



The Learning Organisation



# Assessing without levels

## Mathematics

Year 1	Number place value	Addition subtraction	Multiplication division	Fractions
<b>Emerging</b>	<ul style="list-style-type: none"> <li>with increasing confidence count forwards and then backwards within the number sequence orally and with numerals to 20</li> <li>use the language of ordinal numbers- first, second ,third...</li> <li>count, read and write numbers to 10 in numerals</li> <li>begin to sort objects into groups of 2s, 5s, 10.</li> <li>begin to count forwards in 2s, 5s, 10s</li> <li>say the numbers that come before and after a given number within 20</li> <li>identify and represent numbers using objects and pictorial representations including the number line within 20</li> <li>use the language of: equal to, more than, less than (fewer), most, least within 20</li> </ul>	<ul style="list-style-type: none"> <li>Within 10 recognise and use mathematical language associated with addition and subtraction (+), subtraction (-) and equals (=) signs</li> <li>represent and use number bonds and related subtraction facts within 10</li> <li>begin to add and subtract one-digit numbers to 10, including zero (using signs)</li> <li>solve one-step problems that involve addition and subtraction, using concrete objects</li> </ul>	<ul style="list-style-type: none"> <li>through grouping and sharing small quantities pupils begin to understand multiplication and division and doubling numbers and quantities with support of the teacher</li> </ul>	<ul style="list-style-type: none"> <li>find and name a half as one of two equal shapes or parts of an object</li> </ul>
<b>Developing</b>	<ul style="list-style-type: none"> <li>count forwards and backwards within the number sequence orally and with numerals to 50</li> <li>count, read and write numbers to 50 in numerals;</li> <li>sort objects into groups of 2s, 5s, 10s, count forwards in twos, fives or tens with increasing confidence to 50. <i>Start from both odd and even numbers</i></li> <li>say the numbers that come before and after a given number within 50</li> <li>identify and represent numbers using objects and pictorial representations including the number line within 50</li> <li>use the language of: equal to, more than, less than (fewer), most, least within 50</li> <li>use the language of ordinal numbers in a range of contexts</li> <li>begin to read and write numbers from 1 to 20 in numerals and words.</li> </ul>	<p>Within 20</p> <ul style="list-style-type: none"> <li>recognise and use mathematical language associated with addition and subtraction (+), subtraction (-) and equals (=) signs</li> <li>begin to represent and use number bonds and related subtraction facts within 20</li> <li>begin to add and subtract one-digit and two-digit numbers to 20, including zero</li> <li>begin to solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations</li> </ul>	<ul style="list-style-type: none"> <li>solve one step problems involving multiplication and division, by calculating the answer using concrete objects and pictorial representations with the support of the teacher</li> </ul>	<ul style="list-style-type: none"> <li>recognise, find and name a half as one of two equal parts of an object, shape and begin to find halves of quantities</li> <li>recognise, find and name a quarter as one of four equal parts of an object, shape</li> </ul>
<b>Secure</b>	<ul style="list-style-type: none"> <li>count to and across 100, forwards and backwards, beginning with 0 or 1, or from any given number</li> <li>count, read and write numbers to 100 in numerals;</li> <li>count in multiples of twos, fives and tens (<i>begin to link to 2x,5x,10x tables</i>)</li> <li>given a number, identify one more and one less</li> <li>identify and represent numbers using objects and pictorial representations including the number line,</li> <li>use the language of: equal to, more than, less than (fewer), most, least</li> <li>read and write numbers from 1 to 20 in numerals and words.</li> </ul>	<ul style="list-style-type: none"> <li>read, write and interpret mathematical statements involving addition (+), subtraction (-) and equals (=) signs</li> <li>represent and use number bonds and related subtraction facts within 20</li> <li>add and subtract one-digit and two-digit numbers to 20, including zero</li> <li>solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as <math>7 = ? - 9</math>.</li> </ul>	<ul style="list-style-type: none"> <li>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</li> </ul>	<ul style="list-style-type: none"> <li>recognise, find and name a half as one of two equal parts of an object, shape or quantity</li> <li>recognise, find and name a quarter as one of four equal parts of an object, shape or quantity.</li> </ul>
<b>Working at greater depth within expected levels</b>	<p>Decisions about when to progress should always be based on the security of pupils' understanding and their readiness to progress to the next stage. Pupils who grasp concepts rapidly should be challenged through being offered rich and sophisticated problems before any acceleration through new content. (National Curriculum 2016)</p> <p><a href="https://www.ncetm.org.uk/public/files/23305594/Mastery_Assessment_Y1_Low_Res.pdf">https://www.ncetm.org.uk/public/files/23305594/Mastery_Assessment_Y1_Low_Res.pdf</a></p>			

Year 1	Measures	Geometry		Statistics
		Properties of Shape	Position and Direction	
Emerging	<ul style="list-style-type: none"> <li>compare and use mathematical language to describe:</li> <li>lengths and heights [for example, long/short, longer/shorter]</li> <li>mass/weight [for example, heavy/light]</li> <li>capacity and volume [for example, full/empty, more than, less than,]</li> <li>time [for example, quicker, slower]</li> <li>measure and begin to record the following <i>using non-standard units</i></li> <li>lengths and heights</li> <li>mass/weight</li> <li>capacity and volume</li> <li>recognise and know the value of different denominations of coins</li> <li>sequence events in chronological order using language (for example, before and after, first, today)</li> <li>recognise and use language relating to dates, including days of the week</li> <li>tell the time to the hour</li> </ul>	<ul style="list-style-type: none"> <li>continue to use mathematical names for “solid” 3D shapes and “flat” 2D shapes, and mathematical terms to describe shapes.</li> <li>relate everyday objects to 2D and 3D shapes</li> </ul>	<ul style="list-style-type: none"> <li>with increased confidence use everyday language to talk about position e.g. can describe their relative position such as “behind” or “next to”</li> <li>be able to give and follow simple directional instructions</li> </ul>	
Developing	<ul style="list-style-type: none"> <li>continue to with increased confidence to describe and solve simple practical problems for:</li> <li>lengths and heights [for example, long/short, longer/shorter, tall/short, double/half]</li> <li>mass/weight [for example, heavy/light, heavier than, lighter than]</li> <li>capacity and volume [for example, full/empty, more than, less than, half, half full, quarter]</li> <li>time [for example, quicker, slower, earlier, later]</li> <li>measure (<i>using a ruler, weighing scales and containers</i>) and begin to record the following <i>moving from non-standard units to using manageable common standard units</i>:</li> <li>lengths and heights</li> <li>mass/weight</li> <li>capacity and volume</li> <li>time (hours, minutes, seconds)</li> <li>begin to recognise and know the value of different denominations of coins and notes</li> <li>begin to sequence events in chronological order using language [for example, before and after, next, first, today, yesterday, tomorrow, morning, afternoon and evening]</li> <li>recognise and use language relating to dates, including days of the week, weeks and months</li> <li>tell the time to the hour and half past the hour and <i>begin</i> to draw the hands on a clock face to show these times.</li> </ul>	<ul style="list-style-type: none"> <li>with increased accuracy recognise and name common 2-D and 3-D shapes, including:</li> <li>2-D shapes [for example, rectangles (including squares), circles and triangles]</li> <li>3-D shapes [for example, cuboids (including cubes) and pyramids]</li> <li>recognise shapes in different orientations and sizes and begin to know that rectangles, triangles and cuboids are not always similar to each other</li> </ul>	<ul style="list-style-type: none"> <li>understand, follow and use positional vocabulary such as: position, grid, outside, inside, beside, next to, front, back, between, centre, underneath, above, on top of, below, halfway, near, far</li> <li>understand, follow and use directional language such as: direction, forwards, backwards, sideways, whole turn, half term, quarter turn, right, left</li> </ul>	
Secure	<ul style="list-style-type: none"> <li>compare, describe and solve practical problems for:</li> <li>lengths and heights [for example, long/short, longer/shorter, tall/short, double/half]</li> <li>mass/weight [for example, heavy/light, heavier than, lighter than]</li> <li>capacity and volume [for example, full/empty, more than, less than, half, half full, quarter]</li> <li>time [for example, quicker, slower, earlier, later]</li> <li>measure (<i>using a ruler, weighing scales and containers</i>) and begin to record the following:</li> <li>lengths and heights</li> <li>mass/weight</li> <li>capacity and volume</li> <li>time (hours, minutes, seconds)</li> <li>recognise and know the value of different denominations of coins and notes</li> <li>sequence events in chronological order using language [for example, before and after, next, first, today, yesterday, tomorrow, morning, afternoon and evening]</li> <li>recognise and use language relating to dates, including days of the week, weeks, months and years</li> <li>tell the time to the hour and half past the hour and draw the hands on a clock face to show these times.</li> </ul>	<ul style="list-style-type: none"> <li>recognise and name common 2-D and 3-D shapes, including:</li> <li>2-D shapes [for example, rectangles (including squares), circles and triangles] <i>wider range of examples than developing</i></li> <li>3-D shapes [for example, cuboids (including cubes, pyramids and spheres)] <i>wider range of examples than developing</i></li> </ul>	<ul style="list-style-type: none"> <li>describe position, direction and movement, including whole, half, quarter and three-quarter turns.</li> </ul>	
Working at greater depth within expected levels	<p>Decisions about when to progress should always be based on the security of pupils’ understanding and their readiness to progress to the next stage. Pupils who grasp concepts rapidly should be challenged through being offered rich and sophisticated problems before any acceleration through new content. (National Curriculum 2016)</p> <p><a href="https://www.ncetm.org.uk/public/files/23305594/Mastery_Assessment_Y1_Low_Res.pdf">https://www.ncetm.org.uk/public/files/23305594/Mastery_Assessment_Y1_Low_Res.pdf</a></p>			

