

## Year 3

Year 3 programme of study (statutory requirements)	Notes and guidance (non-statutory)
<p><b>Number, place value and rounding</b></p> <p>Pupils should be taught to:</p> <ul style="list-style-type: none"><li>■ count from 0 in multiples of 4, 8, 50 and 100; finding 10 or 100 more or less than a given number</li><li>■ recognise the place value of each digit in a three-digit number (hundreds, tens, ones)</li><li>■ compare and order numbers up to 1000</li><li>■ identify, represent and estimate numbers using different representations</li><li>■ read and write numbers to at least 1000 in numerals and in words</li><li>■ solve number problems and practical problems involving these ideas.</li></ul>	<p><b>Number, place value and rounding</b></p> <p>Pupils should work with larger numbers, applying partitioning related to place value using varied and increasingly complex problems, building on work in Year 2 (e.g. <math>46 = 40</math> and <math>6</math>, <math>46 = 30</math> and <math>16</math>).</p> <p>Using a variety of representations, including those related to measure, pupils should continue to count in ones, tens and hundreds, so that they become fluent in the order and place value of numbers to 1000.</p>
<p><b>Addition and subtraction</b></p> <p>Pupils should be taught to:</p> <ul style="list-style-type: none"><li>■ add and subtract numbers mentally, including:<ul style="list-style-type: none"><li>■ a three-digit number and ones</li></ul></li></ul>	<p><b>Addition and subtraction</b></p> <p>Pupils should practise solving varied addition and subtraction questions. For mental calculations with two-digit numbers, the answers could exceed 100.</p> <p>Pupils should use their understanding of place value and</p>

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<ul style="list-style-type: none"><li>■ a three-digit number and tens</li><li>■ a three-digit number and hundreds</li><li>■ add and subtract numbers with up to three digits, using the efficient written methods of columnar addition and subtraction</li><li>■ estimate the answer to a calculation and use inverse operations to check answers</li><li>■ solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction.</li></ul>	<p>partitioning, and practise using columnar addition and subtraction with increasingly large numbers up to three digits to become fluent.</p>

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<ul style="list-style-type: none"> <li>■ <b>Multiplication and division</b> Pupils should be taught to:</li> <li>■ recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables</li> <li>■ 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 efficient written methods</li> </ul> <p>solve problems, including missing number problems, involving multiplication and division, including integer scaling problems and correspondence problems in which n objects involving multiplication and division, including integer scaling problems and correspondence problems in which n objects are connected to m objects.</p>	<p>Pupils should continue to practise their mental recall of multiplication tables when they are calculating mathematical statements in order to improve fluency. Through doubling, they connect the 2, 4 and 8 multiplication tables Pupils should develop efficient mental methods, for example, using commutativity (e.g. <math>4 \times 12 \times 5 = 4 \times 5 \times 12 = 20 \times 12 = 240</math>) and multiplication and division facts (e.g. using <math>3 \times 2 = 6</math>, <math>6 \div 3 = 2</math> and <math>2 = 6 \div 3</math>) to derive related facts (<math>30 \times 2 = 60</math>, <math>60 \div 3 = 20</math> and <math>20 = 60 \div 3</math>).</p> <p>Pupils should develop reliable written methods for multiplication and division, starting with calculations of two-digit numbers by one-digit numbers and progressing to the efficient written methods of short multiplication and division.</p> <p>Pupils should solve simple problems in contexts, deciding which of the four operations to use and why, including measuring and scaling contexts, and correspondence problems in which m objects are connected to n objects (e.g. 3 hats and 4 coats, how many different outfits; 12 sweets shared equally between 4 children; 4 cakes shared equally between 8 children).</p>

