


EQUATIONS


Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
<p>Solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as $7 = \square - 9$ <i>(copied from Addition and Subtraction)</i></p>	<p>Recognise and use the inverse relationship between addition and subtraction and use this to check calculations and missing number problems. <i>(copied from Addition and Subtraction)</i></p>	<p>Solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction. <i>(copied from Addition and Subtraction)</i></p>		<p>Use the properties of rectangles to deduce related facts and find missing lengths and angles <i>(copied from Geometry: Properties of Shapes)</i></p>	<p>Express missing number problems algebraically</p>
		<p>Solve problems, including missing number problems, involving multiplication and division, including integer scaling <i>(copied from Multiplication and Division)</i></p>			
	<p>Recall and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100 <i>(copied from Addition and Subtraction)</i></p>	<p>Eg $240 + ? = 300$</p>	<p>Eg $242 + ? = 300$</p>	<p>Eg $300 = ? + ?$</p>	<p>Find pairs of numbers that satisfy number sentences involving two unknowns eg $300 = ? + ?$ where '?' must be a set criteria.</p>
<p>Represent and use number bonds and related subtraction facts within 20 <i>(copied from Addition and Subtraction)</i></p>					<p>Enumerate all possibilities of combinations of two variables</p>

FORMULAE					
Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
			Perimeter can be expressed algebraically as $2(a + b)$ where a and b are the dimensions in the same unit. <i>(Copied from NSG measurement)</i>		Use simple formulae <hr/> Recognise when it is possible to use formulae for area and volume of shapes <i>(copied from Measurement)</i>
SEQUENCES					
Sequence events in chronological order using language such as: before and after, next, first, today, yesterday, tomorrow, morning, afternoon and evening <i>(copied from Measurement)</i>	Compare and sequence intervals of time <i>(copied from Measurement)</i> <hr/> Order and arrange combinations of mathematical objects in patterns <i>(copied from Geometry: position and direction)</i>				Generate and describe linear number sequences

Year 6 Algebra

<p>Express missing number problems algebraically.</p>	<p>Find pairs of numbers that satisfy number sentences involving two unknowns.</p>	<p>Enumerate all possibilities of combinations of two variables use simple formulae.</p>	<p>Generate and describe linear number sequences.</p>
<p>Example...</p> <p>On the planet Vuv there are two sorts of creatures. The Zios have 3 legs and the Zepts have 7 legs.</p>  <p>The great planetary explorer Nico, who first discovered the planet, saw a crowd of Zios and Zepts. He managed to see that there was more than one of each kind of creature before they saw him. Suddenly they all rolled over onto their backs and put their legs in the air.</p> <p>He counted 52 legs. How many Zios and how many Zepts were there?</p> <p>Ext – 52 legs and 36 eyes.</p>	<p>$2x + 3y = 24$ $x=9$ then $y=2$ or $x=12$ When $y=0$.</p> <p>Understand how to generate and describe linear number sequences.</p>	<p>Be able to solve limitations from equations. So, $2n$ is greater than 30 and $5n$ is less than 100. So n is either 16, 17, 18 or 19.</p> <p>Understand basic algebraic equations. Such as $y=10$ so $3y=30$.</p> <p>Understand that $3y$ is actually 3 times y.</p> <p>Brackets are done first.</p>	<p>Understand line graphs</p> <p>Understand and be able to solve x and y formulae so if $2x=10$, $x=5$</p>

NUMBER BONDS					
Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Represent and use number bonds and related subtraction facts within 20	Recall and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100	Recall and use addition and subtraction facts to 100 fluently, and derive and use related facts up to 1000	Recall and use addition and subtraction facts to 1000 fluently, and derive and use related facts up to 10000	Recall and use addition and subtraction facts to 1000 fluently, and derive and use related facts up to 100000	Recall and use addition and subtraction facts to 1000 fluently, and derive and use related facts up to 1000000
MENTAL CALCULATION					
Add and subtract one-digit and two-digit numbers to 20, including zero	Add and subtract numbers using concrete objects, pictorial representations, and mentally, including: <ul style="list-style-type: none"> * a two-digit number and ones * a two-digit number and tens * two two-digit numbers * adding three one-digit numbers 	Add and subtract numbers mentally, including: <ul style="list-style-type: none"> * a three-digit number and ones * a three-digit number and tens * a three-digit number and hundreds 	Add and subtract numbers mentally, including: <ul style="list-style-type: none"> * a three-digit number and ones * a three-digit number and tens * a three-digit number and hundreds 	Add and subtract numbers mentally with increasingly large numbers	Perform mental calculations, including with mixed operations and large numbers
Read, write and interpret mathematical statements involving addition (+), subtraction (-) and equals (=) signs (appears also in Written Methods)	Show that addition of two numbers can be done in any order (commutative) and subtraction of one number from another cannot				Use their knowledge of the order of operations to carry out calculations involving the four operations