Year 2	Number place value	Addition subtraction	Multiplication division	Fractions
<b>Emerging</b>	<ul style="list-style-type: none"> <li>begin to count in steps of 2 and 5 from 0, and in tens from any number, forward and backward</li> <li>recognise each digit in a two-digit number up to 20 (tens, ones)</li> <li>identify, represent and estimate numbers using different representations, including the number line ( up to 100) and consolidate the associated language e.g. equal to, more than, less than (fewer), most and least</li> <li>begin to compare and order numbers from 0 up to 100. Use = sign.</li> <li>begin to read and write numbers to at least 50 in numerals and 20 in words</li> <li>begin to use number facts to solve simple problems.</li> </ul>	<ul style="list-style-type: none"> <li>consolidate 1 step problems with addition and subtraction:               <ul style="list-style-type: none"> <li>using concrete objects and pictorial representations, including those involving numbers, quantities and measures</li> <li>applying their knowledge of mental and written methods</li> </ul> </li> <li>begin to recall and use addition and subtraction facts to 20 and use related facts up to 50</li> <li>add and subtract numbers using concrete objects, pictorial representations, and mentally, including:               <ul style="list-style-type: none"> <li>a two-digit number and ones</li> <li>adding three one-digit numbers</li> </ul> </li> <li>begin to show that addition of two numbers can be done in any order and subtraction of one number from another cannot ( <i>using concrete objects, pictorial representations, and mentally</i>)</li> <li>begin to recognise and use the inverse relationship between addition and subtraction and use this to solve missing number problems to 50</li> </ul>	<ul style="list-style-type: none"> <li>begin to recall multiplication and division facts for the 2 and 10 multiplication tables, including recognising odd and even numbers to 50</li> <li>begin to calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication (×), division (÷) and equals (=) signs (<i>using concrete objects, pictorial representations and arrays</i>)</li> <li>show that multiplication of two numbers can be done in any order (<i>using concrete objects, pictorial representations and arrays</i>)</li> <li>begin to solve problems involving multiplication and division, using materials, arrays, repeated addition including problems in contexts.</li> </ul>	<ul style="list-style-type: none"> <li>recognise, find, name and write fractions, <math>\frac{1}{4}</math>, <math>\frac{2}{4}</math> of a length, shape, set of objects or quantity</li> <li>recognise the equivalence of <math>\frac{2}{4}</math> and <math>\frac{1}{2}</math> using pictorial representations and diagrams</li> </ul>
<b>Developing</b>	<ul style="list-style-type: none"> <li>count in steps of 2 and 5 from 0, and in tens from any number to 100, forward and backward</li> <li>begin to recognise each digit in a two-digit number (tens, ones)</li> <li>with increasing confidence identify, represent and estimate numbers using different representations, including the number line ( up to 100)</li> <li>compare and order numbers from 0 up to 100. Use = sign.</li> <li>read and write numbers to at least 50 in numerals and in words</li> <li>use number facts to solve problems.</li> </ul>	<ul style="list-style-type: none"> <li>begin to solve 1 and 2 step problems with addition and subtraction:               <ul style="list-style-type: none"> <li>using concrete objects and pictorial representations, including those involving numbers, quantities and measures</li> <li>applying their knowledge of mental and written methods</li> </ul> </li> <li>recall and use addition and subtraction facts to 20 and use related facts up to 100</li> <li>add and subtract numbers using concrete objects, pictorial representations, and mentally, including:               <ul style="list-style-type: none"> <li>a two-digit number and ones</li> <li>a two-digit number and tens</li> <li>adding three one-digit numbers</li> </ul> </li> <li>show that addition of two numbers can be done in any order and subtraction of one number from another cannot</li> <li>begin to recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems.</li> </ul>	<ul style="list-style-type: none"> <li>begin to recall multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers to at least 100</li> <li>with increased fluency calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication (×), division (÷) and equals (=) signs</li> <li>show that multiplication of two numbers can be done in any order (commutative) and begin to know that division of one number by another cannot</li> <li>begin to solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts.</li> </ul>	<ul style="list-style-type: none"> <li>recognise, find, name and write fractions, <math>\frac{1}{4}</math>, <math>\frac{2}{4}</math> and <math>\frac{3}{4}</math> of a length, shape, set of objects or quantity</li> <li>recognise the equivalence of <math>\frac{2}{4}</math> and <math>\frac{1}{2}</math> and begin to write simple fractions for example, <math>\frac{1}{2}</math> of 6 = 3</li> </ul>
<b>Secure</b>	<ul style="list-style-type: none"> <li>count in steps of 2, 3, and 5 from 0, and in tens from any number to 100, forward and backward (<i>count in multiples of 3 to at least 30</i>)</li> <li>recognise the place value of each digit in a two-digit number (tens, ones)</li> <li>identify, represent and estimate numbers using different representations, including the number line</li> <li>compare and order numbers from 0 up to 100 (using place value); use &lt;, &gt; and = signs</li> <li>read and write numbers to at least 100 in numerals and in words</li> <li>use place value and number facts to solve problems.</li> </ul>	<ul style="list-style-type: none"> <li>solve problems with addition and subtraction:               <ul style="list-style-type: none"> <li>using concrete objects and pictorial representations, including those involving numbers, quantities and measures</li> <li>applying their increasing knowledge of mental and written methods</li> <li>recall and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100</li> </ul> </li> <li>add and subtract numbers using concrete objects, pictorial representations, and mentally, including:               <ul style="list-style-type: none"> <li>a two-digit number and ones</li> <li>a two-digit number and tens</li> <li>two two-digit numbers (<i>which do not involve bridging a 10</i>)</li> <li>adding three one-digit numbers</li> </ul> </li> <li>show that addition of two numbers can be done in any order (commutative) and subtraction of one number from another cannot</li> <li>recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems.</li> </ul>	<ul style="list-style-type: none"> <li>recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers (<i>to at least 100</i>)</li> <li>calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication (×), division (÷) and equals (=) signs</li> <li>show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot</li> <li>solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts.</li> </ul>	<ul style="list-style-type: none"> <li>recognise, find, name and write fractions <math>\frac{1}{3}</math>, <math>\frac{1}{4}</math>, <math>\frac{2}{4}</math> and <math>\frac{3}{4}</math> of a length, shape, set of objects or quantity</li> <li>write simple fractions for example, <math>\frac{1}{2}</math> of 6 = 3 and recognise the equivalence of <math>\frac{2}{4}</math> and <math>\frac{1}{2}</math></li> </ul>
<b>Working at greater depth within expected levels</b>	<p>Decisions about when to progress should always be based on the security of pupils' understanding and their readiness to progress to the next stage. Pupils who grasp concepts rapidly should be challenged through being offered rich and sophisticated problems before any acceleration through new content. (National Curriculum 2016)</p> <p><a href="https://www.ncetm.org.uk/public/files/23305594/Mastery_Assessment_Y1_Low_Res.pdf">https://www.ncetm.org.uk/public/files/23305594/Mastery_Assessment_Y1_Low_Res.pdf</a></p> <p><a href="https://www.ncetm.org.uk/public/files/23305578/Mastery_Assessment_Y2_High_Res.pdf">https://www.ncetm.org.uk/public/files/23305578/Mastery_Assessment_Y2_High_Res.pdf</a></p>			