<p><b>Fractions</b></p> <p>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>■ 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</li> <li>■ recognise, find and write fractions of a discrete set of objects: unit fractions and non-unit fractions with small denominators</li> <li>■ recognise and use fractions as numbers: unit fractions and non-unit fractions with small denominators</li> <li>■ recognise and show, using diagrams, equivalent fractions with small denominators</li> <li>■ add and subtract fractions with the same denominator within</li> </ul>	<p><b>Fractions</b></p> <p>Pupils should connect tenths to place value and decimal measures, not restricted to decimals between 0 and 1 inclusive and to division by 10.</p> <p>They should begin to understand unit and non-unit fractions as numbers on the number line, and deduce relations between them, such as size and equivalence. They should go beyond the [0, 1] interval, and <math>\frac{1}{4} + \frac{3}{4} = 1</math> for example, relating this to measure.</p> <p>Pupils should understand the relation between unit fractions as operators and division by integers.</p> <p>They should continue to recognise fractions in the context of parts of a whole, numbers, measurements, a shape, or unit fractions as a</p>
<p>one whole (e.g. <math>\frac{5}{7} + \frac{1}{7} = \frac{6}{7}</math>)</p> <ul style="list-style-type: none"> <li>■ compare and order unit fractions with the same denominator</li> <li>■ solve problems that involve all of the above.</li> </ul>	<p>division of a quantity.</p> <p>Pupils should practise adding and subtracting fractions with the same denominator through a variety of increasingly complex problems to improve fluency.</p>

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<p><b>Measures</b></p> <p>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>■ measure, compare, add and subtract: lengths (m/cm/mm); mass (kg/g); volume/capacity (l/ml)</li> <li>■ measure the perimeter of simple 2-D shapes</li> <li>■ add and subtract amounts of money to give change, using both £ and p in practical contexts</li> <li>■ tell and write the time from an analogue clock, including using Roman numerals from I to XII, and 12-hour and 24- hour clocks</li> <li>■ estimate and read time with increasing accuracy to the nearest minute; record and compare time in terms of seconds, minutes, hours and o'clock; use vocabulary such as a.m./p.m., morning, afternoon, noon and midnight</li> <li>■ know the number of seconds in a minute and the number</li> </ul>	<p><b>Measures</b></p> <p>Pupils should continue to measure using the appropriate tools and units, progressing to using a wider range of measures, including comparing and using mixed units (e.g. 1 kg and 200g) and simple equivalents of mixed units (e.g. 5m = 500cm).</p> <p>The comparison of measures should also include simple scaling (e.g. a given quantity or measure is twice as long or five times as high) and connect this to multiplication.</p> <p>Pupils should continue to become fluent in recognising the value of coins, by adding and subtracting amounts, including mixed units, and giving change using manageable amounts. They should record £ and p separately. The decimal recording of money is introduced formally in Year 4.</p> <p>Pupils should use both analogue and digital 12-hour clocks and record their times. In this way they become fluent in and prepared for using digital 24-hour clocks in Year 4.</p>
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### **Geometry: properties of shapes**

Pupils should be taught to:

- draw 2-D shapes and make 3-D shapes using modelling materials; recognise 3-D shapes in different orientations; and describe them with increasing accuracy
- recognise angles as a property of shape and associate angles with turning
- 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, vertical, perpendicular and parallel lines in relation to other lines.

### **Geometry: properties of shapes**

Pupils' knowledge of the properties of shapes is extended at this stage to symmetrical and non-symmetrical polygons and polyhedra. Pupils extend their use of the properties of shapes. They should be able to describe the properties of 2-D and 3-D shapes using accurate language, including lengths of lines and acute and obtuse for angles greater or lesser than a right angle.

Pupils should draw and measure straight lines in centimetres.

### **Data**

Pupils should be taught to:

- interpret and present data using bar charts, pictograms and tables
- solve one-step and two-step questions such as 'How many more?' and 'How many fewer?' using information presented in scaled bar charts and pictograms and tables.

### **Data**

Pupils should understand and use simple scales (e.g. 2, 5, 10 units per cm) in pictograms and bar charts with increasing accuracy.

They should continue to interpret data presented in many contexts.

