



## Maths Intent

Mathematics is a journey and the foundation for helping us understand and change the world. We want all pupils to experience the beauty, power and enjoyment of mathematics and develop a sense of curiosity about the subject with a clear understanding. We want our children to know the purpose behind their learning and apply their knowledge to their everyday lives. This is achieved through providing a **safe, inspiring and creative learning environment for each person** to explore, clarify, practice and apply their learning over time. We want them **to flourish** and become 'deep thinkers' acquiring maths skills that can be recalled quickly and transferred and applied in different contexts. We foster a positive can do attitude and **through challenge, support and care, we strive for excellence** promoting the fact that 'We can all do maths!' We believe all children can achieve **their full potential** in mathematics, and teach for secure and deep understanding of mathematical concepts through small manageable steps. We use mistakes and misconceptions as an essential part of learning and provide **challenge** through rich and sophisticated problems.

We aim for all pupils to:

- become fluent in the fundamentals of mathematics so that they develop conceptual understanding and the ability to recall and apply knowledge rapidly and accurately.
- be able to solve problems by applying their mathematics to a variety of problems with increasing sophistication, including in unfamiliar contexts and to model real-life scenarios
- reason mathematically by following a line of enquiry and develop and present a justification, argument or proof using mathematical language.
- have an appreciation of number and number operations, which enables mental calculations and written procedures to be performed efficiently, fluently and accurately to be successful in mathematics.

*'Mathematics is the language with which God wrote the universe'*- Galileo

- Inclusive 
- Value each person 
- All to flourish 
- Strive for excellence 
- Rooted in God's love 
- Agents of positive change 

# Maths Overview

Year Group			
1	Numbers to 10 Part-whole within 10 Addition within 10 Subtraction within 10 2D and 3D shapes	Numbers to 20 Addition and subtraction within 20 Numbers to 50 Introducing length and height Introducing mass and capacity	Multiplication and Division Fractions Position and Direction Numbers to 100 Money Time
2	Numbers to 100 Addition and subtraction 2D and 3D shapes	Money Multiplication and Division Length and Height Mass, Capacity and Temperature	Fractions Time Problem Solving and Efficient Methods Position and Direction Statistics
3	Place Value within 1000 Addition and Subtraction Multiplication and Division	Multiplication and Division Length and Perimeter Fractions Mass Capacity	Fractions Money Time Angles and Properties of Shapes Statistics
4	Place Value – 4-digit numbers Addition and Subtraction Measure – area Multiplication and Division	Multiplication and Division Length and Perimeter Fractions Decimals	Decimals Money Time Geometry – angles and 2D shapes Statistics Geometry – position and direction
5	Place Value within 1,000,000 Addition and Subtraction Multiplication and Division Fractions	Multiplication and Division Fractions Decimals and Percentages Measure – perimeter and area Graphs and tables	Geometry – properties of shapes Geometry – position and direction Decimals Negative numbers Measure – converting units Volume
6	Place Value within 10,000,000 Four Operations Fractions Measures	Ratio and Proportion Algebra Decimals Percentages Measure – perimeter, area and volume	Statistics Geometry – properties of shapes Geometry – position and direction Problem Solving

# Core Concepts

## CONCEPT – Fluency / Arithmetic

- To develop number sense and be able to choose the most appropriate method for the task at hand
- To apply a skill to multiple contexts.
- To be able to recall and apply knowledge rapidly and accurately

## CONCEPT - Reasoning

- to develop mathematically and think critically.
- To follow a line of enquiry and gather information
- To interpret information to solve problems, conjecture relationships and generalisations.
- To make an informed decision based on what is known and develop an argument, justification or proof
- To communicate ideas effectively using mathematical language

## CONCEPT – Problem solving

- To apply mathematics to a variety of routine and non-routine problems with increasing sophistication.
- To identify key vocabulary to help indicate a mathematical operation.
- To break down problems into a series of simpler steps and persevering in seeking solutions.
- To decide on the correct method or procedure to solve problem

