minutes and hours; use vocabulary such as o'clock, a.m./p.m., morning, afternoon, noon and midnight know the number of seconds in a minute and the number of days in each month, year and leap year compare durations of events [for example to calculate the time taken by particular events or tasks] 	<ul style="list-style-type: none"> read, write and convert time between analogue and digital 12- and 24-hour clocks solve problems involving converting from hours to minutes; minutes to seconds; years to months; weeks to days 	<ul style="list-style-type: none"> solve problems involving converting between units of time 	<p>use, read, write and convert between standard units.</p>
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<p>Early Learning Areas Rich opportunities for children to develop their spatial reasoning skills across all areas of mathematics including shape, space and measures.</p>		<p>NC Alignment Recognise, describe, draw, compare and sort different shapes and use the related vocabulary. Develop mathematical reasoning so they can analyse shapes and their properties. Classify shapes with complex geometric properties and that they learn vocab needed to describe them.</p>						
<p>Geometry (2D and 3D shapes) Properties of shape</p> <ul style="list-style-type: none"> recognise and describe basic 2D shapes (e.g., circles, squares, triangles) and 3D shape (cubes, spheres and cones) recognise 2D shapes within a 3 D shape 		<p>Year 6 end points Properties of shape</p> <ul style="list-style-type: none"> Draw, compose, and decompose shapes according to given properties, including dimensions, angles and area, and solve related problems. Classify geometric shapes based on their properties and sizes 						
<p>Geometry: 2 D shapes (and Space)</p>	<p>Talk about and explore '2D' shapes using informal and mathematical language e.g. sides, corners, straight, flat, round through block play</p> <ul style="list-style-type: none"> Children explore creating AB patterns. Adults supports children to recognise existing AB patterns. 	<p>Demonstrate increasing intentionality in selection of shapes; for example, cylinders to represent wheel</p> <p>Begin to develop and use some specific language in describing properties in shape: equal sides, edges,</p> <ul style="list-style-type: none"> Children recognise, create and describe patterns. Begin to spot shapes within shapes. <ul style="list-style-type: none"> recognise, explore and create AB patterns. identify unit of repeat and begins to develop ABC. ABB pattern begin to spot some mistakes in patterns 	<ul style="list-style-type: none"> recognise and name common 2- D shapes [for example, rectangles (including squares), circles and triangles] 	<ul style="list-style-type: none"> identify and describe the properties of 2-D shapes, including the number of sides and line symmetry in a vertical line identify 2-D shapes on the surface of 3-D shapes, [for example, a circle on a cylinder and a triangle on a pyramid] compare and sort common 2-D shapes and everyday objects 	<ul style="list-style-type: none"> draw 2-D shapes 	<ul style="list-style-type: none"> compare and classify geometric shapes, including quadrilaterals and triangles, based on their properties and sizes identify lines of symmetry in 2-D shapes presented in different orientations 	<ul style="list-style-type: none"> distinguish between regular and irregular polygons based on reasoning about equal sides and angles. use the properties of rectangles to deduce related facts and find missing lengths and angles 	<ul style="list-style-type: none"> draw 2-D shapes using given dimensions and angles compare and classify geometric shapes based on their properties and sizes illustrate and name parts of circles, including radius, diameter and circumference and know that the diameter is twice the radius

Geometry: 3D shapes	<p>Talk about and explore '3D' shapes using informal and mathematical language e.g. sides, corners, straight, flat, round through block play</p> <ul style="list-style-type: none"> • Begins to develop shape awareness through play <p>Pattern: Refer to 2D shapes</p>	<ul style="list-style-type: none"> • Begin to develop and use some specific language in describing properties in shape: faces in 3D shape. • Develop shape awareness through play <p>Use spatial vocabulary such as Position: in, on, under Direction: up, down, across</p> <p>Pattern: Refer to 2D shapes</p>	<ul style="list-style-type: none"> • recognise and name common 3- D shapes [for example, cuboids (including cubes), pyramids and spheres] 	<ul style="list-style-type: none"> • recognise and name common 3- D shapes [for example, cuboids (including cubes), pyramids and spheres] • compare and sort common 3-D shapes and everyday objects 	<ul style="list-style-type: none"> • make 3-D shapes using modelling materials; recognise 3-D shapes in different orientations and describe them 		<ul style="list-style-type: none"> • identify 3-D shapes, including cubes and other cuboids, from 2-D representations 	<ul style="list-style-type: none"> • recognise, describe and build simple 3-D shapes, including making nets