Year 2	Measures	Geometry		Statistics
		Properties of Shape	Position and Direction	
Emerging	<ul style="list-style-type: none"> <li>choose and use appropriate standard units to measure length/height in any direction (m/cm); mass (kg/g); capacity (litres/ml) using rulers, scales and measuring vessels and <i>continue to use associated vocabulary e.g. longer/shorter, double/half etc.</i></li> <li>compare and order lengths, mass, volume/capacity and record the results</li> <li>begin to recognise and use symbols for pounds (£) and pence (p)</li> <li>begin to find a combination of coins that equal the same amount of money</li> <li>solve simple problems in a practical context involving addition of money of the same unit</li> <li>begin to sequence intervals of time</li> <li>begin to tell and write the time to quarter past/to the hour and draw the hands on a clock face to show these times</li> <li>begin to understand the number of minutes in an hour and the number of hours in a day and <i>continue to recognise and use language relating to dates, including days of the week, weeks, months and years</i></li> </ul>	<ul style="list-style-type: none"> <li>begin to identify and describe the properties of 2-D shapes, including the number of sides</li> <li>begin to identify and describe the properties of 3-D shapes, including the number of edges, vertices and faces (<i>cube, cuboid, pyramid</i>)</li> <li>begin to identify 2-D shapes on the surface of 3-D shapes [for example, a circle on a cylinder and a triangle on a pyramid]</li> <li>begin to compare and sort common 2-D and 3-D shapes and everyday objects.</li> </ul>	<ul style="list-style-type: none"> <li>begin to order simple combinations of mathematical objects in patterns and sequences</li> <li>begin to use mathematical vocabulary to describe position, direction and movement, including movement in a straight line and distinguishing between rotation as a turn for quarter, half and three-quarter turns</li> <li>( <i>consolidate language of position and direction from year 1 non statutory guidance e.g. forwards and backwards, up and down</i>)</li> </ul>	<ul style="list-style-type: none"> <li>begin to interpret and construct simple pictograms, tally charts and block diagrams (<i>where the symbols show one to one correspondence</i>)</li> <li>ask and answer simple questions by counting the number of objects in each category (<i>limited</i>) and sorting the categories by quantity (<i>up to 10 objects in each category</i>)</li> <li>ask and answer questions about totalling objects</li> </ul>
Developing	<ul style="list-style-type: none"> <li>choose and use appropriate standard units to estimate and measure length/height in any direction (m/cm); mass (kg/g); capacity (litres/ml) to the nearest appropriate unit, using rulers, scales and measuring vessels and <i>continue to use associated vocabulary e.g. longer/shorter, double/half etc and begin to use thermometers and recognise (°C)</i></li> <li>compare and order lengths, mass, volume/capacity and record the results and begin to use &gt;, &lt; to record results</li> <li>recognise and use symbols for pounds (£) and pence (p) and <i>begin to solve simple problems</i></li> <li>begin to find different combinations of coins that equal the same amounts of money</li> <li>solve simple problems in a practical context involving addition and subtraction of money of the same unit and begin to find change</li> <li>sequence intervals of time</li> <li>tell and write the time to quarter past/to the hour and draw the hands on a clock face to show these times. Begin to tell the time to 5 minutes.</li> <li>begin to know the number of minutes in an hour and the number of hours in a day.</li> </ul>	<ul style="list-style-type: none"> <li>identify and describe the properties of 2-D shapes, including the number of sides</li> <li>identify and describe the properties of 3-D shapes, including the number of edges, vertices and faces (<i>cube, cuboid, pyramid, sphere, cone</i>)</li> <li>identify 2-D shapes on the surface of 3-D shapes (<i>for example, a circle on a cylinder, triangle on a pyramid, a square on a cube and rectangle on a cuboid</i>)</li> <li>compare and sort common 2-D and 3-D shapes and everyday objects (<i>begin to do this according to their geometric properties, edges, faces and vertices</i>)</li> </ul>	<ul style="list-style-type: none"> <li>order and arrange combinations of mathematical objects in patterns and sequences with increased fluency</li> <li>use mathematical vocabulary to describe position, direction and movement, including movement in a straight line and distinguishing between rotation as a turn for quarter, half and three-quarter turns</li> </ul>	<ul style="list-style-type: none"> <li>continue to interpret and construct simple pictograms (<i>where the symbols start to show many to one correspondence</i>), tally charts, block diagrams and begin to interpret and construct simple tables</li> <li>ask and answer simple questions by counting the number of objects in each category and sorting the categories by quantity (<i>increasing the categories and quantity</i>)</li> <li>ask and answer questions about totalling and <i>begin</i> to compare categorical data.</li> </ul>
Secure	<ul style="list-style-type: none"> <li>choose and use appropriate standard units to estimate and measure length/height in any direction (m/cm); mass (kg/g); temperature (°C); capacity (litres/ml) to the nearest appropriate unit, using rulers, scales, thermometers and measuring vessels</li> <li>compare and order lengths, mass, volume/capacity and record the results using &gt;, &lt; and =</li> <li>reason about simple multiplicative relationships such as twice as long, 10 times as high</li> <li>recognise and use symbols for pounds (£) and pence (p); combine amounts to make a particular value</li> <li>find different combinations of coins that equal the same amounts of money</li> <li>solve simple problems in a practical context involving addition and subtraction of money of the same unit, including giving change</li> <li>compare and sequence intervals of time</li> <li>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</li> <li>know the number of minutes in an hour and the number of hours in a day</li> </ul>	<ul style="list-style-type: none"> <li>identify and describe the properties of 2-D shapes, including the number of sides and line symmetry in a vertical line</li> <li>identify and describe the properties of 3-D shapes, including the number of edges, vertices and faces – <i>wide range of shapes</i></li> <li>identify 2-D shapes on the surface of 3-D shapes [for example, a circle on a cylinder and a triangle on a pyramid] <i>use a wider range of shapes</i></li> <li>compare and sort common 2-D and 3-D shapes and everyday objects (<i>on the basis of their geometric properties including vertices, sides, edges, face</i>)</li> </ul>	<ul style="list-style-type: none"> <li>order and arrange combinations of mathematical objects in patterns and sequences</li> <li>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).</li> </ul>	<ul style="list-style-type: none"> <li>interpret and construct simple pictograms, (<i>where the symbols show many to one correspondence</i>) tally charts, block diagrams (<i>where the scale is divided into 2s and 5s</i>) and simple tables <i>and more complex tables</i></li> <li>ask and answer simple questions by counting the number of objects in each category and sorting the categories by quantity</li> <li>ask and answer questions about totalling and comparing categorical data.</li> </ul>
Working at greater depth within expected levels	<p>Decisions about when to progress should always be based on the security of pupils' understanding and their readiness to progress to the next stage. Pupils who grasp concepts rapidly should be challenged through being offered rich and sophisticated problems before any acceleration through new content. (National Curriculum 2016)</p> <p><a href="https://www.ncetm.org.uk/public/files/23305594/Mastery_Assessment_Y1_Low_Res.pdf">https://www.ncetm.org.uk/public/files/23305594/Mastery_Assessment_Y1_Low_Res.pdf</a></p> <p><a href="https://www.ncetm.org.uk/public/files/23305578/Mastery_Assessment_Y2_High_Res.pdf">https://www.ncetm.org.uk/public/files/23305578/Mastery_Assessment_Y2_High_Res.pdf</a></p>			

Y3	Number and Place Value	Calculation		Fractions
		( + - )	( x ÷ )	
Emerging	<ul style="list-style-type: none"> <li>with increasing fluency count forwards and backwards in steps of 2,3 and 5 from 0 and begin to count multiples of 50 and 100</li> <li>find 10 more or 10 less than a given number within 100</li> <li>continue to recognise the place value of each digit in a two and begin to recognise the place value in a three-digit number (hundreds, tens, ones)</li> <li>identify, represent and estimate numbers using different representations</li> <li>begin to order numbers from 0 up to 1000</li> <li>begin to read and write numbers to at least 500 in numerals and words</li> <li>solve number problems and practical problems involving these ideas based on the above</li> </ul>	<ul style="list-style-type: none"> <li>begin to add and subtract numbers mentally, including:               <ul style="list-style-type: none"> <li>a three-digit number and ones</li> <li>a three-digit number and ten</li> </ul> </li> <li>add 2 two-digit numbers using the formal written method of columnar addition and subtraction with increasing accuracy</li> <li>estimate the answer to a calculation</li> <li>begin to solve problems, including missing number problems, using number facts, place value, and addition and subtraction</li> </ul>	<ul style="list-style-type: none"> <li>recall and use the multiplication and division facts for the 3 multiplication table (<i>continue to recall and use multiplication and division facts for the 2,5 and 10 tables, including recognising odd and even</i>).</li> <li>write and calculate mathematical statements for multiplication and continue to recall and use multiplication and division facts for the 2,5 and 10 tables( including recognising odd and even) and recall division using the multiplication tables that they know (x2 x3 , x 5 ,x10)</li> <li>solve problems, including missing number problems, involving multiplication and division and begin to use positive integer scaling problems (<i>four times as high, 8 times as long</i>)</li> </ul>	<ul style="list-style-type: none"> <li>begin to count up and down in tenths</li> <li>begin to recognise, find and write fractions of a discrete set of objects: unit fractions recognise unit fractions e.g <math>\frac{1}{4}, \frac{1}{3}</math></li> <li>use diagrams to show simple equivalent fractions</li> <li>use diagrams to add and subtract fractions with the same denominator within one whole e.g <math>\frac{1}{4} + \frac{2}{4} = \frac{3}{4}</math></li> <li>order simple fractions with the same denominator</li> <li>begin to solve simple problems that involve all of the above</li> </ul>
Developing	<ul style="list-style-type: none"> <li>count from 0 in multiples of 50 and 100; find 10 or 100 more or less than a given number</li> <li>recognise the place value of each digit in a two and three-digit number (hundreds, tens, ones) <i>with increased confidence</i></li> <li>continue to compare and order numbers up to 1000</li> <li>identify, represent and estimate numbers using different representations</li> <li>begin to read and write numbers up to 1000 in numerals and in words</li> <li>solve number problems and practical problems involving these ideas based on the above</li> </ul>	<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> <li>a three-digit number and tens</li> </ul> </li> <li>begin to add and subtract numbers with up to three digits, using formal written methods of columnar addition and subtraction</li> <li>begin to 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 addition and subtraction (<i>not complex</i>)</li> </ul>	<ul style="list-style-type: none"> <li>recall and use multiplication and division facts for the 3, 4 multiplication tables (<i>continue to recall and use multiplication and division facts for the 2,3,5 and 10 tables, including recognising odd and even</i>).</li> <li>begin to write and calculate mathematical statements for multiplication and division using the multiplication tables <i>that they know</i>, including for two-digit numbers times one-digit numbers, using mental and progressing to formal written methods</li> <li>solve problems, including missing number problems, involving multiplication and division, including positive integer scaling problems and begin to solve correspondence problems in which n objects are connected to m objects (<i>easier examples</i>) <i>3 hats and 4 coats, how many different outfits? 4 cakes shared equally among 8 children.</i></li> </ul>	<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</li> <li>recognise, find and write fractions of a discrete set of objects: unit fractions</li> <li>recognise and use fractions as numbers: unit fractions</li> <li>begin to recognise and show, using diagrams, equivalent fractions with small denominators</li> <li>begin to add and subtract fractions with the same denominator within one whole [for example, <math>\frac{2}{5} + \frac{1}{5} = \frac{3}{5}</math>]</li> <li>begin to compare and order unit fractions and fractions with the same denominators</li> <li>solve simple problems that involve all of the above</li> </ul>
Secure	<ul style="list-style-type: none"> <li>count from 0 in multiples of 4, 8, 50 and 100; find 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 up to 1000 in numerals and in words</li> <li>solve number problems and practical problems involving these ideas.</li> </ul>	<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> <li>a three-digit number and tens</li> <li>a three-digit number and hundreds</li> </ul> </li> <li>add and subtract numbers with up to three digits, using formal 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>	<ul style="list-style-type: none"> <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 formal written methods</li> <li>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.</li> </ul>	<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 one whole [for example, <math>\frac{5}{7} + \frac{1}{7} = \frac{6}{7}</math>]</li> <li>compare and order unit fractions, and fractions with the same denominators</li> <li>solve problems that involve all of the above.</li> </ul>
Working at greater depth within expected levels	<p>Decisions about when to progress should always be based on the security of pupils' understanding and their readiness to progress to the next stage. Pupils who grasp concepts rapidly should be challenged through being offered rich and sophisticated problems before any acceleration through new content. (National Curriculum 2016)</p> <p><a href="https://www.ncetm.org.uk/public/files/23305578/Mastery_Assessment_Y2_High_Res.pdf">https://www.ncetm.org.uk/public/files/23305578/Mastery_Assessment_Y2_High_Res.pdf</a></p> <p><a href="https://www.ncetm.org.uk/public/files/23305607/Mastery_Assessment_Y3_High_Res.pdf">https://www.ncetm.org.uk/public/files/23305607/Mastery_Assessment_Y3_High_Res.pdf</a></p>			