# Fluency / Arithmetic

	Addition	Subtraction	Multiplication	Division	Fractions	Percentages
Year One	<p>Count forwards in ones to and across 100 from any given number.</p> <p>Add one digit and two digit numbers to 20</p> <p>Add two digit and two digit numbers</p>	<p>Count backwards in ones to and across 100 from any given number.</p> <p>Subtract one digit and two digit numbers to 20</p> <p>Subtract two digit number from a two digit number</p>	<p>Double a number</p> <p>Find lots of</p>	<p>Share a number into equal groups.</p> <p>Find groups of</p>	<p>Find half of a quantity.</p> <p>Find quarter of a quantity</p>	
Year Two	<p>Count forward in steps of 2,3,5 from 0</p> <p>Count forward in tens from a given number</p> <p>Add a two-digit and one-digit number mentally up to 100</p> <p>Add a two-digit and tens mentally up to 100</p> <p>Add two two-digit numbers mentally up to 100</p> <p>Add three one-digit number mentally up to 100</p>	<p>Count backwards in tens from any number</p> <p>Subtract a two-digit and one-digit number mentally up to 100</p> <p>Subtract a two-digit number and tens mentally up to 100</p> <p>Subtract two two-digit numbers mentally up to 100</p>	<p>Use multiplication facts for the 2, 5 and 10 multiplication tables</p>	<p>Use division facts for the 2, 5 and 10 multiplication tables</p>	<p>Find one third of a quantity.</p> <p>Find two quarters of a quantity.</p> <p>Find three quarters of a quantity.</p>	
Year Three	<p>Add multiples of 10 or 100 to a number up to 999</p> <p>Add numbers up to three digits using formal methods of column addition.</p>	<p>Subtract multiples of 10 or 100 to a number up to 999</p> <p>Subtract numbers up to three digits using formal methods of column subtraction.</p>	<p>Multiply a two-digit number by a one-digit number using mental methods and progressing to formal written methods (2,3,4,5 and 8)</p> <p>Multiply a whole number by 10</p> <p>Multiply more than two numbers together (2,3,4,5 and 8)</p>	<p>Use known multiplication facts to create associated division facts.</p> <p>Divide one or two digit numbers by 10</p>	<p>Add and subtract fractions with the same denominator within one whole.</p> <p>Find fractions of quantities (up to 100) where the denominator is 2,3,4,5,8 or 10</p>	
Year Four	<p>Add multiples of 10, 100 and 1000 to a number (up to 9,999)</p> <p>Add numbers up to 4 digits using formal method of column addition</p> <p>Add decimals (up to tenths and hundredths)</p>	<p>Subtract multiples of 10, 100 and 1000 to a number (up to 9,999)</p> <p>Subtract numbers up to 4 digits using formal method of column subtraction</p> <p>Subtract decimals (up to tenths and hundredths)</p>	<p>Multiply 2 and 3 digit numbers by a 1-digit number using a formal written method.</p> <p>Multiply a whole number by 100</p> <p>Multiply more than two numbers together.</p>	<p>Use known multiplication facts to create associated division facts.</p> <p>Divide one or two digit numbers by 100</p> <p>Divide multiples of 10, 100 and 1000 by a single number using associated division facts.</p>	<p>Add and subtract fractions where the answer may be an improper.</p> <p>Find fractions of quantities using known multiplication facts.</p>	

