



St. John's C.E. Primary Friern Barnet

Mathematics Guidelines

Statement of Intent

When teaching mathematics at St John's we intend to provide a curriculum which caters for the needs of all individuals. We aim to give our children the confidence and competence with numbers and measures. Our lessons focus on fluency, reasoning and problem solving. Pupils are required to explore maths in depth, using mathematical vocabulary to reason and explain their workings. A wide range of mathematical resources are used and pupils are taught to show their workings in a concrete fashion, before establishing ways of pictorially and formally representing their understanding. They are taught to explain their choice of methods and develop their mathematical reasoning skills.

Implementation

Maths at St John's:

- Mathematics at St. John's is fun, practical, engaging and challenging. Children are taught key skills and mathematical vocabulary in each year group and will be encouraged to make connections to real life.
- Teachers follow the National Curriculum for all maths lessons. The curriculum is delivered using the White Rose programme: EYFS Master the Curriculum, KS1 Primary Stars and KS2 Power Maths (Y4-Y6). To assist with transition, Y3 may use a combination of Primary Stars and White Rose resources. All maths resources used are based on the White Rose programme.
- All teachers use the concrete-pictorial-abstract approach in lessons so children experience three representations of a mathematical concept. This begins with a 'hands on' component using real objects, then moves to relating the idea to pictures and finally encourages children to represent the concept using mathematical notation.
- Children are encouraged to present their work to a high standard, taking pride and care. When using maths exercise books in KS2, pupils will fold a page into two columns and use one box for each digit.
- Revise and Review strategies are used to revisit previous learning and ensure maths skills are embedded
- A range of reasoning resources are used to challenge all children and give them the opportunity to reason with their understanding
- Maths learning is reinforced at home through the use of the mathletics programme in KS1 and KS2
- Children are taught to recognise the importance of maths in everyday life; this is reinforced through 'scrapbook activities' as part of home learning

- Children in KS2 are encouraged to improve their number fluency by using the chrome books each day for a week on a fortnightly basis
- All lessons promote number sense, fluency with numbers, mastery and problem solving.
- Where possible, links are made with other subjects across the curriculum.
- Teachers promote a positive attitude to mathematics through appropriate work, encouragement and support
- Teachers encourage an understanding of appropriate mathematical language
- EYFS children are assessed through formative assessment, where teachers use observations to gain an understanding of a child's learning, development and progress and plan individual next steps for each child
- KSI and KS2 children are formally assessed once a term to track progress and inform future planning
- Children are formally assessed at the end of each key stage (YR, Y2 and Y6)

Impact

As a result of our Maths teaching at St John's you will see:

- Children are equipped with the basic Numeracy skills necessary for life
- Children are able to make quick recall of basic mathematical facts
- Children are able to think clearly and logically, to solve problems and to show confidence in overcoming difficulties
- Children are able to achieve their true potential in mathematics
- Engaged children who are all challenged
- All children are supported in their work, at whatever level, using a variety of resources
- A stimulating environment for mathematical activities
- A good mathematical learner at St John's has a wide range of mathematical vocabulary, is fluent in the number system, solves problems in a range of contexts including the new or unusual, embraces the value of learning from mistakes and thinks independently, persevering when faced with challenges.
- Confident children who can all talk about maths and their learning and the links between mathematical topics.
- Learning that is tracked and monitored to ensure all children make good progress.

Parental Engagement

At St. John's we work hard to promote a positive relationship with our families. We offer parents the following ways to engage with their children's maths learning:

- Access to the numeracy challenge website aimed at helping parents improve their own maths skills

- Providing families with maths calculation policy
- Access to maths videos demonstrating current methods and teaching strategies
- Maths activity mornings where parents can come in to school and carry out maths learning alongside their children
- Careers afternoon where parents share how they use maths in their jobs
- Scrapbook home learning activities which are based on real-life maths