WRITTEN METHODS					
Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Read, write and interpret mathematical statements involving addition (+), subtraction (-) and equals (=) signs (appears also in Mental Calculation)	Read, write and interpret mathematical statements involving addition (+), subtraction (-), multiplication (x) and division (÷) and equals (=) signs	Add and subtract numbers with up to three digits, using formal written methods of columnar addition and subtraction	Add and subtract numbers with up to 4 digits using the formal written methods of columnar addition and subtraction where appropriate	Add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction)	
INVERSE OPERATIONS, ESTIMATING AND CHECKING ANSWERS					
	Recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems.	Estimate the answer to a calculation and use inverse operations to check answers	Estimate and use inverse operations to check answers to a calculation	Use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy	Use estimation to check answers to calculations and determine, in the context of a problem, levels of accuracy.

PROBLEM SOLVING

Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as $7 = \square - 9$	<p>Solve problems with addition and subtraction:</p> <ul style="list-style-type: none"> * using concrete objects and pictorial representations, including those involving numbers, quantities and measures * applying their increasing knowledge of mental and written methods 	Solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction	Solve addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why	Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why	Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why
	<i>Solve simple problems in a practical context involving addition and subtraction of money of the same unit, including giving change (copied from Measurement)</i>				Solve problems involving addition, subtraction, multiplication and division

Year 1 Number – Addition and Subtraction

Read, write and interpret mathematical statements involving addition (+), subtraction (-) and equals (=) signs	Represent and use number bonds and related subtraction facts within 20	Add and subtract one-digit and two-digit numbers to 20, including zero	Solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as $7 = ? - 9$.
<p>To know that '+' means combining two collections to make a larger amount</p> <p>To know that '-' means taking away an amount from a group to make a smaller amount</p> <p>To know that '=' means the same as 'balanced' and 'equals to' so both sides must be the same.</p> <p>To practically demonstrate how to carry out the correct operation when given a number sentence.</p> <p>To record the correct number sentence after completing a practical activity.</p> <p>To understand subtraction is the inverse of addition.</p> <p>Presenting calculations in different ways ($3+7=10$, $7+3=10$, $10=3+7$)</p>	<p>Derive all number bonds up from 1 to 10 (up to 2, 3, 4, etc) and derive all number bonds from 11 to 20</p> <p>To know the subtraction (inverse) facts from 1 to 10 and derive all facts from 11 to 20.</p> <p>Recording all possible outcomes</p>	<p>To understand, through practical demonstrations that addition can be done in any order but practically subtraction cannot (1 take away 9)</p> <p>To use equipment to solve addition and subtraction calculations.</p> <p>To use number lines, 100 square or other support to calculate</p>	<p>Recognise different vocabulary for each operation (key words).</p> <p>To be able to write a number sentence from a word problem.</p> <p>To interpret the context of the problem.</p> <p>To calculate with support from pictures and objects.</p>

Year 2 Number-Addition and Subtraction

<p>Solve problems with addition and subtraction: using concrete objects and pictorial representations, including those involving numbers, quantities and measures applying their increasing knowledge of mental and written methods</p>	<p>Recall and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100</p>	<p>Add and subtract numbers using concrete objects, pictorial representations, and mentally, including: a two-digit number and ones a two-digit number and tens two two-digit numbers adding three one-digit numbers</p>	<p>Show that addition of two numbers can be done in any order (commutative) and subtraction of one number from another cannot</p>	<p>Recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems.</p>
<p>Present problems in different contexts.</p> <p>Find a starting point and begin to pick out key facts.</p> <p>Model how to use a systematic approach and give opportunities to apply this</p> <p>Use apparatus, diagrams or role play to represent a problem.</p> <p>Respond to questions and ideas from peers and adults.</p> <p>Use pictures, diagrams and symbols to communicate their thinking.</p>	<p>To derive number bonds from 20 to 100 - Fact Families ($25 + 75 = 100$, $75 + 25 = 100$, $100 - 75 = 25$, $100 - 25 = 75$)</p> <p>To be able to recall and derive complements to 100.</p>	<p>To be able to count forwards and count backwards from any given number</p> <p>To add a 1 digit number to a 2 digit number within the decade</p> <p>To add a 1 digit number to a 2 digit number over the decade</p> <p>To add a multiply to 10 to a 2 digit number over the decade</p> <p>Need to be able to count in steps of 10 from different starts on and off the decades</p> <p>To record calculation as a number sentence</p> <p>Use partitioning and recombining</p> <p>To know how to use a number line to solve addition and subtraction number calculations</p>	<p>To consolidate, through practical demonstrations that addition can be done in any order, but practically subtraction cannot (1 take away 9)</p> <p>To record calculation as a number sentence</p>	<p>Understand the term of addition / subtraction and the associated vocabulary</p> <p>To be able to make related number sentences</p> <p>To calculate the value of an unknown number in a number sentence.</p> <p>To understand that subtraction is the inverse of addition and vice versa.</p>