## Year 4

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<p data-bbox="147 300 674 336"><b>Number, place value and rounding</b></p> <p data-bbox="147 395 517 432">Pupils should be taught to</p> <ul data-bbox="203 475 1104 1145" style="list-style-type: none"><li data-bbox="203 475 824 512">■ count in multiples of 6, 7, 9, 25 and 1000</li><li data-bbox="203 523 857 560">■ find 1000 more or less than a given number</li><li data-bbox="203 571 1088 608">■ count backwards through zero to include negative numbers</li><li data-bbox="203 619 1104 715">■ recognise the place value of each digit in a four-digit number (thousands, hundreds, tens, and ones)</li><li data-bbox="203 726 846 762">■ order and compare numbers beyond 1000</li><li data-bbox="203 774 913 869">■ identify, represent and estimate numbers using different representations</li><li data-bbox="203 880 947 917">■ round any number to the nearest 10, 100 or 1000</li><li data-bbox="203 928 1025 1024">■ solve number and practical problems that involve all of the above and with increasingly large positive numbers</li><li data-bbox="203 1035 1032 1145">■ read Roman numerals to 100 (I to C) and understand how, over time, the numeral system changed to include the concept of zero and place value.</li></ul>	<p data-bbox="1133 300 1659 336"><b>Number, place value and rounding</b></p> <p data-bbox="1133 395 2063 608">Using a variety of representations, including measures, pupils should become fluent in the order and place value of numbers beyond 1000, including counting in tens and hundreds, and maintaining fluency in other multiples through varied and frequent practice.</p> <p data-bbox="1133 651 2051 767">They begin to extend their knowledge of the number system to include the decimal numbers and fractions that they have met so far.</p> <p data-bbox="1133 810 2063 986">Roman numerals should be put in their historical context so pupils understand that there have been different ways to write whole numbers and that the important concepts of zero and place value were introduced over a period of time.</p>

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<p><b>Addition and subtraction</b></p> <p>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>■ add and subtract numbers with up to 4 digits using the efficient written methods of columnar addition and subtraction where appropriate</li> <li>■ estimate and use inverse operations to check answers to a calculation</li> <li>■ solve addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why.</li> </ul>	<p><b>Addition and subtraction</b></p> <p>Pupils should continue to practise both mental methods and columnar addition and subtraction with increasingly large numbers to aid fluency.</p>
<p><b>Multiplication and division</b></p> <p>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>■ recall multiplication and division facts for multiplication tables up to <math>12 \times 12</math></li> <li>■ 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</li> <li>■ recognise and use factor pairs and commutativity in mental calculations</li> <li>■ multiply two-digit and three-digit numbers by a one-digit number using formal written layout</li> </ul>	<p><b>Multiplication and division</b></p> <p>Pupils should continue to practise recalling and using multiplication tables and related division facts to aid fluency.</p> <p>Pupils should practise mental methods and extend this to three-digit numbers to derive facts, for example <math>200 \times 3 = 600</math> into <math>600 \div 3 = 200</math>, to become fluent.</p> <p>Pupils should practise to become fluent in the efficient written method of short multiplication for multiplying using multi-digit numbers, and short division with exact answers when dividing by a one-digit number.</p> <p>Pupils should write statements about the equality of expressions</p>

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<ul style="list-style-type: none"> <li>■ solve problems involving multiplying and adding, including using the distributive law and harder multiplication problems such as which n objects are connected to m objects.</li> </ul>	<p>(e.g. use the distributive law <math>39 \times 7 = 30 \times 7 + 9 \times 7</math> and associative law <math>(2 \times 3) \times 4 = 2 \times (3 \times 4)</math>).</p> <p>Pupils should solve two-step problems in contexts, choosing the appropriate operation, working with increasingly harder numbers. This should include correspondence questions such as three cakes shared equally between 10 children.</p>
<p><b>Fractions</b></p> <p>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>■ count up and down in hundredths; recognise that hundredths arise when dividing an object by a hundred and dividing tenths by ten</li> <li>■ 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</li> <li>■ identify, name and write equivalent fractions of a given fraction, including tenths and hundredths</li> <li>■ add and subtract fractions with the same denominator.</li> </ul>	<p><b>Fractions</b></p> <p>Pupils should connect hundredths to tenths and place value and decimal measure.</p> <p>They should extend the use of the number line to connect fractions, numbers and measures.</p> <p>Pupils should understand the relation between non-unit fractions and multiplication and division of quantities, with particular emphasis on tenths and hundredths.</p> <p>Pupils should associate fractions of a length, of a shape and as a representation of one whole or set of quantities. Pupils should use factors and multiples to recognise equivalent fractions and simplify where appropriate (e.g. <math>\frac{6}{9} = \frac{2}{3}</math> or <math>\frac{1}{4} = \frac{2}{8}</math>).</p> <p>Pupils should continue practice in adding and subtracting fractions with the same denominator, to become fluent through a variety of</p>