Curriculum Overview

EYFS

	Autumn	Spring	Summer
YN	Number songs (to 5, counting forwards and backwards) Colours Simple patterns (copy, continue and create their own patterns) Sorting (making sets based on attributes such as colour, size or shape) Compare amounts (more, fewer) Compare size (big, small, medium, bigger, smaller) Counting principles (Children learn that numbers are said in the same order each time. They learn to attribute one number name to each object. They begin to learn that the last number said indicates how many there are in the set)	Numbers 1,2 and 3 (identify representations of 1, 2, 3, make their own collections of 1, 2 or 3 objects) Subitising (know how many there are without counting) Composition of 4 and 5 Number 6 Introduce 10 frame 2D shapes (properties of shapes) - square, rectangle, pentagon Length and height (long, short, longer, shorter) Weight (heavier and lighter) Capacity (full and empty, half full, half empty)	One more and one fewer 2D and 3D shapes Numbers 1-5 revision (composition of numbers, count on and back to 4 and 5 ,subitise sets of up to 4 and 5) Ordering- my day (talk about night and day and order key events in their daily routines, such as waking up, coming to school, dinner, bed time) Positional language (on, under, in, over, above, behind, between, next to, beside)
YR	Key times of day Where do things belong- positional language Class routines Counting principles Match sort and compare amounts	One less Introducing zero Composition of 5 Equal/unequal groups Composition of numbers including 3 groups How many altogether	Number patterns Estimating Missing numbers Building numbers beyond 10 Counting patterns beyond 10 Spatial reasoning 1:

	<p>Compare size, length, height and capacity</p> <p>Exploring patterns</p> <p>Representing 1,2 and 3</p> <p>Comparing 1,2 and 3</p> <p>Composition of 1,2 and 3</p> <p>Composition of 4 and 5</p> <p>Subtising (know how many there are without counting)</p> <p>Circles and triangles</p> <p>Positional language</p> <p>Representing numbers</p> <p>One more and one less</p> <p>Shapes with 4 sides</p> <p>Time- ordering my day, day time/ night time</p>	<p>Compare mass (heavier lighter)</p> <p>Compare capacity (full and empty, nearly full, nearly empty, half full, half empty)</p> <p>Measuring capacity</p> <p>Numbers 6,7 and 8</p> <p>One more and one less</p> <p>Combining 2 groups to find the total</p> <p>Length and height</p> <p>Measuring- Time</p> <p>Days of the week</p> <p>Adding more/ counting on</p> <p>Building numbers 9 and 10</p> <p>Number bonds to 10</p> <p>Counting backwards from 10</p> <p>Comparing numbers within 10</p> <p>3D shapes (properties)</p> <p>Pattern</p> <p>Consolidation</p>	<p>Match, rotate and manipulate</p> <p>Adding more and taking away</p> <p>Spatial reasoning 2:</p> <p>Compose and decompose</p> <p>Doubling</p> <p>Sharing and grouping</p> <p>Even and odd numbers</p> <p>Spatial reasoning 3:</p> <p>Visualise and build</p> <p>Depth of numbers</p> <p>Adding by counting on/Subtracting by counting back</p> <p>Patterns and relationships</p> <p>Spatial reasoning 4:</p> <p>Mapping</p>
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KS1