Year 3 Number, Place Value & Rounding

Read and write numbers up to 1000 in numerals and in words	Recognise the place value of each digit in a three-digit number (hundreds, tens, ones)	Find 10 or 100 more or less than a given number	Compare and order numbers up to 1000	Identify, represent and estimate numbers using different representations Round a three digit number to the nearest 10 and 100.	Count from 0 in multiples of 4, 8, 50 and 100;	Solve number problems and practical problems involving these ideas.
<p>Read and write numbers up to 100 in numerals and words</p> <p>Know the difference between teens and 'ties' numbers (17, 70)</p> <p>Recognise '0' as a place holder</p>	<p>Know place value of two digit numbers (tens, ones)</p> <p>Partition two digit numbers into tens and ones</p>	<p>Find one more and one less from given number to up 100</p> <p>Bridge 10 and 100</p> <p>Know place value of two digit numbers (tens, ones)</p> <p>Count in 10s from a given multiple of 10</p> <p>Count in 100s from a given multiple of 100</p>	<p>Compare and order numbers to 100</p> <p>Know place value of two and three digit numbers (hundred, tens, ones)</p> <p>Read and write numbers up to 1000</p> <p>Recognise '0' as a place holder</p> <p>Use <, > and = signs</p>	<p>Know place value of two and three digit numbers (hundreds, tens, ones)</p> <p>Partition two and three digit numbers into hundreds, tens and ones</p> <p>Round a two digit number to the nearest 10.</p> <p>Know that 0-4 rounds down and 5-9 rounds up</p> <p>Know which digit to look at when rounding</p>	<p>Count forwards</p> <p>Count in steps of 2, 5 and 10</p> <p>Understand odd and even numbers</p>	<p>Use place value and number facts to solve problems</p> <p>Solve number problems up to 100</p>

Year 3 Number - Addition & Subtraction

<p>Add and subtract numbers mentally, including:</p> <ul style="list-style-type: none"> •a three-digit number and ones •a three-digit number and tens •a three-digit number and hundreds 	<p>Add and subtract numbers with up to three digits, using formal written methods of columnar addition and subtraction</p>	<p>Estimate the answer to a calculation and use inverse operations to check answers</p>	<p>Solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction.</p>
<p>Count forwards and backwards in ones, tens and hundreds</p> <p>Know place value of two and three digit numbers (hundred, tens, ones)</p> <p>To be able to add/subtract multiples of 10 and adjust</p> <p>To be able to add/subtract multiples of 100 and adjust</p> <p>To know how to partition numbers in different ways</p>	<p>Know place value of two and three digit numbers (hundred, tens, ones)</p> <p>Read and write numbers up to 1000</p> <p>Recognise '0' as a place holder</p> <p>Add and subtract using a number line</p> <p>Follow school's calculation policy</p>	<p>Recognise and use the inverse relationship between addition and subtraction and use this to check calculations</p> <p>Round a two digit number to the nearest 10.</p> <p>Know that 0-4 rounds down and 5-9 rounds up</p> <p>Know which digit to look at when rounding</p> <p>Round a three digit number to the nearest 10</p> <p>Round a three digit number to the nearest 100</p>	<p>Read the question and identify the relevant information.</p> <p>Recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems.</p> <p>Understand and use vocabulary associated with addition and subtraction</p>

Year 4 Number - Addition and Subtraction

<p>Add and subtract numbers with up to 4 digits using the formal written methods of columnar addition and subtraction where appropriate</p>	<p>Estimate and use inverse operations to check answers to a calculation</p>	<p>Solve addition and subtraction 2-step problems in context deciding which operations and methods to use and why</p>
<p>Can add/subtract TO and TO: mentally and written</p> <p>Can add/subtract HTO and O: mentally and written</p> <p>Can add/subtract HTO and TO: mentally and written</p> <p>Can add/subtract HTO and HTO: mentally and written</p> <p>Add/subtract ThHTO and O/TO/HTO/ThHTO: mentally and written</p> <p>Children to decide whether to apply written and mental strategies</p>	<p>Can round numbers to the nearest 10, 100 or 1000 to estimate</p> <p>Understand that addition is the inverse of subtraction and vice versa</p> <p>Know how to calculate the inverse - which numbers to use!!</p>	<p>Read the question and identify relevant information.</p> <p>Can solve missing number problems</p> <p>Can solve problems using number facts and/or place value</p> <p>Present problems and children to explain mathematical thinking using the correct vocabulary</p> <p>Recognise whether the answer is appropriate in the given context</p>