	Addition	Subtraction	Multiplication	Division	Fractions	Percentages
Year Five	<p>Add multiples of 10, 100, 1,000, 10,000 and 100,000 to a number (up to 999,999)</p> <p>Add numbers with more than four digits using formal methods of column addition.</p> <p>Add decimals (where two numbers have a different number of decimal places, e.g., <math>14.7 + 8.65</math>)</p> <p>Apply knowledge of partitioning with numbers up to 1,000,000</p>	<p>Subtract multiples of 10, 100, 1,000, 10,000 and 100,000 to a number (up to 999,999)</p> <p>Subtract numbers with more than four digits using formal methods of column subtraction.</p> <p>Subtract decimals (where two numbers have a different number of decimal places e.g. <math>14.7 - 8.65</math>)</p>	<p>Multiply a 3-digit number by a 2-digit number using formal method of long multiplication.</p> <p>Multiply whole numbers by 10, 100 and 1000 (where the answer is no greater than 999,999)</p> <p>Multiply decimals by 10, 100 and 1000 where the quotient may be a decimal</p> <p>Recognise and use square and cube numbers</p> <p>Multiply multiples of 10 by 10, 100 or 1000 (e.g. <math>30 \times 400</math>)</p>	<p>Divide number up to a 4-digit number by a 1-digit number using the formal method of long division (recording with a remainder where required)</p> <p>Divide whole numbers by 10, 100 and 1000 (where the quotient contains a decimal and the dividend may contain a decimal)</p>	<p>Add fractions with the same denominators and convert the answer from improper fractions to mixed numbers.</p> <p>Add and subtract fractions where there are different denominators and one fraction is a multiple of the other (and one fraction may be a mixed number)</p> <p>Multiply proper fraction and mixed number fractions by whole numbers</p> <p>Find fractions of quantities using formal calculation strategies</p>	<p>Find 10% of a number</p> <p>Find a multiple of 10% of a number</p> <p>Find 5% of a number</p>
Year Six	<p>Add multiples of 10, 100, 1,000, 10,000, 100,000 and 1,000,000 to a number (up to 9,999,999)</p> <p>Add and subtract negative numbers through zero</p> <p>Use BIDMAS to identify the correct order of operations</p>	<p>Subtract multiples of 10, 100, 1,000, 10,000, 100,000 and 1,000,000 to a number (up to 9,999,999)</p> <p>Add and subtract negative numbers through zero</p> <p>Use BIDMAS to identify the correct order of operations</p>	<p>Multiply a 4-digit number by a 2-digit number using the formal method of multiplication.</p> <p>Multiply a one-digit number with up to two decimal places by whole numbers.</p> <p>Multiply a tenths number by a multiple of 10 or 100 (e.g. <math>0.4 \times 60</math>)</p> <p>Multiply a number with decimals by a two digit number using the formal method of long multiplication (e.g. <math>5.1 \times 28</math>)</p>	<p>Divide numbers up to a 4 digits by a 2-digit number using the formal written method of long division (where the dividend may include a fraction)</p> <p>Divide number up to 4 digits by a 1-digit number using formal written method of short division (where the dividend may include a fraction)</p>	<p>Add and subtract fractions with different denominators (using two or three fractions)</p> <p>Add and subtract a mixed number to a fraction where there are different denominators.</p> <p>Multiply pairs of proper fractions writing the answer in its simplest form.</p> <p>Divide proper fractions by a whole number</p>	<p>Find a multiple of 5% of a number.</p> <p>Find 1% of a number.</p> <p>Find a multiple of 1% of a number.</p>