	Autumn	Spring	Summer
Y1	<p><u>Number & Place Value within 10</u></p> <ul style="list-style-type: none"> * Count to 100, forwards and backwards, beginning with 0 or 1, or from any given number * Count, read and write numbers to 100 in numerals and words * Given a number, identify one more and one less * Identify and represent numbers using objects and pictorial representations including the number line * Use the language of : equal to, more than, less than (fewer), most, least <p><u>Number: addition and subtraction within 10</u></p>	<p><u>Number: place value within 20</u></p> <ul style="list-style-type: none"> * Read and write numbers from 1 to 20 in numerals and words. <p><u>Number: addition and subtraction within 20</u></p> <ul style="list-style-type: none"> * Represent and use number bonds and related subtraction facts within 20 (Algebra) * Add and subtract 1-digit and 2-digit numbers to 20, including 0. * Solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems. 	<p><u>Number: multiplication and division</u></p> <ul style="list-style-type: none"> * 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 <p><u>Number: fractions</u></p> <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"> * Represent and use number bonds and related subtraction facts within 10 * Read, write and interpret mathematical statements involving addition, subtraction and equals signs. * Add and subtract one digit numbers to 10, including zero * Solve one step problems that involve addition and subtraction, using concrete objects and pictorial presentations and missing number problems (Algebra) <p><u>Geometry: shape</u></p> <ul style="list-style-type: none"> * Recognise and name common 2D and 3D shapes including squares, circles and triangles * Recognise and name common 3D shapes including cuboids, cubes, pyramids and spheres 	<p><u>Number: place value within 50</u></p> <ul style="list-style-type: none"> * Count to 50 forwards and backwards, beginning with 0 or 1, or from any number. * Count, read and write numbers to 50 in numerals. * Given a number, identify one more or one less. * 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. * Count in multiples of twos, fives and tens. <p><u>Measurement: length, height, weight and volume</u></p> <ul style="list-style-type: none"> * Measure and begin to record lengths, heights, mass/weight and volume * Compare, describe and solve practical problems for lengths and heights (e.g. long/short, longer/shorter, tall/short, double/half); mass/weight (e.g. heavy/light, heavier than, lighter than); capacity/volume (e.g. full/empty, more than, less than, half, half full, quarter) 	<p><u>Geometry: position and direction</u></p> <ul style="list-style-type: none"> * Describe position, direction and movement, including half, quarter and three-quarter turns <p><u>Number: place value within 100</u></p> <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, read and write numbers to 100, count in twos, fives and tens. <p><u>Measurement: money</u></p> <ul style="list-style-type: none"> * recognise and know the value of different denominations of coins and notes <p><u>Measurement: time</u></p> <ul style="list-style-type: none"> * Measure and begin to record time (hours, minutes, seconds) * compare, describe and solve practical problems for time (e.g. quicker, slower, earlier, later) * sequence events in chronological order using language (e.g. before and after, next, first, today, yesterday, tomorrow, morning, afternoon and evening) (Algebra) * tell the time to half hour and half past the hour and draw the hands on a clock face to show these times * recognise and use language relating to dates, including days of the week, weeks, months and years
Y2	<p><u>Number: place value</u></p> <ul style="list-style-type: none"> * Count in steps of 2, 3, and 5 from 0, and in tens from any number, forward or backward * Recognise the place value of each digit in a two-digit number 	<p><u>Measurement: money</u></p> <ul style="list-style-type: none"> * Find different combinations of coins that equal the same amounts of money * Recognise and use symbols for pounds (£) and pence (p); combine amounts to make a particular value. 	<p><u>Number: fractions</u></p> <ul style="list-style-type: none"> * 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 * Write simple fractions e.g. $\frac{1}{2}$ of 6 = 3 and recognise the equivalence of $\frac{2}{4}$ and $\frac{1}{2}$

<ul style="list-style-type: none"> * Identify, represent and estimate numbers using different representations including the number line. * Compare and order from 0 up to 100; use $<$, $>$ and $=$ signs * Read and write numbers to at least 100 in numerals and in words * Use place value and number facts to solve problems <p><u>Number: addition and subtraction</u></p> <ul style="list-style-type: none"> * 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 addition and subtraction facts to 20 fluently, and derive and use related facts up to 100 (Algebra) * Show that the 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 (Algebra) * Add and subtract numbers using concrete objects, pictorial representations, and mentally, including: a 2-digit number and ones; a 2-digit number and tens; two 2-digit numbers; adding three 1-digit numbers <p><u>Geometry: properties of shape</u></p> <ul style="list-style-type: none"> * Identify and describe the properties of 2D shapes, including the number of sides and line symmetry in a vertical line 	<ul style="list-style-type: none"> * Solve simple problems in a practical context involving addition and subtraction of money of the same unit, including giving change (Addition and Subtraction) <p><u>Number: multiplication and division</u></p> <ul style="list-style-type: none"> * Recall and use multiplication and division facts for the 2, 5 and 10 tables, recognising odd and even numbers. * Calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication (\times), division (\div) and equals ($=$) signs * Show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot * Solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in context <p><u>Measurement: length, height, mass, capacity and temperature</u></p> <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 ($^{\circ}\text{C}$); capacity (litres/ml) to the nearest appropriate unit, using rulers, scales, thermometers and measuring vessels * Compare and order lengths, mass, volume/capacity and record the results using $>$, $<$ and $=$ 	<p><u>Measurement: time</u></p> <ul style="list-style-type: none"> * Know the number of minutes in an hour and the number of hours in a day * 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 * Compare and sequence intervals of time (Algebra) <p><u>Statistics</u></p> <ul style="list-style-type: none"> * Interpret and construct simple pictograms, tally charts, block diagrams and simple tables * Ask and answer simple questions by counting the number of objects in each category and sorting the categories by quantity * Ask and answer questions about totalling and comparing categorical data <p><u>Geometry: position and direction</u></p> <ul style="list-style-type: none"> * 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 anti-clockwise) * Order and arrange combinations of mathematical objects in patterns and sequences (Algebra)
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	<ul style="list-style-type: none"> * Identify and describe the properties of 3D shapes, including the number of edges, vertices and faces * Identify 2D shapes on the surface of 3D shapes * Compare and sort common 2D and 3D shapes and everyday objects 		
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KS2