COMPARING AND ESTIMATING					
Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Compare, describe and solve practical problems for: <ul style="list-style-type: none"> * lengths and heights [e.g. long/short, longer/shorter, tall/short, double/half] * mass/weight [e.g. heavy/light, heavier than, lighter than] * capacity and volume [e.g. full/empty, more than, less than, half, half full, quarter] * time [e.g. quicker, slower, earlier, later] 	Compare and order lengths, mass, volume/capacity and record the results using >, < and =		Estimate, compare and calculate different measures, including money in pounds and pence (also included in Measuring)	Calculate and compare the area of squares and rectangles including using standard units, square centimetres (cm ²) and square metres (m ²) and estimate the area of irregular shapes (also included in measuring) Estimate volume (e.g. using 1 cm ³ blocks to build cubes and cuboids) and capacity (e.g. using water)	Calculate, estimate and compare volume of cubes and cuboids using standard units, including centimetre cubed (cm ³) and cubic metres (m ³), and extending to other units such as mm ³ and km ³ .
Sequence events in chronological order using language [e.g. before and after, next, first, today, yesterday, tomorrow, morning, afternoon and evening]	Compare and sequence intervals of time	Compare durations of events, for example to calculate the time taken by particular events or tasks			
		Estimate and read time with increasing accuracy to the nearest minute; record and compare time in terms of seconds, minutes, hours and o'clock; use vocabulary such as a.m./p.m., morning, afternoon, noon and midnight (appears also in Telling the Time)			

MEASURING and CALCULATING					
Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Measure and begin to record the following: * lengths and heights * mass/weight * capacity and volume * time (hours, minutes, seconds)	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	Measure, compare, add and subtract: lengths (m/cm/mm); mass (kg/g); volume/capacity (l/ml)	Estimate, compare and calculate different measures , including money in pounds and pence (appears also in Comparing)	Use all four operations to solve problems involving measure (e.g. length, mass, volume, money) using decimal notation including scaling.	Solve problems involving the calculation and conversion of units of measure , using decimal notation up to three decimal places where appropriate (appears also in Converting)
		Measure the perimeter of simple 2-D shapes	Measure and calculate the perimeter of a rectilinear figure (including squares) in centimetres and metres	Measure and calculate the perimeter of composite rectilinear shapes in centimetres and metres	Recognise that shapes with the same areas can have different perimeters and vice versa

MEASURING and CALCULATING

Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
<p>Recognise and know the value of different denominations of coins and notes</p>	<p>Recognise and use symbols for pounds (£) and pence (p); combine amounts to make a particular value</p>	<p>Add and subtract amounts of money to give change, using both £ and p in practical contexts</p>			
	<p>Find different combinations of coins that equal the same amounts of money</p>				
	<p>Solve simple problems in a practical context involving addition and subtraction of money of the same unit, including giving change</p>				
			<p>Find the area of rectilinear shapes by counting squares</p>	<p>Calculate and compare the area of squares and rectangles including using standard units, square centimetres (cm²) and square metres (m²) and estimate the area of irregular shapes</p>	<p>Calculate the area of parallelograms and triangles</p>
				<p><i>recognise and use square numbers and cube numbers, and the notation for squared (²) and cubed (³)</i> (copied from Multiplication and Division)</p>	<p>Calculate, estimate and compare volume of cubes and cuboids using standard units, including cubic centimetres (cm³) and cubic metres (m³), and extending to other units [e.g. mm³ and km³].</p>
					<p>Recognise when it is possible to use formulae for area and volume of shapes</p>

TELLING THE TIME

Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Tell the time to the hour and half past the hour and draw the hands on a clock face to show these times.	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.	Tell and write the time from an analogue clock, including using Roman numerals from I to XII, and 12-hour and 24-hour clocks	Read, write and convert time between analogue and digital 12 and 24-hour clocks (appears also in Converting)		
Recognise and use language relating to dates, including days of the week, weeks, months and years	Know the number of minutes in an hour and the number of hours in a day. (appears also in Converting)	Estimate and read time with increasing accuracy to the nearest minute; record and compare time in terms of seconds, minutes, hours and o'clock; use vocabulary such as a.m./p.m., morning, afternoon, noon and midnight (appears also in Comparing and Estimating)			
			Solve problems involving converting from hours to minutes; minutes to seconds; years to months; weeks to days (appears also in Converting)	Solve problems involving converting between units of time	

CONVERTING

Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
	Know the number of minutes in an hour and the number of hours in a day. (appears also in Telling the Time)	Know the number of seconds in a minute and the number of days in each month, year and leap year	Convert between different units of measure (e.g. kilometre to metre; hour to minute)	Convert between different units of metric measure (e.g. kilometre and metre; centimetre and metre; centimetre and millimetre; gram and kilogram; litre and millilitre)	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
			Read, write and convert time between analogue and digital 12 and 24-hour clocks	Solve problems involving converting between units of time	Solve problems involving the calculation and conversion of units of measure, using decimal notation up to three decimal places where appropriate (appears also in Measuring and Calculating)
			Solve problems involving converting from hours to minutes; minutes to seconds; years to months; weeks to days (appears also in Telling the Time)	Understand and use equivalences between metric units and common imperial units such as inches, pounds and pints	Convert between miles and kilometres