# Assessment

## How we track children's progress

- Teacher assessment
- Formal assessments
- Analysis grids
- School Tracker

## Fluency/Arithmetic

Through daily 'Fluent in Five' lessons at the start of every lesson

Daily fluency questions in Power Maths lessons

AfL through live marking in lessons

Formal termly assessments using White Rose Arithmetic Papers

## Reasoning

Daily opportunities to reflect at the end of daily lessons

Daily reasoning questions in Power Maths sessions

Extended reasoning questions on a Friday

AfL through live marking during daily maths lessons

Formal termly assessments using PI IMA

## Problem Solving

Daily problem solving in Power Maths lessons

Extended problem solving in Friday maths sessions

AfL live marking in lesson observations

Formal termly assessments using PUMA

## End of Year Expectations

	Number and place value	Addition and Subtraction	Multiplication and Division	Fractions	Measurement	Geometry properties of shape
Year One	count to and across 100, forwards and backwards, beginning with 0 or 1, or from any given number	read, write and interpret mathematical statements involving addition (+), subtraction (-) and equals (=) signs.	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.	recognise, find and name a half as one of two equal parts of an object, shape or quantity $\frac{1}{2}$ .	compare, describe and solve practical problems for: lengths and heights [for example, long/short, longer/shorter, tall/short, double/half]  mass/weight [for example, heavy/light, heavier than, lighter than]  capacity and volume [for example, full/empty, more than, less than, half, half full, quarter]  time [for example, quicker, slower, earlier, later]	recognise and name common 2-D and 3-D shapes, including:  2-D shapes [for example, rectangles (including squares), circles and triangles]  3-D shapes [for example, cuboids (including cubes), pyramids and spheres].
	count, read and write numbers to 100 in numerals; count in multiples of twos, fives and tens	represent and use number bonds and related subtraction facts within 20		recognise, find and name a quarter as one of four equal parts of an object, shape or quantity	measure and begin to record the following:  lengths and heights  mass/weight  capacity and volume  time (hours, minutes, seconds)	Geometry Position and direction
	given a number, identify one more and one less	add and subtract one-digit and two-digit numbers to 20, including zero			recognise and know the value of different denominations of coins and notes	describe position, direction and movement, including whole, half, quarter and three-quarter turns
	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	solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as $7 = ? - 9$			sequence events in chronological order using language [for example, before and after, next, first, today, yesterday, tomorrow, morning, afternoon and evening]	
	read and write numbers from 1 to 20 in numerals and words				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	

Year Two	Number and place value	Addition and Subtraction	Multiplication and Division	Fractions	Measurement	Geometry properties of shape
	count in steps of 2, 3, and 5 from 0, and in tens from any number, forward and backward	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	recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers	recognise, find, name and write fractions $\frac{1}{3}$ $\frac{1}{4}$ $\frac{2}{4}$ and $\frac{3}{4}$ of a length, shape, set of objects or quantity	choose and use appropriate standard units to estimate and measure length/height in any direction (m/cm); mass (kg/g); temperature ( $^{\circ}$ C); capacity (litres/ml) to the nearest appropriate unit, using rulers, scales, thermometers and measuring vessels	identify and describe the properties of 2-D shapes, including the number of sides and line symmetry in a vertical line  identify and describe the properties of 3-D shapes, including the number of edges, vertices and faces
	recognise the place value of each digit in a two-digit number (tens, ones)	recall and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100	calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication ( $\times$ ), division ( $\div$ ) and equals (=) signs	write simple fractions for example, $\frac{1}{2}$ of 6 = 3 and recognise the equivalence of $\frac{2}{4}$ and $\frac{1}{2}$	compare and order lengths, mass, volume/capacity and record the results using $>$ , $<$ and $=$	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 and 3-D shapes and everyday objects.
	identify, represent and estimate numbers using different representations, including the number line	add and subtract numbers 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	show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot	<b>Statistics</b>	recognise and use symbols for pounds (£) and pence (p); combine amounts to make a particular value	<b>Geometry Position and direction</b>
	compare and order numbers from 0 up to 100; use $<$ , $>$ and $=$ signs	show that addition of two numbers can be done in any order (commutative) and subtraction of one number from another cannot	solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts	interpret and construct simple pictograms, tally charts, block diagrams and simple tables	find different combinations of coins that equal the same amounts of money	order and arrange combinations of mathematical objects in patterns and sequences
	read and write numbers to at least 100 in numerals and in words	recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems.		ask and answer simple questions by counting the number of objects in each category and sorting the categories by quantity	solve simple problems in a practical context involving addition and subtraction of money of the same unit, including giving change	use mathematical vocabulary to describe position, direction and movement, including movement in a straight line and distinguishing between rotation as a turn and in terms of right angles for quarter, half and three-quarter turns (clockwise and anti-clockwise).
	use place value and number facts to solve problems			ask and answer questions about totalling and comparing categorical data.	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.	