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<p>Geometry: Angles, position and direction and transformation</p> <p>Position and direction</p> <ul style="list-style-type: none"> develop an understanding of spatial relationships and describe positions using positional language <p>Translation</p> <ul style="list-style-type: none"> Explore and manipulate orientation of shapes 		<p>Year 6 end points</p> <ul style="list-style-type: none"> use angle properties to calculate missing angles at a point, on a straight line, and within shapes, including angles in different types of triangles, regular polygons and quadrilaterals. <p>Position and direction</p> <ul style="list-style-type: none"> describe positions on the full coordinate grid (all four quadrants) and draw and translate simple shapes on the coordinate plane, as well as reflect them in the axes <p>Transformation</p> <ul style="list-style-type: none"> use transformations such as reflection, translation, and rotation, recognising how these transformations affect the position and orientation of shapes. 						
<p>Geometry: Angles and Lines</p>					<ul style="list-style-type: none"> recognise angles as a property of shape or a description of a turn 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 identify horizontal and vertical lines and pairs of perpendicular and parallel lines 	<ul style="list-style-type: none"> identify acute and obtuse angles and compare and order angles up to two right angles by size identify lines of symmetry in 2-D shapes presented in different orientations complete a simple symmetric figure with respect to a specific line of symmetry 	<ul style="list-style-type: none"> know angles are measured in degrees: estimate and compare acute, obtuse and reflex angles draw given angles, and measure them in degrees identify: \sphericalangle angles at a point and one whole turn (total 360°) \sphericalangle angles at a point on a straight line and 1 2 a turn (total 180°) \sphericalangle other multiples of 90 	<ul style="list-style-type: none"> find unknown angles in any triangles, quadrilaterals, and regular polygons recognise angles where they meet at a point, are on a straight line, or are vertically opposite, and find missing angles

Geometry: Position & Direction			<ul style="list-style-type: none"> describe position, direction and movement, including whole, half, quarter and three-quarter turns 	<ul style="list-style-type: none"> order and arrange combinations of mathematical objects in patterns and sequences use mathematical vocabulary to describe position, direction and movement in a straight line and distinguishing between rotation as a turn and in terms of right angles for quarter, half and three-quarter turns (clockwise and anticlockwise) 		<ul style="list-style-type: none"> describe positions on a 2-D grid as coordinates in the first quadrant describe movements between positions as translations of a given unit to the left/right and up/down plot specified points and draw sides to complete a given polygon 	<ul style="list-style-type: none"> 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 	<ul style="list-style-type: none"> describe positions on the full coordinate grid (all four quadrants) draw and translate simple shapes on the coordinate plane, and reflect them in the axes
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Year 6 end points								
<ul style="list-style-type: none"> interpret graphs to solve problems such as comparing quantities and showing changes over time link knowledge of angles, fractions and percentages to interpret pie charts calculate and interpret the mean as an average and apply knowledge to understand and solve data sets in real-world problems 								
Statistics				<ul style="list-style-type: none"> interpret and construct simple pictograms, tally charts, block diagrams and simple tables 	<ul style="list-style-type: none"> interpret and present data using bar charts, pictograms and tables 	<ul style="list-style-type: none"> interpret and present discrete and continuous data using appropriate graphical methods, including bar charts and time graph 	<ul style="list-style-type: none"> complete, read and interpret information in tables, including timetables 	<ul style="list-style-type: none"> interpret and construct pie charts and line graphs and use these to solve problems