	Autumn	Spring	Summer
Y3	<p><u>Number and Place Value</u></p> <ul style="list-style-type: none"> * Count from 0 in multiples of 4, 8, 50 and 100 (Multiplication and Division) * Find 10 or 100 more or less than a given number * Compare and order numbers to 1000 * Identify, represent and estimate numbers using different representations * Read and write numbers up to 1000 in numerals and in words * Recognise the place value of each digit in a 3-digit number (hundreds, tens, ones) <p><u>Addition and Subtraction</u></p> <ul style="list-style-type: none"> * Add and subtract numbers mentally, including: a 3-digit number and ones; a 3-digit number and tens; a 3-digit number and hundreds * Add and subtract numbers with up to 3-digits, using formal and written methods of columnar addition and subtraction * Estimate the answer to a calculation and use inverse operations to check answers (Multiplication and Division) 	<p><u>Multiplication and Division</u></p> <ul style="list-style-type: none"> * Recall and use multiplication facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers (Y2) * Write and calculate mathematical statements for multiplication and division using the multiplication tables that they know, including for 2-digit numbers times 1-digit numbers, using mental and progressing to formal written methods * Solve problems, including missing number problems, involving multiplication and division, including positive integer scaling problems (Algebra) and correspondence problems in which n objects are connected to m objects <p><u>Measurement: Length and Perimeter</u></p> <ul style="list-style-type: none"> * Measure the perimeter of simple 2-D shapes * Measure, compare, add and subtract: lengths (m/cm/mm); mass (kg/g); volume/capacity (l/ml) <p><u>Fractions (including Decimals and Percentages)</u></p> <ul style="list-style-type: none"> * Recognise, find and write fractions of a discrete set of objects: unit fractions and non-unit fractions with small denominations 	<p><u>Fractions</u></p> <ul style="list-style-type: none"> * Recognise, find and write fractions of a discrete set of objects: unit fractions and non-unit fractions with small denominators * Add and subtract fractions with the same denomination within one whole (e.g. $5/7 + 1/7 = 6/7$) <p><u>Money</u></p> <ul style="list-style-type: none"> * Add and subtract amounts of money to give change, using both £ and p in practical contexts <p><u>Measurement: Time</u></p> <ul style="list-style-type: none"> * 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 a.m./p.m., morning, afternoon, noon and midnight * Tell and write the time from an analogue clock, including using Roman numerals from I to XII, and 12-hour and 24-hour clocks (Number and Place Value)

	<ul style="list-style-type: none"> * Solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction (Algebra) * Count in steps of 2, 3, and 5 from 0, and in tens from any number, forward or backward (Y2) * Recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers (Y2) * Recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables * Write and calculate mathematical statements for multiplication and division using the multiplication tables that they know, including for 2-digit numbers, using mental and progressing to written methods 	<ul style="list-style-type: none"> * Recognise and use fractions as numbers: unit fractions and non-unit fractions with small denominations * Recognise and show, using diagrams, equivalent fractions with small denominations * Compare and order unit fractions, and fractions with the same denominations <p><u>Measurement: Mass and Capacity</u></p> <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"> * Compare durations of events, for example to calculate the time taken by particular events or tasks * Know the number of seconds in a minute and the number of days in each month, year and leap year <p><u>Geometry: Properties of Shape</u></p> <ul style="list-style-type: none"> * Measure the perimeter of simple 2-D shapes * Measure, compare, add and subtract: lengths (m/cm/mm); mass (kg/g); volume/capacity (l/ml) * Draw 2D shapes and make 3D shapes using modelling materials; recognise 3D shapes in different orientations and describe them * 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 <p><u>Statistics</u></p> <ul style="list-style-type: none"> * Interpret and present data using pictograms, bar charts and tables * Solve one-step and two-step questions (e.g. How many more? and How many fewer?) using information presented in scaled bar charts and pictograms and tables
Y4	<p><u>Number and Place Value: 4-digit numbers</u></p> <ul style="list-style-type: none"> * Recognise the place value of each digit in a four-digit number (1,000s, 100s, 10s, and 1s) 	<p><u>Multiplication and Division</u></p> <ul style="list-style-type: none"> * Recognise and use factor pairs and commutativity in mental calculations 	<p><u>Decimals</u></p> <ul style="list-style-type: none"> * recognise and write decimal equivalents of any number of tenths or hundredths