Y3	Measures	Geometry		Statistics
		Properties of Shape	Position and Direction	
Emerging	<ul style="list-style-type: none"> <li>measure, compare, add and subtract: lengths (cm); mass (g); volume/capacity (ml) and <i>use simple scaling e.g twice as long</i> from given measurements find the perimeter of simple 2D shapes</li> <li>add and subtract amounts of money to give change, using p in practical contexts</li> <li>begin to tell and write the time from an analogue clock, including using Roman numerals from I to XII, and 12-hour</li> <li>use vocabulary such as o'clock, morning, afternoon, noon and midnight</li> <li>begin to know the number of seconds in a minute and the number of days in each month,</li> <li>begin to compare durations of events</li> </ul>	<ul style="list-style-type: none"> <li>begin to draw 2-D shapes and make 3-D shapes using modelling materials</li> <li>begin to recognise angles as a property of shape</li> <li>identify right angles, recognise that 2 right angles make a half turn</li> <li>recognise horizontal and vertical lines <i>and draw and measure in centimetres</i></li> </ul>		<ul style="list-style-type: none"> <li>interpret and present data using simple bar charts and pictograms (<i>2,5,10 intervals</i>)</li> <li>solve one-step questions [for example, 'How many more?' and 'How many fewer?'] using information presented in <i>simple</i> scaled bar charts and pictograms and tables.</li> </ul>
Developing	<ul style="list-style-type: none"> <li>measure, compare, add and subtract: lengths (m/cm); mass (kg/g); volume/capacity (l/ml) – <i>start to introduce mixed units</i></li> <li>begin to measure the perimeter of simple 2-D shapes</li> <li>begin to 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</li> <li>estimate and read time to the nearest minute; record and compare time in terms of seconds, minutes and hours; use vocabulary such as o'clock, morning, afternoon, noon and midnight</li> <li>know the number of seconds in a minute and the number of days in each month,</li> <li>begin to compare durations of events [for example to calculate the time taken by particular events or tasks].</li> </ul>	<ul style="list-style-type: none"> <li>draw 2-D shapes and make 3-D shapes using modelling materials</li> <li>recognise angles as a property of shape and begin to recognise a description of a turn</li> <li>identify right angles, recognise that two right angles make a half-turn and four a complete turn</li> <li>identify horizontal and vertical lines</li> </ul>		<ul style="list-style-type: none"> <li>continue to interpret and present data using bar charts, pictograms (<i>2,5,10 intervals</i>) and begin to interpret and present data in simple tables</li> <li>solve one-step questions [for example, 'How many more?' and 'How many fewer?'] using information presented in scaled bar charts and pictograms and tables.</li> </ul>
Secure	<ul style="list-style-type: none"> <li><b>measure, compare, add and subtract: lengths (m/cm/mm); mass (kg/g); volume/capacity (l/ml)- including mixed units</b></li> <li><b>measure the perimeter of simple 2-D shapes</b></li> <li><b>add and subtract amounts of money to give change, using both £ and p in practical contexts (introduce formal decimal recording if appropriate)</b></li> <li><b>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></li> <li><b>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</b></li> <li><b>know the number of seconds in a minute and the number of days in each month, year and leap year</b></li> <li><b>compare durations of events [for example to calculate the time taken by particular events or tasks].</b></li> </ul>	<ul style="list-style-type: none"> <li><b>draw 2-D shapes and make 3-D shapes using modelling materials; recognise 3-D shapes in different orientations and describe them</b></li> <li><b>recognise angles as a property of shape or a description of a turn</b></li> <li><b>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</b></li> <li><b>identify horizontal and vertical lines and pairs of perpendicular and parallel lines.</b></li> </ul>		<ul style="list-style-type: none"> <li><b>interpret and present data using bar charts, pictograms and tables</b></li> <li><b>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. (In varied contexts)</b></li> </ul>
Working at greater depth within expected levels	<p>Decisions about when to progress should always be based on the security of pupils' understanding and their readiness to progress to the next stage. Pupils who grasp concepts rapidly should be challenged through being offered rich and sophisticated problems before any acceleration through new content. (National Curriculum 2016)</p> <p><a href="https://www.ncetm.org.uk/public/files/23305578/Mastery_Assessment_Y2_High_Res.pdf">https://www.ncetm.org.uk/public/files/23305578/Mastery_Assessment_Y2_High_Res.pdf</a></p> <p><a href="https://www.ncetm.org.uk/public/files/23305607/Mastery_Assessment_Y3_High_Res.pdf">https://www.ncetm.org.uk/public/files/23305607/Mastery_Assessment_Y3_High_Res.pdf</a></p>			