Year Three	Number and place value	Addition and Subtraction	Multiplication and Division	Fractions	Measurement	Geometry properties of shape
	count from 0 in multiples of 4, 8, 50 and 100; find 10 or 100 more or less than a given number	add and subtract numbers mentally, including: a three-digit number and ones a three-digit number and tens a three-digit number and hundreds	recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables	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	measure, compare, add and subtract: lengths (m/cm/mm); mass (kg/g); volume/capacity (l/ml)	draw 2-D shapes and make 3-D shapes using modelling materials; recognise 3-D shapes in different orientations and describe them  ;
	recognise the place value of each digit in a three-digit number (hundreds, tens, ones)	add and subtract numbers with up to three digits, using formal written methods of columnar addition and subtraction	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	recognise, find and write fractions of a discrete set of objects: unit fractions and non-unit fractions with small denominators	measure the perimeter of simple 2-D shapes	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
	compare and order numbers up to 1000	estimate the answer to a calculation and use inverse operations to check answers	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.	recognise and use fractions as numbers: unit fractions and non-unit fractions with small denominators	add and subtract amounts of money to give change, using both £ and p in practical contexts Ⓢ	identify horizontal and vertical lines and pairs of perpendicular and parallel lines.
	identify, represent and estimate numbers using different representations	solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction		recognise and show, using diagrams, equivalent fractions with small denominators	tell and write the time from an analogue clock, including using Roman numerals from I to XII, and 12-hour and 24-hour clocks	<b>Statistics</b>
	read and write numbers up to 1000 in numerals and in words			add and subtract fractions with the same denominator within one whole [for example, $5/7 + 1/7 = 6/7$ ]	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	interpret and present data using bar charts, pictograms and tables
	solve number problems and practical problems involving these ideas			compare and order unit fractions, and fractions with the same denominators	know the number of seconds in a minute and the number of days in each month, year and leap year	solve one-step and two-step questions [for example, 'How many more?' and 'How many fewer?'] using information presented in scaled bar charts and pictograms and tables
				solve problems that involve all of the above	compare durations of events [for example to calculate the time taken by particular events or tasks].	

Year Four	Number and place value	Addition and Subtraction	Multiplication and Division	Fractions	Measurement	Geometry properties of shape
	count in multiples of 6, 7, 9, 25 and 1000	add and subtract numbers with up to 4 digits using the formal written methods of columnar addition and subtraction where appropriate	recall multiplication and division facts for multiplication tables up to $12 \times 12$	recognise and show, using diagrams, families of common equivalent fractions	Convert between different units of measure [for example, kilometre to metre; hour to minute]	compare and classify geometric shapes, including quadrilaterals and triangles, based on their properties and sizes
	find 1000 more or less than a given number	estimate and use inverse operations to check answers to a calculation	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	count up and down in hundredths; recognise that hundredths arise when dividing an object by one hundred and dividing tenths by ten. ☐	measure and calculate the perimeter of a rectilinear figure (including squares) in centimetres and metres	identify acute and obtuse angles and compare and order angles up to two right angles by size
	count backwards through zero to include negative numbers	solve addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why.	recognise and use factor pairs and commutativity in mental calculations ☐	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	find the area of rectilinear shapes by counting squares	identify lines of symmetry in 2-D shapes presented in different orientations
	order and compare numbers beyond 1000 identify, represent and estimate numbers using different representations		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.	recognise and write decimal equivalents of any number of tenths or hundredths	read, write and convert time between analogue and digital 12- and 24-hour clocks	<b>Geometry Position and direction</b>
	round any number to the nearest 10, 100 or 1000			recognise and write decimal equivalents to $\frac{1}{4}$ $\frac{3}{4}$	solve problems involving converting from hours to minutes; minutes to seconds; years to months; weeks to days.	describe positions on a 2-D grid as coordinates in the first quadrant
	solve number and practical problems that involve all of the above and with increasingly large positive numbers			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	<b>Statistics</b>	describe movements between positions as translations of a given unit to the left/right and up/down
	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			round decimals with one decimal place to the nearest whole number	interpret and present discrete and continuous data using appropriate graphical methods, including bar charts and time graphs.	plot specified points and draw sides to complete a given polygon.
				compare numbers with the same number of decimal places up to two decimal places	solve comparison, sum and difference problems using information presented in bar charts, pictograms, tables and other graphs.	
				solve simple measure and money problems involving fractions and decimals to two decimal places		