<p>* Count in multiples of 6, 7, 9, 25 and 1,000 (Multiplication and Division)</p> <p>* Identify, represent and estimate numbers using different representations</p> <p>* Find 1,000 more or less than a given number</p> <p>* Order and compare numbers beyond 1,000</p> <p>* Round any number to the nearest 10, 100 or 1,000</p> <p><u>Addition and Subtraction</u></p> <p>* add and subtract numbers with up to 4 digits using the formal written methods of columnar addition and subtraction where appropriate</p> <p>* estimate and use inverse operations to check answers to a calculation (Multiplication and Division)</p> <p>* solve addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why</p> <p><u>Multiplication and Division</u></p> <p>* Recall multiplication and division facts for multiplication tables up to 12×12</p> <p>* 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</p> <p><u>Measurement: Area</u></p> <p>* Find the area of rectilinear shapes by counting squares</p>	<p>* recall multiplication and division facts for multiplication tables up to 12×12</p> <p>* 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</p> <p>* multiply two-digit and three-digit numbers by a one-digit number using formal written layout</p> <p>* recognise and use factor pairs and commutativity in mental calculations</p> <p>* 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</p> <p><u>Measurement: Length and Perimeter</u></p> <p>* Convert between different units of measure [for example, kilometre to metre; hour to minute]</p> <p>* measure and calculate the perimeter of a rectilinear figure (including squares) in centimetres and metres</p> <p>* <i>Perimeter can be expressed algebraically as $2(a+b)$ where a and b are the same dimensions in the same unit (Algebra)</i></p> <p><u>Fractions</u></p> <p>* practise counting using simple fractions and decimals, both forwards and backwards</p> <p>* Reason about the location of mixed numbers in the linear number system</p> <p>* Convert mixed numbers to improper fractions and vice versa</p> <p>* recognise and show, using diagrams, families of common equivalent fractions</p>	<p>* compare numbers with the same number of decimal places up to two decimal places (Number and Place Value)</p> <p>* round decimals with one decimal place to the nearest whole number (Number and Place Value)</p> <p>* recognise and write decimal equivalents to $1/4$, $1/2$, $3/4$</p> <p><u>Measurement: Time</u></p> <p>* Convert between different units of measure [for example, kilometre to metre; hour to minute]</p> <p><u>Measurement: Money</u></p> <p>* estimate, compare and calculate different measures, including money in pounds and pence</p> <p><u>Statistics</u></p> <p>* Interpret and present discrete and continuous data using appropriate graphical methods, including bar charts and time graphs</p> <p>* solve comparison, sum and difference problems using information presented in bar charts, pictograms, tables and other graphs</p> <p><u>Geometry: Properties of Shape and Angles</u></p> <p>* identify acute and obtuse angles and compare and order angles up to two right angles by size</p> <p>* compare and classify geometric shapes, including quadrilaterals and triangles, based on their properties and sizes</p> <p>* Identify lines of symmetry in 2D shapes presented in different orientations</p> <p>* complete a simple symmetric figure with respect to a specific line of symmetry</p> <p><u>Geometry: Position and Direction</u></p> <p>* Describe positions on a 2D grid as coordinates in the first quadrant</p>
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		<ul style="list-style-type: none"> * add and subtract fractions with the same denominator * 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 <p><u>Decimals</u></p> <ul style="list-style-type: none"> * recognise and write decimal equivalents of any number of tenths or hundredths * 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 (Number and Place Value) 	<ul style="list-style-type: none"> * plot specified points and draw sides to complete a given polygon * describe movements between positions as translations of a given unit to the left/right and up/down
Y5	<p><u>Number and Place Value within 1,000,000</u></p> <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 * Count forwards or backwards in steps of powers of 10 for any given number up to 1,000,000 (Multiplication and Division) * Read Roman numerals to 1000 (M) and recognise years written in Roman numerals * Round any number up to 1,000,000 to the nearest 10, 100, 1000, 10,000 and 100,000 <p><u>Addition and Subtraction</u></p> <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) * Use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy * Add and subtract numbers mentally with increasingly large numbers 	<p><u>Multiplication and Division</u></p> <ul style="list-style-type: none"> * Multiply numbers up to 4-digits by a 1 or 2-digit number using a formal written method, including long multiplication for 2-digit numbers * Divide numbers up to 4-digit by a 1-digit number using formal written method of short division and interpret remainders appropriately for the context <p><u>Fractions (including decimals and percentages)</u></p> <ul style="list-style-type: none"> * Read and write decimal numbers as fractions (e.g. $0.71 = 71/100$) * 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 as a decimal fraction * Multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams * Read, write, order and compare numbers with up to three decimal places 	<p><u>Geometry: Properties of Shape</u></p> <ul style="list-style-type: none"> * Identify 3D shapes, including cubes and other cuboids, from 2D representations * Draw given angles, and measure in degrees (°) * Use the properties of rectangles to deduce related facts and find missing lengths and angles * Distinguish between regular and irregular polygons based on reasoning about equal sides and angles * Know angles are measured in degrees; estimate and compare acute, obtuse and reflex angles * Identify angles at a point and one whole turn (360°); angles at a point on a straight line and $\frac{1}{2}$ a turn (total 180°); other multiples of 90° * Identify horizontal and vertical lines and pairs of perpendicular and parallel lines (Year 3) <p><u>Geometry: Position and Direction</u></p> <ul style="list-style-type: none"> * Identify, describe and represent the position of a shape following a reflection or translation,