Y4	Number and Place Value	Calculation		Fractions
		( + - )	( x ÷ )	
Emerging	<ul style="list-style-type: none"> <li>count in multiples of 25 and 1000</li> <li>know 1000 more <i>than and less than a simple number e.g multiples of 10,100,1000</i></li> <li>begin to use a number line to count backwards through zero to include negative numbers</li> <li>know and understand the place value of each digit in a 3 digit number (hundreds, tens, ones)</li> <li>begin to order numbers beyond 1000</li> <li>round any number to the nearest 10,100</li> <li>read Roman numerals to 12 (X11)</li> <li>identify, represent and estimate numbers (as above) using different representations</li> <li>begin to solve number and practical problems that involve all of the above</li> </ul>	<ul style="list-style-type: none"> <li>add and subtract numbers up to 3 digits using the formal written methods of column addition and subtraction where appropriate (<i>mental or written strategies</i>)</li> <li>begin to solve addition and subtraction 1 step problems in context, decide which operations and methods to use and why</li> </ul>	<ul style="list-style-type: none"> <li>rapidly recall multiplication and division facts for multiplication tables 3,4, and 8 and begin to recall multiplication and division facts for 6</li> <li>begin to use place value, known and derived facts to multiply and divide multiplying by 0 and 1, multiplying together 3 numbers</li> <li>begin to multiply 2 digit numbers by a 1 digit number using formal written layout</li> <li>solve problems, including missing numbers</li> </ul>	<ul style="list-style-type: none"> <li>begin to recognise and show , fractions with small denominators using diagrams, families of equivalents ,</li> <li>begin to count up in hundredths</li> <li>begin to solve problems involving fractions to calculate quantities where the answers are in a whole number Eg <math>\frac{1}{4}</math> of 20</li> <li>add and subtract fractions (simple) with the same denominator <i>within and over 1 whole</i></li> <li>recognise decimal equivalence to <math>\frac{1}{2}</math>,</li> <li>find the effect of dividing a 1 or 2 digit number by 10</li> <li>begin to compare numbers with the same number of decimal places up to 1 decimal place</li> <li>solve simple money problems involving decimals to 2 decimal places</li> </ul>
Developing	<ul style="list-style-type: none"> <li>count in multiples of 6, 9, 25, 1000</li> <li>begin to use 1000 more or less than a given number-increasing complexity of starting number</li> <li>use a number line to count backwards through zero to include negative numbers</li> <li>begin to recognise the place value of each digit in a four-digit number (thousands, hundreds, tens, and ones)</li> <li>order and begin to compare numbers beyond 1000</li> <li>read Roman numerals to 100 (I to C)</li> <li>identify, represent and estimate numbers(as above) using different representations</li> <li>begin to round any number to the nearest 10,100,1000</li> <li>solve number and practical problems that involve all of the above</li> </ul>	<ul style="list-style-type: none"> <li>begin to add and subtract numbers up to 4 digits using the formal written methods of column addition and subtraction</li> <li>estimate and use inverse operations to check answers to a calculation.</li> <li>solve a mixture of addition and subtraction one and two step problems in context, decide which operations and methods to use and why</li> </ul>	<ul style="list-style-type: none"> <li>recall multiplication and division facts for multiplication tables 3,6,4,8 and 9</li> <li>use place value, known and derived facts to multiply and divide multiplying by 0 and 1, multiplying together 3 numbers with increased fluency</li> <li>recognise and use factor pairs in mental calculation</li> <li>multiply 2 digit numbers by a 1 digit number using formal written layout (begin to multiply 3 by 1 digit)</li> <li>begin to 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.</li> </ul>	<ul style="list-style-type: none"> <li>recognise and show, using diagrams, families of equivalents , fractions with small denominators</li> <li>count up and down in tenths and hundredths</li> <li>solve problems involving fractions to calculate quantities where the answers are in a whole number Eg <math>\frac{1}{4}</math> of 60</li> <li>begin to add and subtract fractions with the same denominator <i>within and over 1 whole</i></li> <li>recognise decimal equivalence to <math>\frac{1}{2}</math>, <math>\frac{1}{4}</math> and begin to understand decimal equivalents of any number of tenths and hundredths</li> <li>find the effect of dividing a 1 or 2 digit number by 10 and 100</li> <li>compare numbers with the same number of decimal places up to 1 decimal place</li> <li>solve simple money problems involving fractions and decimals to 1 or 2 decimal places</li> </ul>
Secure	<ul style="list-style-type: none"> <li>count in multiples of 6, 7, 9, 25 and 1000</li> <li>find 1000 more or less than a given number – <i>any number</i></li> <li>count backwards through zero to include negative numbers</li> <li>recognise the place value of each digit in a four-digit number (thousands, hundreds, tens, and ones)</li> <li>order and compare numbers beyond 1000</li> <li>identify, represent and estimate numbers (as above) using different representations</li> <li>round any number to the nearest 10, 100 or 1000</li> <li>solve number and practical problems that involve all of the above and with increasingly large positive numbers</li> <li>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.</li> </ul>	<ul style="list-style-type: none"> <li>add and subtract numbers with up to 4 digits using the formal 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>	<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> <li>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.</li> </ul>	<ul style="list-style-type: none"> <li>recognise and show, using diagrams, families of common equivalent fractions</li> <li>count up and down in hundredths; recognise that hundredths arise when dividing an object by one 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>add and subtract fractions with the same denominator <i>through a variety of increasingly complex problems</i></li> <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 ones, 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>
Working at greater depth within expected levels	<p>Decisions about when to progress should always be based on the security of pupils' understanding and their readiness to progress to the next stage. Pupils who grasp concepts rapidly should be challenged through being offered rich and sophisticated problems before any acceleration through new content. (National Curriculum 2016)</p> <p><a href="https://www.ncetm.org.uk/public/files/23305607/Mastery_Assessment_Y3_High_Res.pdf">https://www.ncetm.org.uk/public/files/23305607/Mastery_Assessment_Y3_High_Res.pdf</a></p> <p><a href="https://www.ncetm.org.uk/public/files/23305578/Mastery_Assessment_Y4_High_Res.pdf">https://www.ncetm.org.uk/public/files/23305578/Mastery_Assessment_Y4_High_Res.pdf</a></p>			

Y4	Measures	Geometry		Statistics
		Properties of Shape	Position and Direction	
Emerging	<ul style="list-style-type: none"> <li>convert between simple whole units of measure (for example, kilometre to metre; kilograms to grams)</li> <li>begin to calculate the perimeter of a rectangle (including squares) in cms</li> <li>begin to find the area of simple rectangular shapes by counting squares</li> <li>calculate different measures, including money in pounds and pence</li> <li>tell and write the time from an analogue or digital clock and 12 and introduce 24hr clocks – hour conversion e.g 1pm = 13:00</li> <li>solve problems involving converting from hours to minutes; minutes to seconds</li> </ul>	<ul style="list-style-type: none"> <li>begin to compare and classify geometric shapes including triangles based on their properties and sizes( using vocabulary covered in Year 3)</li> <li>begin to identify acute and obtuse angles</li> <li>identify lines of symmetry in simple 2D shapes</li> </ul>	<ul style="list-style-type: none"> <li>begin to plot co-ordinates on a 2D grid in the first quadrant</li> </ul>	<ul style="list-style-type: none"> <li>interpret and present discreet data using appropriate graphical methods including bar charts <i>using simple scales and intervals</i></li> <li>begin to solve comparison using information presented in bar charts, pictograms, tables and other graphs</li> </ul>
Developing	<ul style="list-style-type: none"> <li>with increased confidence convert between different units of measure [for example, kilometre to metre; hour to minute]- <i>extend the range</i></li> <li>measure and calculate the perimeter of a rectangle (including squares) in cms</li> <li>find the area of <i>simple</i> rectangular shapes by counting squares</li> <li>begin to estimate, compare and calculate different measures, including money in pounds and pence</li> <li>tell and write the time from an analogue or digital clock and 12 and 24hr clocks</li> <li>begin to solve problems involving converting from hours to minutes; minutes to seconds ;years to months; weeks to days</li> </ul>	<ul style="list-style-type: none"> <li>compare and classify geometric shapes including triangles based on their properties and sizes (<i>classify triangles into equilateral, isosceles and scalene</i>)</li> <li>identify acute and obtuse angles</li> <li>identify lines of symmetry in 2D shapes <i>and in a variety of diagrams</i></li> <li>begin to complete a simple symmetric figure with respect to a specific line of symmetry</li> </ul>	<ul style="list-style-type: none"> <li>identify and plot co-ordinates on a 2D grid as co-ordinates in the first quadrant</li> <li>begin to describe movements between positions as translations of a given unit to the left/right and up and down</li> </ul>	<ul style="list-style-type: none"> <li>interpret and present discreet and continuous data using appropriate graphical methods including bar charts – <i>using a greater range of scales</i></li> <li>solve comparison and begin to solve sum and difference problems using information presented in bar charts, pictograms, tables and other graphs</li> </ul>
Secure	<ul style="list-style-type: none"> <li>convert between different units of measure [for example, 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 squares</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>	<ul style="list-style-type: none"> <li>compare and classify geometric shapes, including quadrilaterals and triangles, based on their properties and sizes (<i>e.g parallelogram, rhombus and trapezium</i>)</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 different orientations</li> <li>complete a simple symmetric figure with respect to a specific line of symmetry.</li> </ul>	<ul style="list-style-type: none"> <li>describe positions on a 2-D grid as co-ordinates 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>	<ul style="list-style-type: none"> <li>interpret and present discrete and continuous data using appropriate graphical methods, including bar charts and time graphs. - <i>using a greater range of scales</i></li> <li>solve comparison, sum and difference problems using information presented in bar charts, pictograms, tables and other graphs. <i>begin to relate graphical representation of data to recording change over time</i></li> </ul>
Working at greater depth within expected levels	<p>Decisions about when to progress should always be based on the security of pupils' understanding and their readiness to progress to the next stage. Pupils who grasp concepts rapidly should be challenged through being offered rich and sophisticated problems before any acceleration through new content. (National Curriculum 2016)</p> <p><a href="https://www.ncetm.org.uk/public/files/23305607/Mastery_Assessment_Y3_High_Res.pdf">https://www.ncetm.org.uk/public/files/23305607/Mastery_Assessment_Y3_High_Res.pdf</a></p> <p><a href="https://www.ncetm.org.uk/public/files/23305578/Mastery_Assessment_Y4_High_Res.pdf">https://www.ncetm.org.uk/public/files/23305578/Mastery_Assessment_Y4_High_Res.pdf</a></p>			