	Number and place value	Addition and Subtraction	Multiplication and Division	Fractions	Measurement	Geometry properties of shape
Year Five	write, order and compare numbers to at least 1 000 000 and determine the value of each digit	add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction)	identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers	compare and order fractions whose denominators are all multiples of the same number	convert between different units of metric measure (for example, kilometre and metre; centimetre and metre; centimetre and millimetre; gram and kilogram; litre and millilitre)	identify 3-D shapes, including cubes and other cuboids, from 2-D representations
	count forwards or backwards in steps of powers of 10 for any given number up to 1 000 000	add and subtract numbers mentally with increasingly large numbers	know and use the vocabulary of prime numbers, prime factors and composite (non-prime) numbers	identify, name and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths	understand and use approximate equivalences between metric units and common imperial units such as inches, pounds and pints	know angles are measured in degrees: estimate and compare acute, obtuse and reflex angles
	interpret negative numbers in context, count forwards and backwards with positive and negative whole numbers, including through zero	use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy	establish whether a number up to 100 is prime and recall prime numbers up to 19	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, $2/5 + 4/5 = 6/5 = 1 \frac{1}{5}$ ]	measure and calculate the perimeter of composite rectilinear shapes in centimetres and metres	draw given angles, and measure them in degrees (o)
	round any number up to 1 000 000 to the nearest 10, 100, 1000, 10 000 and 100 000	solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why	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	add and subtract fractions with the same denominator and denominators that are multiples of the same number	calculate and compare the area of rectangles (including squares), and including using standard units, square centimetres (cm <sup>2</sup> ) and square metres (m <sup>2</sup> ) and estimate the area of irregular shapes	identify: angles at a point and one whole turn (total 360o)  angles at a point on a straight line and $\frac{1}{2}$ a turn (total 180o) ▣ other multiples of 90o
	solve number problems and practical problems that involve all of the above		multiply and divide numbers mentally drawing upon known facts	multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams	▣ estimate volume [for example, using 1 cm <sup>3</sup> blocks to build cuboids (including cubes)] and capacity [for example, using water]	use the properties of rectangles to deduce related facts and find missing lengths and angles
	read Roman numerals to 1000 (M) and recognise years written in Roman numerals		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	read and write decimal numbers as fractions [for example, $0.71 = 71/100$ 71 ]	solve problems involving converting between units of time	distinguish between regular and irregular polygons based on reasoning about equal sides and angles.
			multiply and divide whole numbers and those involving decimals by 10, 100 and 1000	recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents	use all four operations to solve problems involving measure [e.g., length, mass, volume, money] using decimals and scaling.	<b>Geometry Position and direction</b>
			recognise and use square numbers and cube numbers, and the notation for squared (2) and cubed (3)	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		identify, describe and represent the position of a shape following a reflection or translation, using the appropriate language, and know the shape hasn't changed.
			solve problems involving $\times$ and $\div$ including using their knowledge of factors, multiples, squares and cubes	solve problems involving number up to three decimal places		<b>Statistics</b>
			solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign	recognise % and understand that per cent relates to 'number of parts per hundred', and write %s as a fraction with denominator 100, and as a decimal		solve comparison, sum and difference problems using information presented in a line graph
		solve problems involving multiplication and division, including scaling by simple fractions and problems involving simple rates	solve problems which require knowing % and decimal equivalents of $\frac{1}{2}$ $\frac{2}{5}$ $\frac{1}{5}$ $\frac{4}{5}$ and those fractions with a denominator of a multiple of 10 or 25.		complete, read and interpret information in tables, including timetables	