	<p>* Solve addition and subtraction multi-step problem in contexts, deciding which operations and methods to use and why</p> <p><u>Multiplication and Division</u></p> <p>* Multiply and divide whole numbers and those involving decimals by 10, 100 and 1000</p> <p>* Identify multiples and factors, including finding all factor pairs of a number, and common factors or two numbers</p> <p>* Know and use the vocabulary of prime numbers, prime factors and composite (non-prime) numbers</p> <p>* Recognise and use square numbers and cube numbers, and the notation for squared (dm^2) and cubed (dm^3) (Measurement)</p> <p><u>Fractions (including decimals and percentages)</u></p> <p>* Identify, name and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths</p> <p>* Compare and order fractions whose denominators are all multiples of the same number</p> <p>* Recognise mixed numbers and improper fractions and convert from one form to the other and write mathematical statements >1 as a mixed number (e.g. $\frac{6}{5} + \frac{1}{5} = 6/5 = 1 \frac{1}{5}$)</p> <p>* Add and subtract fractions with the same denominator and denominators that are multiples of the same number</p>	<p>* Recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents</p> <p><u>Measurement: Area and Perimeter</u></p> <p>* Measure and calculate the perimeter of composite rectilinear shapes in centimetres and metres</p> <p>* 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</p> <p><u>Statistics: graphs and tables</u></p> <p>* Complete, read and interpret information in tables, including timetables</p> <p>* Solve comparison, sum and difference problems using information presented in a line graph</p>	<p>using the appropriate language, and know that the shape has not changed</p> <p>* Describe positions on a 2D grid as coordinates in the first quadrant (Year 4)</p> <p><u>Decimals</u></p> <p>decimal sequences</p> <p>* Add and subtract fractions with the same denominator and multiples of the same number</p> <p>* Read, write, order and compare numbers with up to 3-decimal places</p> <p>* Solve problems involving numbers up to 3-decimal places</p> <p>* Recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents (Measurement)</p> <p><u>Negative Numbers</u></p> <p>* Interpret negative numbers in context, count forwards and backwards with positive and negative whole numbers, including through zero</p> <p><u>Measurement: Converting Units</u></p> <p>* Solve problems involving converting between units of time</p> <p>* Convert between different units of metric (e.g. kilometre and metre; centimetre and metre; centimetre and millimetre; gram and kilogram; litre and millilitre)</p> <p>* Understand and use approximate equivalences between metric units and common imperial units such as inches, pounds and pints</p> <p>* Use all four operations to solve problems involving measure [for example, length, mass, volume, money] using decimal notation, including scaling</p>
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			<u>Measure: Volume and Capacity</u> * Estimate volume (e.g. using 1 cm ³ blocks to build cubes and cuboids) and capacity (e.g. using water)
Y6	<u>Number and Place Value within 10,000,000</u> * Read, write, order and compare numbers up to 10,000,000 and determine the value of each digit. * Use negative numbers in context, and calculate intervals across zero * Round any whole number to a required degree of accuracy <u>Four Operations</u> * Use estimation to check answers to calculations and determine, in the context of a problem, levels of accuracy * 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 * Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why * Multiply multi-digit numbers up to 4-digits by a 2-digit whole number using formal written method of long multiplication * Divide numbers up to 4-digits by a 2-digit whole number using formal written methods of short division where appropriate for the context * Identify common factors, common multiples and prime numbers * Recognise and use square numbers and cube numbers, and the notation for squared (2) and cubed (3) (year 5)	<u>Ratio and Proportion</u> * Solve problems involving shapes where the scale factor is known or can be found (Multiplication and Division) * Solve problems involving unequal sharing and grouping using knowledge of fractions and multiples <u>Decimals and Percentages</u> * Identify the value of each digit to 3-decimal places and multiply and divide numbers by 10, 100 and 1000 where the answers are up to 3-decimal places (Number and Place Value) * Associate a fraction with division and calculate decimal fraction equivalents (e.g. 0.375) for a simple fraction (e.g. $\frac{3}{8}$) (Multiplication and Division) * Recall and use equivalences between simple fractions, decimals and percentages, including in different contexts * Multiply 1-digit numbers with up to 2-decimal places by whole numbers * Use written division methods in cases where the answer has up to 2-decimal places * Solve problems which require answers to be rounded to specified degrees of accuracy * Compare and order fractions, including fractions > 1 * Solve problems involving the calculation of percentages (for example, of measures, and such as	<u>Geometry: Properties of Shapes</u> * Recognise, describe and build simple 3D shapes, including making nets * Illustrate and name parts of circles, including radius, diameter and circumference and know that the diameter is twice the radius * Draw 2D shapes using given dimensions and angles * Compare and classify geometric shapes based on their properties and sizes and 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 <u>Statistics</u> * Interpret and construct pie charts and line graphs and use these to solve problems * Calculate and interpret the mean as an average <u>Geometry: Position and Direction</u> * 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