Y5	Number and Place Value	Calculation		Fractions
		( + - )	( x ÷ )	
<b>Emerging</b>	<ul style="list-style-type: none"> <li>read, write, order and compare numbers to at least 10 000 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 10 000</li> <li>count forwards and backwards with positive and negative whole numbers, including through zero</li> <li>round any number up to 10 000 to the nearest 10, 100, 1000</li> <li>solve number problems and practical problems that involve all of the above</li> <li>begin to read Roman numerals to 100 (C) and begin to recognise years written in Roman numerals.</li> </ul>	<ul style="list-style-type: none"> <li>consolidate addition and subtraction with up to 4 digits using the formal written methods of columnar addition and subtraction and introduce addition and subtraction of whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction)</li> <li>begin to add and subtract numbers mentally with increasingly large numbers</li> <li>begin to use rounding to check answers to calculations</li> <li>begin to solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use</li> </ul>	<ul style="list-style-type: none"> <li>identify factors, including finding all factor pairs of a number</li> <li>know and use the vocabulary of prime numbers</li> <li>begin to establish whether a number up to 30 is prime and begin to recall prime numbers up to 19</li> <li>begin to multiply numbers up to 4 digits by a one – digit number using a formal written method,</li> <li>begin to multiply and divide numbers mentally</li> <li>divide numbers up to 3 digits by a one-digit number using the formal written method of short division with remainders if appropriate</li> <li>multiply and divide whole numbers by 10 and 100</li> <li>begin to recognise and use square numbers and the notation for squared (²) numbers</li> <li>solve problems involving multiplication and division including using their knowledge of factors and multiples and squares</li> <li>begin to solve simple problems involving addition, subtraction, multiplication and division and a combination of these</li> <li>begin to solve simple problems involving multiplication and division, including problems involving simple rates.</li> </ul>	<ul style="list-style-type: none"> <li>order fractions whose denominators are all multiples of the same number represented visually if appropriate</li> <li>identify, name and write equivalent fractions of a given fraction, ( <i>use diagrams if appropriate</i>) represented visually, including tenths</li> <li>begin to recognise simple mixed numbers and improper fractions and convert from one form to the other e.g. <math>\frac{2}{5} + \frac{4}{5} = \frac{6}{5} = 1\frac{1}{5}</math> ]</li> <li>consolidate addition and subtraction of fractions with the same denominator</li> <li>begin to multiply proper fractions by whole numbers, supported by materials and diagrams</li> <li>continue to read and write simple decimal numbers as fractions [for example, 0.7 = 7/10], introduce hundredths e.g. 0.35 = 35/100</li> <li>begin to recognise and use thousandths and relate them to decimal equivalents – <i>including through measures</i></li> <li>begin to round simple decimals with two decimal places to the nearest whole number</li> <li>continue to read, write, order numbers with up to two decimal places with increased fluency and introduce three decimal places</li> <li>begin to solve problems involving number up to three decimal places</li> <li>begin to recognise the per cent symbol (%) and understand that per cent relates to ‘number of parts per hundred’</li> <li>solve problems which requiring knowing percentage and decimal equivalents of <math>\frac{1}{2}</math>, <math>\frac{1}{4}</math> one tenth</li> </ul>
<b>Developing</b>	<ul style="list-style-type: none"> <li>read, write, order and compare numbers to at least 100 000 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 100 000</li> <li>begin to interpret negative numbers, and continue to count forwards and backwards with positive and negative whole numbers, including through zero (wider interval range)</li> <li>round any number up to 100 000 to the nearest 10, 100, 1000 and 10 000</li> <li>solve number problems and practical problems that involve all of the above</li> <li>read Roman numerals to 100 (C) and recognise years written in Roman numerals.</li> </ul>	<ul style="list-style-type: none"> <li>begin to add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction)</li> <li>add and subtract numbers mentally with increasingly large numbers to aid fluency</li> <li>use rounding to check answers to calculations</li> <li>solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use</li> </ul>	<ul style="list-style-type: none"> <li>identify multiples and factors, including finding all factor pairs of a number</li> <li>know and use the vocabulary of prime numbers, prime factors</li> <li>establish whether a number up to 50 is prime and begin to recall prime numbers up to 19</li> <li>multiply numbers up to 4 digits by a one – digit number using a formal written method</li> <li>begin to 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</li> <li>begin to multiply and divide numbers mentally drawing upon known facts</li> <li>divide numbers up to 4 digits by a one-digit number using the formal written method of short division with remainders</li> <li>multiply and divide whole numbers and those involving decimals by 10 and 100</li> <li>recognise and use square numbers and the notation for squared (²) numbers</li> <li>solve problems involving multiplication and division including using their knowledge of factors and multiples and squares</li> <li>begin to solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign</li> <li>begin to solve problems involving multiplication and division, including scaling by simple fractions and problems involving simple rates.</li> </ul>	<ul style="list-style-type: none"> <li>compare and order fractions whose denominators are all multiples of the same number represented visually if appropriate</li> <li>identify, name and write equivalent fractions of a given fraction, represented visually, including tenths and <i>begin</i> to identify hundredths</li> <li>recognise mixed numbers and improper fractions and convert from one form to the other with increased confidence e.g. <math>\frac{2}{5} + \frac{4}{5} = \frac{6}{5} = 1\frac{1}{5}</math> ]</li> <li>add and subtract fractions with the same denominator and begin to add and subtract denominators that are multiples of the same number</li> <li>multiply proper fractions by whole numbers, supported by materials and diagrams</li> <li>with increasing fluency read and write decimal numbers as fractions [for example, 0.71 = <math>\frac{71}{100}</math> ]</li> <li>begin to 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</li> <li>begin to read, write, order and compare numbers with up to three decimal places</li> <li>with increased confidence solve problems involving number up to three decimal places</li> <li>continue to recognise the per cent symbol (%) and understand that per cent relates to ‘number of parts per hundred’, and begin to write percentages as a fraction with denominator 100, and as a decimal</li> <li>solve problems which requiring knowing percentage and decimal equivalents of <math>\frac{1}{2}</math>, <math>\frac{1}{4}</math>, <math>\frac{1}{5}</math>, <math>\frac{2}{5}</math>, <math>\frac{4}{5}</math></li> </ul>

<b>Secure</b>	<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>• solve number problems and practical problems that involve all of the above</li> <li>• read Roman numerals to 1000 (M) and recognise years written in Roman numerals.</li> </ul>	<ul style="list-style-type: none"> <li>• add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction)</li> <li>• add and subtract numbers mentally with increasingly large numbers e.g <math>12\,462 - 2300 = 10\,162</math></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> <li>• <i>(Vary the context and complexity of questions)</i></li> </ul>	<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>• 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 using a formal written method, including long multiplication for two-digit numbers</li> <li>• multiply and divide numbers mentally drawing upon known facts</li> <li>• 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</li> <li>• multiply and divide whole numbers and those involving decimals by 10, 100 and 1000</li> <li>• recognise and use square numbers and cube numbers, and the notation for squared (<math>^2</math>) and cubed (<math>^3</math>)</li> <li>• solve problems involving multiplication and division including using their knowledge of factors and multiples, squares and cubes</li> <li>• solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign</li> <li>• solve problems involving multiplication and division, including scaling by simple fractions and problems involving simple rates.</li> </ul>	<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 <math>&gt; 1</math> as a mixed number [for example, <math>\frac{2}{5} + \frac{4}{5} = \frac{6}{5} = 1\frac{1}{5}</math>]</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 [for example, <math>0.71 = \frac{71}{100}</math>]</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>• read, write, order and compare numbers with up to three decimal places</li> <li>• solve problems involving number 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{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> </ul>
Working at greater depth within expected levels	<p>Decisions about when to progress should always be based on the security of pupils' understanding and their readiness to progress to the next stage. Pupils who grasp concepts rapidly should be challenged through being offered rich and sophisticated problems before any acceleration through new content. (National Curriculum 2016)</p> <p><a href="https://www.ncetm.org.uk/public/files/23305628/Mastery_Assessment_Y5_High_Res.pdf">https://www.ncetm.org.uk/public/files/23305628/Mastery_Assessment_Y5_High_Res.pdf</a></p> <p><a href="https://www.ncetm.org.uk/public/files/23305649/Mastery_Assessment_Y6_High_Res.pdf">https://www.ncetm.org.uk/public/files/23305649/Mastery_Assessment_Y6_High_Res.pdf</a></p>			