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	<p>increasingly complex problems beyond one whole.</p> <p>They should practise counting using simple fractions and decimal fractions, both forwards and backwards.</p>
<p><b>Decimals and fractions</b></p> <p>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>■ recognise and write decimal equivalents of any number of tenths or hundredths</li> <li>■ recognise and write decimal equivalents to <math>\frac{1}{4}</math>; <math>\frac{1}{2}</math>; <math>\frac{3}{4}</math></li> <li>■ find the effect of dividing a one- or two-digit number by 10 and 100, identifying the value of the digits in the answer as units, tenths and hundredths</li> <li>■ round decimals with one decimal place to the nearest whole number</li> <li>■ compare numbers with the same number of decimal places up to two decimal places</li> <li>■ solve simple measure and money problems involving fractions and decimals to two decimal places.</li> </ul>	<p><b>Decimals and fractions</b></p> <p>Pupils should be taught throughout that decimals and fractions are different ways of expressing numbers.</p> <p>Pupils' understanding of the number system and decimal place value is extended at this stage to tenths and then hundredths. This includes relating the decimal notation to division of whole numbers by 10 and later 100.</p> <p>Pupils should learn decimal notation and the language associated with it, including in the context of measurements. They make comparisons and order decimal amounts and quantities that are expressed to the same number of decimal places. They should be able to represent numbers with one or two decimal places in multiple ways, such as on number lines.</p>

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<p><b>Measures</b></p> <p>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>■ convert between different units of measure (e.g. kilometre to metre; hour to minute)</li> <li>■ measure and calculate the perimeter of a rectilinear figure (including squares) in centimetres and metres</li> <li>■ find the area of rectilinear shapes by counting</li> <li>■ estimate, compare and calculate different measures, including money in pounds and pence</li> <li>■ read, write and convert time between analogue and digital 12 and 24-hour clocks</li> <li>■ solve problems involving converting from hours to minutes; minutes to seconds; years to months; weeks to days.</li> </ul>	<p><b>Measures</b></p> <p>Pupils should use multiplication and their knowledge of place value to convert from larger to smaller units.</p> <p>They should relate area to arrays and multiplication.</p> <p>Pupils should build on their understanding of decimal notation to record measures.</p>
<p><b>Geometry: properties of shapes</b></p> <p>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>■ compare and classify geometric shapes, including quadrilaterals and triangles, based on their properties and sizes</li> <li>■ identify acute and obtuse angles and compare and order angles up to two right angles by size</li> <li>■ identify lines of symmetry in 2-D shapes presented in</li> </ul>	<p><b>Geometry: properties of shapes</b></p> <p>Pupils should continue to classify shapes using geometrical properties, extending to classifying different triangles (e.g. isosceles, equilateral, scalene) and quadrilaterals (e.g. parallelogram, rhombus, trapezium).</p> <p>Pupils should compare and order angles in preparation for using a protractor and compare lengths and angles to decide if a polygon is regular or irregular.</p>

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<p>different orientations</p> <ul style="list-style-type: none"> <li>■ complete a simple symmetric figure with respect to a specific line of symmetry.</li> </ul>	<p>Pupils should draw symmetric patterns using a variety of media to become familiar with different orientations of lines of symmetry; and recognise line symmetry in a variety of diagrams.</p>
<p><b>Geometry: position, direction, motion</b></p> <p>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>■ describe positions on a 2-D grid as coordinates in the first quadrant</li> <li>■ describe movements between positions as translations of a given unit to the left/right and up/down</li> <li>■ plot specified points and draw sides to complete a given polygon.</li> </ul>	<p><b>Geometry: position, direction, motion</b></p> <p>Pupils should draw a pair of axes in one quadrant, with equal scales and integer labels. They should read, write and use pairs of coordinates (2, 5), including using coordinate-plotting ICT tools.</p>
<p><b>Data</b></p> <p>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>■ interpret and present discrete data using bar charts and continuous data using line graphs</li> <li>■ solve comparison, sum and difference problems using information presented in bar charts, pictograms, tables and simple line graphs.</li> </ul>	<p><b>Data</b></p> <p>Pupils should understand and use a greater range of scales in their representations. Pupils should begin to relate the graphical representation of data to recording change over time.</p>