Year 1 Measurement

Compare, describe and solve practical problems.	Measure and begin to record.	Recognise and know the value of different denominations of coins and notes.	Sequence events in chronological order.	Recognise and use language relating to dates, including days of the week, weeks, months and years.	Tell the time to the hour and half past the hour.
<p>Know basic vocabulary linked to length, mass capacity and time.</p> <p>Look at an object and describe using related vocabulary to length, capacity, mass or time.</p> <p>Look at 2 different objects and say something similar or different relating to length, capacity, mass or time.</p> <p>Put objects in order of height, length, weight, capacity or time.</p>	<p>Say which object is heavier or lighter, longer or shorter.</p> <p>Measure using non-standard objects.</p> <p>Know why you need standard units of measurement.</p> <p>Match the correct measuring tool to the subject being measured.</p> <p>Read scales knowing you start at zero using rulers, scales and containers.</p>	<p>Recognise and name individual coins and notes.</p> <p>Order coins and notes in order of value.</p> <p>Know the value of each coin and exchange equal values.</p>	<p>Put pictures of events in time order.</p> <p>Know and use words before and after and link to everyday events.</p>	<p>Know names and order of days of the week.</p> <p>Know months of the year and their order.</p> <p>Answer questions related to days and months. E.g. when is your birthday? What day do we do P.E. on?</p>	<p>Look at clocks and describe what they can see. E.g. hands.</p> <p>Know the position of the hands for o'clock.</p> <p>Know clock is divided into halves and relate to half past.</p> <p>Know how to draw the hands on the clock and record the time in words.</p>

Year 2 Measure

<p>Choose and use appropriate standard units to estimate and measure length/height in any direction (m/cm); mass (kg/g); temperature ($^{\circ}\text{C}$); capacity (litres/ml) to the nearest appropriate unit, using rulers, scales, thermometers and measuring vessels Compare and order lengths, mass, volume/capacity and record the results using $>$, $<$ and $=$</p>	<p>Recognise and use symbols for pounds (£) and pence (p); combine amounts to make a particular value</p> <p>Find different combinations of coins that equal the same amounts of money</p> <p>Solve simple problems in a practical context involving addition and subtraction of money of the same unit, including giving change</p>	<p>Compare and sequence intervals of time</p> <p>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</p> <p>Know the number of minutes in an hour and the number of hours in a day.</p>
<p>Opportunities for the direct comparison of objects for length, weight and capacity.</p> <p>Offer children a range eg. Big light box and small heavy toy. Children should not associate size directly with weight.</p> <p>Use standard and non-standard units to measure mass and capacity.</p> <p>Identify suitable measuring instruments eg. Be able to explain why it would not be appropriate to use a ruler to measure the classroom etc.</p> <p>Know that the starting point needs to be the same when beginning to measure.</p> <p>Understand that numbers appear on a scale and</p>	<p>Can give a value to each value of coin/note.</p> <p>Can combine amounts to make a given value.</p> <p>Can investigate to find different ways to make same amounts using different coin combinations.</p> <p>Recognise landmark numbers, e.g., 10s, 100s etc.</p> <p>Estimate and place nos. on a number line or grid</p> <p>Relate to money in number contexts e.g.</p> <p>Bridge the 10's in context eg: pence</p>	<p>Use a right angle checker in investigation tasks.</p> <p>Understand angle as a measurement of turn. Eg turn 2 right angles = half link angles of turn to analogue clocks.</p> <p>Make whole turns, half turns and quarter turns. Use a time line (number line) to order familiar events. Be able to use ordinal numbers in context eg: I have my breakfast first and then I go to school. Use ordinal numbers to label events.</p> <p>Use a number line to work out time intervals.</p> <p>Understand the relationship between units</p>

<p>that this shows how much, how long,</p> <p>Choose and use a range of measuring instruments.</p> <p>Read scales to the nearest labelled division eg the book is nearly 15 cms long.</p> <p>Begin to make sensible estimates in relation to familiar units eg. The book is about 25 cms not 2 metres.</p> <p>Begin to use a wider range of measures.</p> <p>Know that the starting point needs to be the same when beginning to measure.</p> <p>Understand that numbers appear on a scale and that this shows how much, how long,</p> <p>Use a range of number lines in different orientations including semi - circle and ask children to read and place numbers on.</p> <p>Use a range of number lines including those with only landmark numbers marked.</p> <p>Read scales to the nearest labelled division.</p> <p>Draw and measure lines of different lengths.</p>	<p>pounds, etc</p> <p>Apply to £-Bridge 10 Bridge 100</p> <p>Word problems involving money, eg, calculate the change from £5 when we buy 5 oranges at 35-p each.</p>	<p>of time.</p> <p>Count in steps of 5 and relate to minutes on an analogue clock.</p> <p>Use word problems to provide a context for time</p> <p>Read the time to the hour, half hour and quarter hour.</p>
---	--	---

