

Cycle 1	Cycle 2	Cycle 3
<p><b>Number and Place Value</b></p> <ul style="list-style-type: none"> <li>• read, write, order and compare numbers to 5-digits and determine the value of each digit</li> <li>• count forwards or backwards in steps of powers of 10 for any given number up to 10 000</li> <li>• round any number up to 10 000 to the nearest 10, 100, 1000</li> <li>• interpret negative numbers in context, count forwards and backwards with positive and negative whole numbers, including through zero</li> <li>• recognise and describe linear number sequences, including those involving fractions and decimals, and find the term-to-term rule in words (for example, add <math>\frac{1}{2}</math>)</li> <li>• solve number problems and practical problems that involve all of the above</li> </ul>	<p><b>Number and Place Value</b></p> <ul style="list-style-type: none"> <li>• read, write, order and compare numbers to 6-digits and determine the value of each digit</li> <li>• count forwards or backwards in steps of powers of 10 for any given number up to 100 000</li> <li>• round any number up to 100 000 to the nearest 10, 100, 1000, 10 000</li> <li>• interpret negative numbers in context, count forwards and backwards with positive and negative whole numbers, including through zero</li> <li>• recognise and describe linear number sequences, including those involving fractions and decimals, and find the term-to-term rule in words (for example, add <math>\frac{1}{2}</math>)</li> <li>• solve number problems and practical problems that involve all of the above</li> </ul>	<p><b>Number and Place Value</b></p> <ul style="list-style-type: none"> <li>• read, write, order and compare numbers to at least 1 000 000 and determine the value of each digit</li> <li>• count forwards or backwards in steps of powers of 10 for any given number up to 1 000 000</li> <li>• interpret negative numbers in context, count forwards and backwards with positive and negative whole numbers, including through zero</li> <li>• round any number up to 1 000 000 to the nearest 10, 100, 1000, 10 000 and 100 000</li> <li>• recognise and describe linear number sequences, including those involving fractions and decimals, and find the term-to-term rule in words (for example, add <math>\frac{1}{2}</math>)</li> <li>• solve number problems and practical problems that involve all of the above</li> </ul>

- read Roman numerals to 1000 (M) and recognise years written in Roman numerals. – to be covered during Roman topic.

Cycle 1	Cycle 2	Cycle 3
<p><b>Addition and Subtraction</b></p> <ul style="list-style-type: none"> <li>• add and subtract two whole numbers with 4 digits, using a written method if appropriate – for example <math>2\ 675 + 1000</math> should be carried out mentally not using a written method.</li> <li>• add and subtract numbers mentally with increasingly large numbers</li> <li>• use rounding to check answers to calculations and <b><u>determine, in the context of a problem, levels of accuracy</u></b></li> <li>• solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why.</li> <li>•</li> </ul>	<p><b>Addition and Subtraction</b></p> <ul style="list-style-type: none"> <li>• add and subtract whole numbers with up to 6- digits, using a written method if appropriate</li> <li>• add and subtract numbers mentally with increasingly large numbers</li> <li>• use rounding to check answers to calculations and <b><u>determine, in the context of a problem, levels of accuracy</u></b></li> <li>• solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why.</li> </ul>	<p><b>Addition and Subtraction</b></p> <ul style="list-style-type: none"> <li>• add and subtract whole numbers with more than 4 digits (and upto 7 digits), using a written method if appropriate</li> <li>• add and subtract numbers mentally with increasingly large numbers</li> <li>• use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy</li> <li>• solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why.</li> </ul>