Year Six	<b>Number and place value</b>	<b>Addition and Subtraction</b>	<b>Multiplication and Division</b>	<b>Fractions</b>	<b>Measurement</b>	<b>Geometry properties of shape</b>
	read, write, order and compare numbers up to 10 000 000 and determine the value of each digit	multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication	use common factors to simplify fractions; use common multiples to express fractions in the same denomination	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 and conversion of units of measure, using decimal notation up to three decimal places where appropriate	draw 2-D shapes using given dimensions and angles  recognise, describe and build simple 3-D shapes, including making nets
	round any whole number to a required degree of accuracy	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	compare and order fractions, including fractions $> 1$	solve problems involving the calculation of percentages [for example, of measures, and such as 15% of 360] and the use of percentages for comparison	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 three decimal places	compare and classify geometric shapes based on their properties and sizes and find unknown angles in any triangles, quadrilaterals, and regular polygons
	use negative numbers in context, and calculate intervals across zero	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	add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions	solve problems involving similar shapes where the scale factor is known or can be found	convert between miles and kilometres	illustrate and name parts of circles, including radius, diameter and circumference and know that the diameter is twice the radius
	solve number and practical problems that involve all of the above	perform mental calculations, including with mixed operations and large numbers	multiply simple pairs of proper fractions, writing the answer in its simplest form [for example, $1/4 \times 2/8$ ]	solve problems involving unequal sharing and grouping using knowledge of fractions and multiples.	recognise that shapes with the same areas can have different perimeters and vice versa	recognise angles where they meet at a point, are on a straight line, or are vertically opposite, and find missing angles.
		identify common factors, common multiples and prime numbers	divide proper fractions by whole numbers [for example, $1/3 \div 2 = 1/6$ ]		recognise when it is possible to use formulae for area and volume of shapes	<b>Geometry Position and direction</b>
		use their knowledge of the order of operations to carry out calculations involving the four operations	associate a fraction with division and calculate decimal fraction equivalents [for example, 0.375] for a simple fraction [for example, $3/8$ ]		calculate the area of parallelograms and triangles	describe positions on the full coordinate grid (all four quadrants)
	<b>Algebra</b>	solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why	identify the value of each digit in numbers given to three decimal places and multiply and divide numbers by 10, 100 and 1000 giving answers up to three decimal places		calculate, estimate and compare volume of cubes and cuboids using standard units, including cubic centimetres (cm <sup>3</sup> ) and cubic metres (m <sup>3</sup> ), and extending to other units [for example, mm <sup>3</sup> and km <sup>3</sup> ].	draw and translate simple shapes on the coordinate plane, and reflect them in the axes.
	use simple formulae					
	generate and describe linear number sequences	solve problems involving addition, subtraction, multiplication and division.	multiply one-digit numbers with up to two decimal places by whole numbers			
	express missing number problems algebraically	use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy	use written division methods in cases where the answer has up to two decimal places			<b>Statistics</b>
	find pairs of numbers that satisfy an equation with two unknowns		solve problems which require answers to be rounded to specified degrees of accuracy			interpret and construct pie charts and line graphs and use these to solve problems
	enumerate possibilities of combinations of two variables		recall and use equivalences between simple fractions, decimals and percentages, including in different contexts			calculate and interpret the mean as an average