Year 3 Measure

<p>Measure, compare, add and subtract: lengths (m/cm/mm); mass (kg/g); volume/capacity (l/ml).</p>	<p>Measure the perimeter of simple 2-D shapes.</p>	<p>Add and subtract amounts of money to give change, using both £ and p in practical contexts.</p>	<p>Tell and write the time from an analogue clock, including using Roman numerals from I to XII, and 12-hour and 24-hour clocks.</p>
<p>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.</p> <p>To understand more than, less than and equal to.</p> <p>To understand equivalent measures.</p> <p>Understand which measuring tools are appropriate and to use them correctly.</p>	<p>To understand the term perimeter.</p> <p>Understand which measuring tools are appropriate and to use them correctly.</p> <p>To recognise 2d shapes.</p>	<p>To recognise all coins and notes</p> <p>To recognise and use symbols for pounds (£) and pence (p);</p> <p>To add money to make a particular amount</p> <p>To find different combinations of coins that equal the same amounts of money</p> <p>To solve simple money problems involving addition and subtraction of money of the same unit, including giving change</p> <p>To understand how to use a number line for addition and subtraction.</p> <p>Bonds to 10 and 100.</p>	<p>To tell and write the time to five minutes, including quarter past/to the hour</p> <p>To draw the hands on a clock face to show above times</p> <p>Children expected to begin to tell time from a 12 hour digital clock to prepare for telling the time from a 24 hour digital clock in Year 4</p>

Year 3 Measure

Know the number of seconds in a minute and the number of days in each month, year and leap year	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	Compare durations of events [for example to calculate the time taken by particular events or tasks].
To know the number of minutes in an hour and the number of hours in a day. To know the months of the year and how many months are in a year To know the seasons of the year	To tell and write the time to five minutes	To know the number of minutes in an hour. To use a number line to count on or find the difference

Year 4 Measure

Convert between different units of measure (e.g. kilometre to metre; hour to minute).	Measure and calculate the perimeter of a rectilinear figure (including squares) in centimetres and metres.	Find the area of rectilinear shapes by counting squares.	Estimate, compare and calculate different measures, including money in pounds and pence.	Read, write and convert time between analogue and digital 12 and 24 hour clocks.	Solve problems involving converting from hours to minutes; minutes to seconds; years to months; weeks to days.
<p>Understand the relationship between units of length, capacity, mass. eg ml and litres, cm and metres, grams and kgs</p> <p>Know the meaning of kilo, centi and milli.</p> <p>Understand equivalence eg 1.3mtrs is the same as 1 metre 300 cms and 1300 cms.</p> <p>Know the conversions of 24 hours to a day; 60 minutes to an hour; 60 seconds to a minute</p>	<p>Rectilinear shapes = bounded or formed by straight lines and meet at right angles</p> <p>Accurately draw rectangles and other simple shapes.</p> <p>Measure and calculate the perimeters in cm and m</p>	<p>Begin to understand area as a measure of surface.</p> <p>Find area by counting squares.</p> <p>Use a grid to draw shapes with straight lines and calculate the areas by counting squares.</p> <p>Begin to understand the connection between counting squares and cm^2</p> <p>Relate to multiplication and arrays</p>	<p>Understand vocabulary estimate, compare</p> <p>Visualise the different quantities of measure eg how much does the bucket hold compared to a small bottle?</p>	<p>Understand about am and pm.</p> <p>Be aware of analogue, 12 and 24 hour clocks and use notation</p> <p>Read digital clocks</p> <p>Read time to the nearest minute.</p> <p>Convert time between analogue and digital</p>	<p>Calculate time intervals that don't cross the hour</p> <p>Calculate time intervals that cross over the hour</p> <p>Use a calendar for longer time intervals. eg: the 17th July 2009 is a Friday what day will be the 6th August?</p>

Year 5 Measure

Convert units of measurement for length, weight & capacity.	Understand and use approximate equivalences between metric units and common imperial units such as inches, pounds and pints.	Measure & calculate the perimeter of composite rectilinear shapes in cm & m.	Calculate & compare the area of rectangles (including squares) and including standard units, square cm and square m. Estimate area of irregular shapes.	Estimate volume and capacity.
<p>To Know that 1000m = 1km 100cm = 1m 10mm = 1cm 1000g = 1kg 1000ml = 1l</p> <p>To change mm into cm & vice versa</p> <p>To change cm into mm & vice versa</p> <p>To change mm into cm & vice versa</p> <p>To change g into kg & vice versa</p> <p>To change ml into l & vice versa</p> <p>To apply knowledge of \times & \div by 10, 100, 1000</p>	<p>To know the imperial terms: Inches - length Pounds - weight Pints - capacity</p> <p>To know that 1 inch = 2.5cm</p> <p>To know that 1 pound = approx. 450g</p> <p>To know that 1 pint = approx. $\frac{1}{2}$ litre</p>	<p>To know perimeter is distance around the outside of a shape.</p> <p>Calculate perimeter of rectangles</p> <p>Calculate perimeter of composite shapes.</p> <p>Use knowledge of perimeter to find unknown lengths.</p> <p>Use algebraic equations to express perimeter.</p>	<p>To know what the area of a shape is measuring.</p> <p>Use formula Length \times Width to find out area of a shape.</p> <p>Use cm^2 and m^2 as unit of measurement.</p> <p>Use scale drawings</p>	<p>To know what volume is.</p> <p>To estimate the volume of different shapes.</p> <p>Use 1 cm^3 blocks to build cuboids to investigate volume.</p> <p>To know what capacity is.</p> <p>To investigate capacity of different containers.</p> <p>To use knowledge of capacity to estimate capacity of different containers.</p>