Cycle 1	Cycle 2	Cycle 3
<p><b>Multiplication and Division</b></p> <ul style="list-style-type: none"> <li>recall multiplication and division facts for <b>x11</b> and <b>x12</b> (Y4)</li> <li>multiply and divide whole numbers and those involving decimals by 10, 100 and 1000</li> <li>multiply and divide numbers mentally drawing upon known facts and halving, doubling, dividing by 4= halve and halve again, x or dividing by 10/100 or multiples of 10/100.</li> <li>identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers</li> <li>recognise, use and recall square numbers and notation for squared.</li> <li>know and use the vocabulary of prime numbers, prime factors and composite (non-prime) numbers</li> <li>establish whether a number up to 100 is prime and recall prime numbers up to 19</li> <li>Multiply a 2-digit by 2-digit using a written method.</li> <li>Divide a 2 or 3 digit number by a single digit number.</li> <li>Solve problems involving multiplication and division, including scaling by simple fractions, problems involving simple rates, other operations and remainders in context.</li> </ul>	<p><b>Multiplication and Division</b></p> <ul style="list-style-type: none"> <li>identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers</li> <li>multiply and divide whole numbers and those involving decimals by 10, 100 and 1000</li> <li>multiply and divide numbers mentally drawing upon known facts and halving, doubling, dividing by 4= halve and halve again, x or dividing by 10/100 or multiples of 10/100.</li> <li>recognise, use and recall square numbers and notation for squared.</li> <li>know and use the vocabulary of prime numbers, prime factors and composite (non-prime) numbers</li> <li>establish whether a number up to 100 is prime and recall prime numbers up to 19</li> <li>Multiply a 3-digit by 2-digit using a written method.</li> <li>Divide a 3-digit number by a single digit.</li> <li>Solve problems involving multiplication and division, including scaling by simple fractions, problems involving simple rates, other operations and remainders in context.</li> </ul>	<p><b>Multiplication and Division</b></p> <ul style="list-style-type: none"> <li>identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers</li> <li>multiply and divide whole numbers and those involving decimals by 10, 100 and 1000</li> <li>multiply and divide numbers mentally drawing upon known facts and halving, doubling, dividing by 4= halve and halve again, x or dividing by 10/100 or multiples of 10/100.</li> <li>recognise and use square numbers and cube numbers, and the notation for squared (<sup>2</sup>) and cubed (<sup>3</sup>)</li> <li>know and use the vocabulary of prime numbers, prime factors and composite (non-prime) numbers</li> <li>establish whether a number up to 100 is prime and recall prime numbers up to 19</li> <li>multiply numbers up to 4 digits by a one- or two-digit number</li> <li>divide numbers up to 4 digits by a one-digit number using a written method</li> <li>Solve problems involving multiplication and division, including scaling by simple fractions, problems involving simple rates, other operations and remainders in context.</li> </ul>

## Non-statutory Guidance:

They use and understand the terms factor, multiple and prime, square and cube numbers.

Pupils interpret non-integer answers to division by expressing results in different ways according to the context, including with remainders, as fractions, as decimals or by rounding (for example,  $98 \div 4 = 98/4 = 24r2 = 24\frac{1}{2} = 24.5 \approx 25$ )

Pupils use multiplication and division as inverses to support the introduction of ratio in year 6, for example, by multiplying and dividing by powers of 10 in scale drawings or by multiplying and dividing by powers of a 1000 in converting between units such as kilometres and metres.

They understand the terms factor, multiple and prime, square and cube numbers and use them to construct equivalence statements (for example,  $4 \times 35 = 2 \times 2 \times 35$ ;  $3 \times 270 = 3 \times 3 \times 9 \times 10 = 9^2 \times 10$ ).

Pupils use and explain the equals sign to indicate equivalence, including in missing number problems (for example,  $13 + 24 = 12 + 25$ ;  $33 = 5 \times \square$ ).