Y5	Measures	Geometry		Statistics
		Properties of Shape	Position and Direction	
Emerging	<ul style="list-style-type: none"> <li>with increasing confidence convert between different units of metric measure (for example, kilometre and metre; centimetre and metre; gram and kilogram; litre and millilitre) <i>as year 4 but with increasing complexity</i></li> <li>continue to measure and calculate the perimeter of rectilinear shapes in centimetres and metres</li> <li>begin to 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>)</li> <li>begin to estimate volume and capacity [for example, using water]</li> <li>solve problems involving converting between units of time – <i>analogue and digital and 12 and 24 hour clocks</i></li> <li>use all four operations to solve problems involving measure [for example, length, mass, volume, money] for all of the above</li> </ul>	<ul style="list-style-type: none"> <li>begin to identify 3-D shapes, including cubes and other cuboids, from 2-D representations</li> <li>know angles are measured in degrees: compare acute and obtuse angles</li> <li>begin to measure angles in degrees (°) using a protractor</li> <li>begin to identify: angles at a point and one whole turn (total 360°)</li> <li>begin to use the properties of rectangles to find missing lengths and angles</li> <li>begin to identify regular and irregular polygons based on reasoning about equal sides and angles.</li> </ul>	<ul style="list-style-type: none"> <li>represent the position of a shape following a reflection or translation, using the appropriate language – <i>reflection in a line parallel to the axis</i></li> </ul>	<ul style="list-style-type: none"> <li>continue to solve comparison, sum and difference problems using information presented in <i>bar charts and time graphs and introduce a simple line graph</i></li> <li>read and interpret information in tables, including simple timetables.</li> </ul>
Developing	<ul style="list-style-type: none"> <li>with increased confidence convert between different units of metric measure (for example, kilometre and metre; centimetre and metre; centimetre and millimetre; gram and kilogram; litre and millilitre)</li> <li>begin to understand equivalences between metric units and common imperial units such as inches, pounds and pints</li> <li>measure and calculate the perimeter of rectilinear shapes in centimetres and metres – <i>introduce unknown lengths</i></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>)</li> <li>estimate volume and capacity [for example, using water]</li> <li>solve problems involving converting between units of time – <i>increasing complexity</i></li> <li>use all four operations to solve problems involving measure [for example, length, mass, volume, money] using decimal notation for all of the above</li> </ul>	<ul style="list-style-type: none"> <li>identify 3-D shapes, including cubes and other cuboids, from 2-D representations. <i>Introduce a wider range of examples</i></li> <li>know angles are measured in degrees: estimate and compare acute and obtuse angles</li> <li>measure angles in degrees (°) using a protractor</li> <li>identify: <ul style="list-style-type: none"> <li>angles at a point and one whole turn (total 360°) and angles at a point on a straight line and <math>\frac{1}{2}</math> a turn (total 180°)</li> </ul> </li> <li>begin to use the properties of rectangles to deduce related facts and find missing lengths and angles</li> <li>identify regular and irregular polygons based on reasoning about equal sides and angles.</li> </ul>	<ul style="list-style-type: none"> <li>begin to identify, 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>	<ul style="list-style-type: none"> <li>begin to solve comparison, sum and difference problems using information presented in a line graph</li> <li>begin to complete, read and interpret information in tables, including timetables.</li> </ul>
Secure	<ul style="list-style-type: none"> <li>convert between different units of metric measure (for example, kilometre and metre; centimetre and metre; centimetre and millimetre; gram and kilogram; litre and millilitre)</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 <i>with unknown lengths</i></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</li> <li>use all four operations to solve problems involving measure [for example, length, mass, volume, money] using decimal notation, including scaling ( for all of the above).</li> </ul>	<ul style="list-style-type: none"> <li>identify 3-D shapes, including cubes and other cuboids, from 2-D representations (<i>greater range of examples</i>)</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 (°)</li> <li>identify: <ul style="list-style-type: none"> <li>angles at a point and one whole turn (total 360°)</li> <li>angles at a point on a straight line and <math>\frac{1}{2}</math> a turn (total 180°)</li> </ul> </li> <li>other multiples of 90°</li> <li>use the properties of rectangles to deduce related facts and find missing lengths and angles – <i>use angle sum facts</i></li> <li>distinguish between regular and irregular polygons based on reasoning about equal sides and angles.</li> </ul>	<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>	<ul style="list-style-type: none"> <li>solve comparison, sum and difference problems using information presented in a line graph</li> <li>complete, read and interpret information in tables, including timetables.</li> <li><i>Begin to decide which representations of data are most appropriate and why</i></li> </ul>
Working at greater depth within expected levels	<p>Decisions about when to progress should always be based on the security of pupils' understanding and their readiness to progress to the next stage. Pupils who grasp concepts rapidly should be challenged through being offered rich and sophisticated problems before any acceleration through new content. (National Curriculum 2016)</p> <p><a href="https://www.ncetm.org.uk/public/files/23305628/Mastery_Assessment_Y5_High_Res.pdf">https://www.ncetm.org.uk/public/files/23305628/Mastery_Assessment_Y5_High_Res.pdf</a></p> <p><a href="https://www.ncetm.org.uk/public/files/23305649/Mastery_Assessment_Y6_High_Res.pdf">https://www.ncetm.org.uk/public/files/23305649/Mastery_Assessment_Y6_High_Res.pdf</a></p>			

Y6	Number and Place Value	Calculation		Fractions
		( + - )	( x ÷ )	
Emerging	<ul style="list-style-type: none"> <li>read, write, order and compare numbers up to 5 000 000 and determine the value of each digit</li> <li>round any whole number to a required degree of accuracy <i>10, 100, 1000,</i></li> <li>continue to use negative numbers in context, counting forwards and backwards and calculate intervals across zero – <i>small intervals</i></li> <li>solve number and practical problems that involve all of the above.</li> </ul>	<ul style="list-style-type: none"> <li>begin to solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use</li> <li>solve simple problems involving addition, subtraction, multiplication and division</li> <li>use estimation to check answers to calculations</li> </ul>	<ul style="list-style-type: none"> <li>multiply 4 digit numbers by one digit and begin to multiply numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication</li> <li>divide numbers up to 4 digits by a two-digit whole number using the formal written method of long division</li> <li>divide numbers up to 4 digits by a two-digit number using the formal written method of short division where appropriate</li> <li>perform mental calculations, including with mixed operations</li> <li>identify common factors, begin to identify common multiples and prime numbers to 19</li> </ul>	<ul style="list-style-type: none"> <li>use common factors to simplify fractions</li> <li>compare and order fractions <i>with increasing confidence</i></li> <li>add and subtract fractions with different denominators</li> <li>identify the value of each digit in numbers given to three decimal places ( tenth , hundredth, thousandth )</li> </ul>
Developing	<ul style="list-style-type: none"> <li>with increased confidence read, write, order and compare numbers up to 10 000 000 and determine the value of each digit</li> <li>round any whole number to a required degree of accuracy <i>10, 100, 1000, 10 000</i></li> <li>use negative numbers in context, and calculate intervals across zero – <i>increasingly larger intervals</i></li> <li>solve number and practical problems that involve all of the above.</li> </ul>	<ul style="list-style-type: none"> <li>continue to solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use</li> <li>solve problems involving addition, subtraction, multiplication and division – <i>increase the complexity</i></li> <li>use estimation to check answers to calculations and begin to determine, in the context of a problem, an appropriate degree of accuracy.</li> </ul>	<ul style="list-style-type: none"> <li>with increasing confidence, multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication</li> <li>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</li> <li>divide numbers up to 4 digits by a two-digit number using the formal written method of short division where appropriate, and begin to interpret remainders according to the context</li> <li>perform mental calculations, including with mixed operations and <i>increasingly large numbers</i></li> <li>identify common factors, common multiples and prime numbers (prime numbers to at least 19 with increased fluency and square numbers at least up to 100)</li> <li>begin to use their knowledge of the order of operations to carry out calculations involving the four operations <i>BODMAS</i></li> </ul>	<ul style="list-style-type: none"> <li>use common factors to simplify fractions; <i>begin</i> to use common multiples to express fractions in the same denomination</li> <li>compare and order fractions and begin to include fractions &gt; 1</li> <li>add and subtract fractions with different denominators and mixed numbers</li> <li><i>begin</i> to multiply simple pairs of proper fractions, [for example, <math>\frac{1}{4} \times \frac{1}{2} = \frac{1}{8}</math> ]</li> <li><i>begin</i> to divide proper fractions by whole numbers [for example, <math>\frac{1}{3} \div 2 = \frac{1}{6}</math> ]</li> <li><i>begin</i> to associate a fraction with division and calculate decimal fraction equivalents e.g <math>\frac{1}{8} = 0.125</math></li> <li>identify the value of each digit in numbers given to three decimal places and <i>begin</i> to multiply and divide numbers by 10, and 100 giving answers <i>up to</i> three decimal places</li> </ul>
Secure	<ul style="list-style-type: none"> <li>read, write, order and compare numbers up to 10 000 000 and determine the value of each digit</li> <li>round any whole number to a required degree of accuracy (<i>10, 100, 1000, 10,000, 100,000</i>)</li> <li>use negative numbers in context, and calculate intervals across zero</li> <li>solve number and practical problems that involve all of the above.</li> </ul>	<ul style="list-style-type: none"> <li>solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why</li> <li>solve problems involving addition, subtraction, multiplication and division</li> <li>use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy.</li> </ul>	<ul style="list-style-type: none"> <li>multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication</li> <li>multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication</li> <li>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</li> <li>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</li> <li>perform mental calculations, including with mixed operations and large numbers</li> <li>identify common factors, common multiples and prime numbers (prime numbers to at least 19 and square numbers at least up to 144)</li> <li>use their knowledge of the order of operations to carry out calculations involving the four operations <i>BODMAS</i></li> </ul>	<ul style="list-style-type: none"> <li>use common factors to simplify fractions; (<i>identify equivalent fractions</i>) use common multiples to express fractions in the same denomination</li> <li>compare and order fractions, including fractions &gt; 1</li> <li>add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions</li> <li>multiply simple pairs of proper fractions, writing the answer in its simplest form [ <math>\frac{1}{4} \times \frac{1}{2} = \frac{1}{8}</math> ]</li> <li>divide proper fractions by whole numbers [for example, <math>\frac{1}{3} \div 2 = \frac{1}{6}</math> ]</li> <li>associate a fraction with division and calculate decimal fraction equivalents [for example, 0.375] for a simple fraction [for example, <math>\frac{3}{8}</math> ]</li> <li>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</li> </ul>
Working at greater depth within expected levels	<p>Decisions about when to progress should always be based on the security of pupils' understanding and their readiness to progress to the next stage. Pupils who grasp concepts rapidly should be challenged through being offered rich and sophisticated problems before any acceleration through new content. (National Curriculum 2016)</p> <p><a href="https://www.ncetm.org.uk/public/files/23305628/Mastery_Assessment_Y5_High_Res.pdf">https://www.ncetm.org.uk/public/files/23305628/Mastery_Assessment_Y5_High_Res.pdf</a></p> <p><a href="https://www.ncetm.org.uk/public/files/23305649/Mastery_Assessment_Y6_High_Res.pdf">https://www.ncetm.org.uk/public/files/23305649/Mastery_Assessment_Y6_High_Res.pdf</a></p>			