Year 5 Measure

To solve problems involving converting between units of time.

To use all 4 operations to solve problems involving measure (length, mass, volume & money) using decimal notation, including scaling.

To read the question and highlight key information.

Use a variety of word and practical problems.

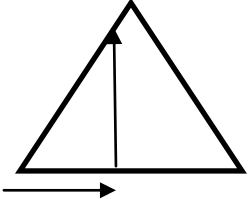
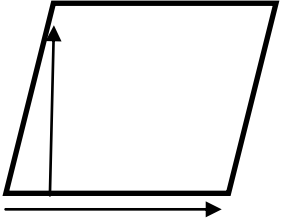
To know the conversions of time:

60 secs = 1 min

60 mins = 1 hr

24 hrs = 1 day

Year 6 Measure

<p>Calculate, estimate and compare volume of cubes and cuboids using standard units, including centimetre cubed (cm^3) and cubic metres (m^3), and extending to other units such as mm^3 and km^3.</p>	<p>Solve problems involving the calculation and conversion of units of measure, using decimal notation up to three decimal places where appropriate.</p>	<p>Recognise that shapes with the same areas can have different perimeters and vice versa.</p>	<p>Calculate the area of parallelograms and triangles.</p>
<p>Understand the difference between volume and capacity.</p> <p>Understand that it is 3D.</p> <p>Understand and use units of measure.</p> <p>Know how to calculate volume</p> <p>Be able to compare.</p>	<p>Use units of measure such as kg to g and litres to ml.</p> <p>Apply to real life context.</p> <p>Apply all four operations reliably.</p>	<p>Understand the difference between area and perimeter.</p> <p>How to calculate area and perimeter.</p> <p>How the same area can give different shapes.</p> <p>As well as same perimeter through a different shape will give a different area.</p>	<p>Area of a triangle = $\frac{1}{2}$ base x height</p>  <p>Area of a Parallelogram = height x length</p> 

Year 6 Measure

<p>Recognise when it is possible to use formulae for area and volume of shapes.</p>	<p>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.</p>	<p>Solve problems involving the calculation and conversion of units of measure, using decimal notation up to three decimal places where appropriate .</p>	<p>Convert between miles and kilometres.</p>
<p>Apply formulae when needed.</p> <p>Length x Height x Depth</p>	<p>Know use and convert measures.</p> <p>Multiplying and dividing by 10, 100, 1000.</p>	<p>Know standard units of measure and apply to problem solving and reasoning activities.</p> <p>Multiplying and dividing by 10, 100, 1000.</p>	<p>Know 1.609344 (Perhaps 1.6) Km equals 1 mile.</p> <p>Be able to multiply and divide by 1.6.</p>

POSITION, DIRECTION AND MOVEMENT					
Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Describe position, direction and movement, including half, quarter and three-quarter turns.	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) Compass points (N, E, W, S)	Use mathematical vocabulary to describe position, direction and movement including distinguishing between rotation as a turn and in terms of quarters and eighths of a turn (clockwise and anti-clockwise) Compass points (NW, NE, SW, SE)	Describe positions on a 2-D grid as coordinates in the first quadrant	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	Describe positions on the full coordinate grid (all four quadrants)
			Describe movements between positions as translations of a given unit to the left/right and up/down		
			Plot specified points and draw sides to complete a given polygon (in first quadrant)		Plot specified points and draw sides to complete a given polygon (in all four quadrants)
PATTERN					
	Order and arrange combinations of mathematical objects in patterns and sequences				