Cycle 1	Cycle 2	Cycle 3
<p><b>Fractions (including decimals and percentages).</b></p> <ul style="list-style-type: none"> <li>• compare and order fractions whose denominators are all multiples of the same number</li> <li>• identify, name and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths</li> <li>• recognise mixed numbers and improper fractions and convert from one form to the other and write mathematical statements</li> <li>• add and subtract fractions with the same denominator</li> <li>• read and write decimal numbers as fractions</li> <li>• recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents</li> <li>• round decimals with two decimal places to the nearest whole number and know compliments to 1 for example <math>0.83+0.17</math></li> <li>• read, write, order, compare and solve problems using numbers with up to three decimal places</li> <li>• recognise the per cent symbol (%) and understand that per cent relates to 'number of parts per hundred', and</li> </ul>	<p><b>Fractions (including decimals and percentages).</b></p> <ul style="list-style-type: none"> <li>• compare and order fractions whose denominators are all multiples of the same number</li> <li>• identify, name and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths</li> <li>• recognise mixed numbers and improper fractions and convert from one form to the other and write mathematical statements</li> <li>• add and subtract fractions with the same denominator and denominators that are multiples of the same number</li> <li>• multiply proper fractions by whole numbers, supported by materials and diagrams</li> <li>• read and write decimal numbers as fractions</li> <li>• recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents</li> <li>• round decimals with two decimal places to the nearest whole number and to one decimal place</li> <li>• know compliments to 1 for example <math>0.83+0.17</math></li> </ul>	<p><b>Fractions (including decimals and percentages).</b></p> <ul style="list-style-type: none"> <li>• compare and order fractions whose denominators are all multiples of the same number</li> <li>• identify, name and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths</li> <li>• recognise mixed numbers and improper fractions and convert from one form to the other and write mathematical statements</li> <li>• add and subtract fractions with the same denominator and denominators that are multiples of the same number</li> <li>• multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams</li> <li>• read and write decimal numbers as fractions</li> <li>• recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents</li> <li>• round decimals with two decimal places to the nearest whole number and to one decimal place</li> <li>• know compliments to 1 for example <math>0.83+0.17</math></li> </ul>

<p>write percentages as a fraction with denominator 100, and as a decimal</p> <ul style="list-style-type: none"> <li>• know decimal equivalents for <math>\frac{1}{2}</math>, <math>\frac{1}{4}</math>, <math>\frac{3}{4}</math>, <math>\frac{1}{5}</math>, <math>\frac{2}{5}</math>, <math>\frac{4}{5}</math></li> <li>• Count using decimals and fractions including bridging zero, including using a number line. (FJS)</li> <li>• Compare, order and place fractions, decimals and percentages on a number line. (FJS)</li> </ul>	<ul style="list-style-type: none"> <li>• read, write, order, compare and solve problems using numbers with up to three decimal places</li> <li>• recognise the per cent symbol (%) and understand that per cent relates to 'number of parts per hundred', and write percentages as a fraction with denominator 100, and as a decimal</li> <li>• know decimal and percentage equivalents for <math>\frac{1}{2}</math>, <math>\frac{1}{4}</math>, <math>\frac{3}{4}</math>, <math>\frac{1}{5}</math>, <math>\frac{2}{5}</math>, <math>\frac{4}{5}</math>, and solve problems</li> <li>• Count using decimals and fractions including bridging zero, including using a number line. (FJS)</li> <li>• Compare, order and place fractions, decimals and percentages on a number line. (FJS)</li> </ul>	<ul style="list-style-type: none"> <li>• read, write, order, compare and solve problems using numbers with up to three decimal places</li> <li>• recognise the per cent symbol (%) and understand that per cent relates to 'number of parts per hundred', and write percentages as a fraction with denominator 100, and as a decimal</li> <li>• solve problems which require knowing percentage and decimal equivalents of <math>\frac{1}{2}</math>, <math>\frac{1}{4}</math>, <math>\frac{3}{4}</math>, <math>\frac{1}{5}</math>, <math>\frac{2}{5}</math>, <math>\frac{4}{5}</math> and those fractions with a denominator of a multiple of 10 or 25.</li> <li>• Count using decimals and fractions including bridging zero, including using a number line. (FJS)</li> <li>• Compare, order and place fractions, decimals and percentages on a number line. (FJS)</li> </ul>
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Cycle 1	Cycle 2	Cycle 3
<p><b>Measurement</b></p> <ul style="list-style-type: none"> <li>• convert between different units of metric measure with emphasis on <b><u>mass</u></b></li> <li>• understand and use approximate equivalences between metric units and common imperial units such as inches, pounds and pints</li> <li>• measure and calculate the perimeter of composite rectilinear shapes in centimetres and metres</li> <li>• <b>calculate</b> 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 –(make links to finding area by counting Y4).</li> <li>• solve problems involving converting between units of time including seconds, minutes, hours, days, weeks, months and years, as well as calculating start time, finish time and duration. (Y5 and FJS)</li> <li>• use all four operations to solve problems involving measure [for example, length, mass, volume, money] using decimal notation, including scaling.</li> </ul>	<p><b>Measurement</b></p> <ul style="list-style-type: none"> <li>• convert between different units of metric measure with emphasis on <b><u>length</u></b></li> <li>• understand and use approximate equivalences between metric units and common imperial units</li> <li>• measure and calculate the perimeter of composite rectilinear shapes in centimetres and metres</li> <li>• 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</li> <li>• calculate area and perimeter from scale drawings using given measurements. (Non stat.)</li> <li>• solve problems involving converting between units of time including seconds, minutes, hours, days, weeks, months and years, as well as calculating start time, finish time and duration. (Y5 and FJS)</li> <li>• use all four operations to solve problems involving measure [for example, length, mass, volume, money] using decimal notation, including scaling</li> </ul>	<p><b>Measurement</b></p> <ul style="list-style-type: none"> <li>• convert between different units of metric measure with emphasis on <b><u>capacity and volume</u></b></li> <li>• understand and use approximate equivalences between metric units and common imperial units</li> <li>• measure and calculate the perimeter of composite rectilinear shapes in centimetres and metres</li> <li>• 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</li> <li>• estimate volume [for example, using 1 cm<sup>3</sup> blocks to build cuboids (including cubes)] and capacity [for example, using water]</li> <li>• solve problems involving converting between units of time including seconds, minutes, hours, days, weeks, months and years, as well as calculating start time, finish time and duration. (Y5 and FJS)</li> <li>• use all four operations to solve problems involving measure using decimal notation, including scaling.</li> </ul>