Y6	Ratio and Proportion	Algebra
Emerging	<ul style="list-style-type: none"> <li>• solve simple problems involving the calculation of percentages [for example, of measures, and such as 15% of 360]</li> </ul>	<ul style="list-style-type: none"> <li>• introduce <i>simple</i> formulae e.g <math>3y = 21</math>, <math>y = \dots</math></li> <li>• generate and describe linear number sequences at a simple level</li> </ul>
Developing	<ul style="list-style-type: none"> <li>• begin to solve problems involving the relative sizes of two quantities where missing values can be found by using integer multiplication and division facts</li> <li>• With increasing confidence solve problems involving the calculation of percentages [for example, of measures, and such as 15% of 360] and the use of percentages for comparison</li> <li>• begin to solve problems involving similar shapes where the scale factor is known or can be found e.g <i>Two rulers cost 80 pence. How much do three rulers cost?</i></li> <li>• begin to solve problems involving unequal sharing and grouping using knowledge of fractions and multiples e.g <i>What fraction is 500ml of 400ml?</i></li> </ul>	<ul style="list-style-type: none"> <li>• With increasing complexity use simple formulae e.g <i>What is the perimeter if <math>l = 8</math> cm and <math>b = 5</math> cm?</i></li> <li>• with increased confidence generate and describe linear number sequences</li> <li>• begin to express missing number problems algebraically</li> <li>• find pairs of numbers that satisfy an equation with (one) unknown</li> <li>• begin to enumerate possibilities of combinations of two variables.</li> </ul>
Secure	<ul style="list-style-type: none"> <li>• <b>solve problems involving the relative sizes of two quantities where missing values can be found by using integer multiplication and division facts</b></li> <li>• <b>solve problems involving the calculation of percentages [for example, of measures, and such as 15% of 360] and the use of percentages for comparison e.g <i>25% of the apples in a basket are red. The rest are green. There are 21 red apples. How many green apples are there?</i></b></li> <li>• <b>solve problems involving similar shapes where the scale factor is known or can be found</b></li> <li>• <b>solve problems involving unequal sharing and grouping using knowledge of fractions and multiples e.g <i>What is <math>\frac{1}{8} \times 15</math>? What about <math>15 \times \frac{1}{8}</math>? How did you work it out?</i></b></li> </ul>	<ul style="list-style-type: none"> <li>• <b>use simple formulae e.g <i>Write a formula for the <math>n</math>th term of this sequence: 3, 6, 9, 12, 15...</i></b></li> <li>• <b>generate and describe linear number sequences (more complex)</b></li> <li>• <b>express missing number problems algebraically</b></li> <li>• <b>find pairs of numbers that satisfy an equation with two unknowns</b></li> <li>• <b>enumerate possibilities of combinations of two variables</b></li> </ul>
Working at greater depth within expected levels	<p>Decisions about when to progress should always be based on the security of pupils' understanding and their readiness to progress to the next stage. Pupils who grasp concepts rapidly should be challenged through being offered rich and sophisticated problems before any acceleration through new content. (National Curriculum 2016)</p> <p><a href="https://www.ncetm.org.uk/public/files/23305628/Mastery_Assessment_Y5_High_Res.pdf">https://www.ncetm.org.uk/public/files/23305628/Mastery_Assessment_Y5_High_Res.pdf</a></p> <p><a href="https://www.ncetm.org.uk/public/files/23305649/Mastery_Assessment_Y6_High_Res.pdf">https://www.ncetm.org.uk/public/files/23305649/Mastery_Assessment_Y6_High_Res.pdf</a></p>	

Y6	Measures	Geometry		Statistics
		Properties of Shape	Position and Direction	
Emerging	<ul style="list-style-type: none"> <li>solve problems involving the calculation and conversion of units of measure, using decimal notation</li> <li>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</li> <li>begin to convert between miles and kilometres <i>simple whole numbers</i></li> <li>continue to measure and calculate the perimeter of composite rectilinear shapes including finding unknown lengths in cm and m</li> <li>recognise when it is possible to use formulae for area</li> <li>with increased consistency estimate the area of irregular shapes and begin to calculate the area and triangles</li> </ul>	<ul style="list-style-type: none"> <li>draw <i>simple 2-D</i> shapes using given dimensions and angles</li> <li>recognise, describe and build simple 3-D shapes, including making nets – <i>cube, cuboid</i></li> <li>find unknown angles in any triangles, quadrilaterals, and regular polygons</li> <li>begin to know and name parts of circles, including radius, diameter and circumference</li> <li>recognise angles where they meet at a point, are on a straight line</li> </ul>	<ul style="list-style-type: none"> <li>describe positions on the coordinate grid (two quadrants)</li> <li>translate simple shapes on the coordinate plane, and reflect them in the axes <i>first quadrant</i></li> </ul>	<ul style="list-style-type: none"> <li>begin to interpret and construct pie charts and line graphs</li> <li>begin to calculate the mean as an average - <i>find the mean of a data set</i></li> </ul>
Developing	<ul style="list-style-type: none"> <li>solve problems involving the calculation and conversion of units of measure and <i>begin to use decimal notation up to three decimal places where appropriate</i></li> <li>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 and <i>begin to use decimal notation to up to three decimal places</i></li> <li>convert between miles and kilometres – <i>introduce decimals</i></li> <li>begin to recognise that shapes with the same areas can have different perimeters and vice versa</li> <li>recognise when it is possible to use formulae for area and <i>begin to use the formulae for volume of shapes</i></li> <li>calculate the area of triangles and use formulae more confidently</li> <li>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>),</li> </ul>	<ul style="list-style-type: none"> <li>draw 2-D shapes using given dimensions and angles – <i>vary the range</i></li> <li>recognise, describe and build simple 3-D shapes, including making nets- <i>include square based pyramid, triangular prism</i></li> <li>compare geometric shapes based on their properties and sizes and continue to find unknown angles in any triangles, quadrilaterals, and regular polygons</li> <li>illustrate and name parts of circles, including radius, diameter and circumference</li> <li>recognise angles where they meet at a point, are on a straight line and find missing angles.</li> </ul>	<ul style="list-style-type: none"> <li>begin to describe positions on the full coordinate grid (all four quadrants)</li> <li>begin to draw and translate simple shapes on the coordinate plane, and reflect them in the axes – <i>two quadrants</i></li> </ul>	<ul style="list-style-type: none"> <li>interpret and construct pie charts and line graphs and begin to use these to solve problems</li> <li>calculate and interpret the mean as an average – <i>find the mean of a variety of data in different contexts</i></li> </ul>
Secure	<ul style="list-style-type: none"> <li><b>solve problems involving the calculation and conversion of units of measure, using decimal notation up to three decimal places where appropriate</b></li> <li><b>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</b></li> <li><b>convert between miles and kilometres and connect conversion from kilometres to miles in measurement to its graphical representation</b></li> <li><b>recognise that shapes with the same areas can have different perimeters and vice versa</b></li> <li><b>recognise when it is possible to use formulae for area and volume of shapes</b></li> <li><b>calculate the area of parallelograms and triangles</b></li> <li><b>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>].</b></li> </ul>	<ul style="list-style-type: none"> <li><b>draw 2-D shapes using given dimensions and angles – increased range</b></li> <li><b>recognise, describe and build simple 3-D shapes, including making nets – increased examples of shapes used</b></li> <li><b>compare and classify geometric shapes based on their properties and sizes and find unknown angles in any triangles, quadrilaterals, and regular polygons</b></li> <li><b>illustrate and name parts of circles, including radius, diameter and circumference and know that the diameter is twice the radius</b></li> <li><b>recognise angles where they meet at a point, are on a straight line, or are vertically opposite, and find missing angles.</b></li> </ul>	<ul style="list-style-type: none"> <li><b>describe positions on the full coordinate grid (all four quadrants)</b></li> <li><b>draw and translate simple shapes on the coordinate plane and reflect them in the axes.</b></li> </ul>	<ul style="list-style-type: none"> <li><b>interpret and construct pie charts and line graphs and use these to solve problems</b></li> <li><b>calculate and interpret the mean as an average – find the mean of a variety of data in different contexts with increasing complexity</b></li> </ul>
Working at greater depth within expected levels	<p>Decisions about when to progress should always be based on the security of pupils' understanding and their readiness to progress to the next stage. Pupils who grasp concepts rapidly should be challenged through being offered rich and sophisticated problems before any acceleration through new content. (National Curriculum 2016)</p> <p><a href="https://www.ncetm.org.uk/public/files/23305628/Mastery_Assessment_Y5_High_Res.pdf">https://www.ncetm.org.uk/public/files/23305628/Mastery_Assessment_Y5_High_Res.pdf</a></p> <p><a href="https://www.ncetm.org.uk/public/files/23305649/Mastery_Assessment_Y6_High_Res.pdf">https://www.ncetm.org.uk/public/files/23305649/Mastery_Assessment_Y6_High_Res.pdf</a></p>			