	<p>(Measures)</p> <p><u>Fractions</u></p> <ul style="list-style-type: none"> * Use common factors to simplify fractions; use common multiples to express fractions in the same denomination (Multiplication and Division) * Compare and order fractions, including fractions >1 * Add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions * Divide proper fractions by whole numbers (e.g. $\frac{1}{3} \div 2 = \frac{1}{6}$) * Multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams * Multiply simple pairs of proper fractions, writing the answer in its simplest form [for example, $\frac{1}{4} \times \frac{1}{2} = \frac{1}{8}$] * Use written division methods in cases where the answer has up to two decimal places <p><u>Measurement: Imperial and Metric</u></p> <p>Reading, writing and comparing; problem solving</p> <ul style="list-style-type: none"> * Convert between miles and kilometres * 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 * Solve problems involving the calculation and conversion of units of measure, using decimal notation up to three decimal places where appropriate 	<p>15% of 360) and the use of percentages for comparison</p> <p><u>Algebra</u></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 number sequences involving two unknowns * Enumerate all possibilities of combinations of two variables <p><u>Measure: Perimeter, Area and Volume</u></p> <ul style="list-style-type: none"> * Recognise that shapes with the same areas can have different perimeters and vice versa * Calculate the area of parallelograms and triangles * Calculate, estimate and compare volume of cubes and cuboids using standard units, including centimetre cubed (cm^3) and cubic metres (m^3), and extending to other units such as mm^3 and km^3 <p>(Multiplication and Division)</p> <ul style="list-style-type: none"> * Recognise when it is possible to use formulae for area and volume of shapes 	
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