Non-statutory:

Pupils calculate the perimeter of rectangles and related composite shapes, including using the relations of perimeter or area to find unknown lengths. Missing measures questions such as these can be expressed algebraically, for example  $4 + 2b = 20$  for a rectangle of sides 2 cm and  $b$  cm and perimeter of 20cm.



Cycle 1	Cycle 2	Cycle 3
<p><b>Geometry – properties of shapes</b></p> <ul style="list-style-type: none"> <li>Identify, compare, sort and describe 3-D shapes, use vocabulary- edges, vertices, faces. For example: cuboids, prisms, cones, pyramids. (Y2)</li> <li>know angles are measured in degrees: estimate and compare acute, obtuse and reflex angles</li> <li>draw given angles, and measure them in degrees (o)</li> <li>know that a complete turn is <math>360^\circ</math> , straight line is <math>180^\circ</math> or a <math>\frac{1}{2}</math> turn and <math>270^\circ</math> .</li> <li>use the properties of rectangles and regular polygons to deduce related facts and find missing lengths and angles</li> <li>distinguish between regular and irregular polygons based on reasoning about equal sides and angles.</li> </ul> <p><b>Position and Direction</b></p> <ul style="list-style-type: none"> <li>identify, describe and represent the position of a shape following a reflection or translation, and state coordinates in first quadrant.</li> </ul>	<p><b>Geometry – properties of shapes</b></p> <ul style="list-style-type: none"> <li>Identify, compare, sort and describe 3-D shapes, use vocabulary- edges, vertices, faces. For example: cuboids, prisms, cones, pyramids. (Y2)</li> <li>identify 3-D shapes, including cubes and other cuboids, from 2-D representations</li> <li>know angles are measured in degrees: estimate and compare acute, obtuse and reflex angles</li> <li>draw given angles, and measure them in degrees (o)</li> <li>know that a complete turn is <math>360^\circ</math> , straight line is <math>180^\circ</math> or a <math>\frac{1}{2}</math> turn and <math>270^\circ</math> .</li> <li>use the properties of rectangles and regular polygons to deduce related facts and find missing lengths and angles</li> <li>distinguish between regular and irregular polygons based on reasoning about equal sides and angles.</li> </ul> <p><b>Position and Direction</b></p> <ul style="list-style-type: none"> <li>identify, describe and represent the position of a shape following a reflection or translation, using the appropriate language, and know that</li> </ul>	<p><b>Geometry – properties of shapes</b></p> <ul style="list-style-type: none"> <li>identify 3-D shapes, including cubes and other cuboids, from 2-D representations</li> <li>know angles are measured in degrees: estimate and compare acute, obtuse and reflex angles</li> <li>draw given angles, and measure them in degrees (o)</li> <li>know that a complete turn is <math>360^\circ</math> , straight line is <math>180^\circ</math> or a <math>\frac{1}{2}</math> turn and <math>270^\circ</math> .</li> <li>use the properties of rectangles and regular polygons to deduce related facts and find missing lengths and angles</li> <li>distinguish between regular and irregular polygons based on reasoning about equal sides and angles.</li> </ul> <p><b>Position and Direction</b></p> <ul style="list-style-type: none"> <li>identify, describe and represent the position of a shape following a reflection or translation, using the appropriate language, and know that the shape has not changed.</li> </ul> <p><b>Position and Direction</b></p> <ul style="list-style-type: none"> <li>identify, describe and represent the position of a shape following a reflection or translation, using the</li> </ul>

	the shape has not changed. <ul style="list-style-type: none"><li>• Describe position using coordinates in two quadrants (FJS)</li></ul>	appropriate language, and know that the shape has not changed. <ul style="list-style-type: none"><li>• Describe position using coordinates in two quadrants (FJS)</li></ul>
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**Notes and guidance (non-statutory)**

Pupils become accurate in drawing lines with a ruler to the nearest millimetre, and measuring with a protractor. They use conventional markings for parallel lines and right angles.

Pupils use the term diagonal and make conjectures about the angles formed between sides, and between diagonals and parallel sides, and other properties of quadrilaterals, for example using dynamic geometry ICT tools.

Pupils use angle sum facts and other properties to make deductions about missing angles and relate these to missing number problems.

Cycle 1	Cycle 2	Cycle 3
<p><b>Statistics</b></p> <ul style="list-style-type: none"> <li>• Interpret a range of discrete, continuous data: tables, pictograms, bar charts, time graphs and line graphs. (Y4)</li> <li>• Use ICT to present data and begin to decide which representations of data are most appropriate and why (FJS)</li> <li>• solve comparison, sum and difference problems using information presented in a line graph</li> <li>• complete, read and interpret information in tables, including <b><u>timetables.</u></b></li> </ul> <p><b>(1 week maximum + use of topic and ict time to reinforce, extend etc)</b></p>	<p><b>Statistics</b></p> <ul style="list-style-type: none"> <li>• Interpret a range of discrete, continuous and <b><u>grouped</u></b> data: tables, pictograms, bar charts, time graphs and line graphs. (Y4 &amp; fjs)</li> <li>• Use ICT to present data and begin to decide which representations of data are most appropriate and why (FJS)</li> <li>• solve comparison, sum and difference problems using information presented in a line graph</li> <li>• complete, read and interpret information in tables, including <b><u>timetables.</u></b></li> </ul> <p><b>(1 week maximum + use of topic and ict time to reinforce, extend etc)</b></p>	<p><b>Statistics</b></p> <ul style="list-style-type: none"> <li>• Interpret a range of discrete, continuous and <b><u>grouped</u></b> data: tables, pictograms, bar charts, time graphs and line graphs. (Y4 &amp; fjs)</li> <li>• Use ICT to present data and begin to decide which representations of data are most appropriate and why (FJS)</li> <li>• solve comparison, sum and difference problems using information presented in a line graph</li> <li>• complete, read and interpret information in tables, including <b><u>timetables.</u></b></li> </ul> <p><b>(1 week maximum + use of topic and ict time to reinforce, extend etc)</b></p>