IDENTIFYING SHAPES AND THEIR PROPERTIES					
Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Recognise and name common 2-D and 3-D shapes, including: * 2-D shapes [e.g. rectangles (including squares), circles and triangles] * 3-D shapes [e.g. cuboids (including cubes), pyramids and spheres].	Identify and describe the properties of 2-D shapes, including the number of sides and line symmetry in a vertical line	Revise from Y2 (drip) identify and describe the properties of 2-D shapes, including the number of sides and line symmetry in a vertical line identify and describe the properties of 3-D shapes, including the number of edges, vertices and faces identify 2-D shapes on the surface of 3-D shapes, [for example, a circle on a cylinder and a triangle on a pyramid]	Identify lines of symmetry in 2-D shapes presented in different orientations	Identify 3-D shapes, including cubes and other cuboids, from 2-D representations	Recognise, describe and build simple 3-D shapes, including making nets (appears also in Drawing and Constructing)
	Identify and describe the properties of 3-D shapes, including the number of edges, vertices and faces				Illustrate and name parts of circles, including radius, diameter and circumference and know that the diameter is twice the radius
	Identify 2-D shapes on the surface of 3-D shapes, [for example, a circle on a cylinder and a triangle on a pyramid]				
DRAWING AND CONSTRUCTING					
Use modelling materials to experiment in making 2D shapes.	Use modelling materials to make 2D shapes.	Draw 2-D shapes and make 3-D shapes using modelling materials; recognise 3-D shapes in different orientations and describe them	Complete a simple symmetric figure with respect to a specific line of symmetry	Draw given angles, and measure them in degrees ($^{\circ}$)	Draw 2-D shapes using given dimensions and angles
					Recognise, describe and build simple 3-D shapes, including making nets (appears also in Identifying Shapes and Their Properties)

COMPARING AND CLASSIFYING					
Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
	Compare and sort common 2-D and 3-D shapes and everyday objects	Revise from Y3 (drip) compare and sort common 2-D and 3-D shapes and everyday objects	Compare and classify geometric shapes, including quadrilaterals and triangles, based on their properties and sizes	Use the properties of rectangles to deduce related facts and find missing lengths and angles Distinguish between regular and irregular polygons based on reasoning about equal sides and angles	Compare and classify geometric shapes based on their properties and sizes and find unknown angles in any triangles, quadrilaterals, and regular polygons
ANGLES					
		Recognise angles as a property of shape or a description of a turn		Know angles are measured in degrees: estimate and compare acute, obtuse and reflex angles	
		Identify right angles, recognise that two right angles make a half-turn, three make three quarters of a turn and four a complete turn; identify whether angles are greater than or less than a right angle	Identify acute and obtuse angles and compare and order angles up to two right angles by size	Identify: * angles at a point and one whole turn (total 360°) * angles at a point on a straight line and $\frac{1}{2}$ a turn (total 180°) * other multiples of 90°	Recognise angles where they meet at a point, are on a straight line, or are vertically opposite, and find missing angles
		Identify horizontal and vertical lines and pairs of perpendicular and parallel lines	Identify horizontal and vertical lines and pairs of perpendicular and parallel lines (in new shapes)	Revise (drip) identify horizontal and vertical lines and pairs of perpendicular and parallel lines (in new shapes)	Revise (drip) identify horizontal and vertical lines and pairs of perpendicular and parallel lines (in new shapes)

Year 1 Geometry

Shape - Recognise and name common 2-D and 3D shapes.

Position and Direction - Describe position, directions and movements, including half, quarter and three-quarter turns

Name 2D shapes such as square and circle.

Use positional words to describe where an object is

Name 3D shapes such as cube and sphere. Name shapes in any orientation or size.

Understand terms clockwise and anti-clockwise when making turns in relation to themselves and objects.

Know that shapes such as triangles do not always look the same.

Make turns including quarter, half and $\frac{3}{4}$ turns using objects and also relate these to clocks

Link 2 and 3-D shapes to common objects.

Program robot to make turns.

<p>Identify and describe the properties of 2-D shapes, including the number of sides and line symmetry in a vertical line.</p>	<p>Identify and describe the properties of 3-D shapes, including the number of edges, vertices and faces.</p>	<p>Identify 2-D shapes on the surface of 3-D shapes [for example, a circle on a cylinder and a triangle on a pyramid].</p>	<p>Compare and sort common 2-D and 3-D shapes and everyday objects.</p>
<p>Use everyday language to describe properties of 2D shapes (sides, corners, straight, curved) Know names of 2D shapes: circle, triangle, square, rectangle, hexagon, pentagon, octagon.</p> <p>Opportunities to identify shapes from pictures (moving from concrete to the abstract).</p> <p>Present shapes in different orientations. Recognise that the same shape can be different sizes.</p> <p>Make shapes using pinboards including regular and irregular shapes. Draw shapes using square or dotted paper, including regular and irregular shapes.</p> <p>Understand the vocabulary <i>reflective</i> and <i>symmetry</i>.</p> <p>Be able to use a mirror to identify symmetry in 2 D shapes. Draw the reflection. Be able to draw a line on a shape and recognise that both sides are the same. Construct simple patterns which have reflective symmetry e.g. patterns on a butterfly wing or on squared paper.</p>	<p>Use everyday language to describe properties of 3D shapes (faces, edges, vertices, flat, curved)</p> <p>Know names of 3D shapes: cube, cuboid, pyramid, sphere, cone, cylinder.</p> <p>Opportunities to identify shapes from pictures (moving from concrete to the abstract).</p> <p>Present shapes in different orientations.</p> <p>Make shapes using blocks, polydron etc.</p>	<p>Begin to understand the differences between 2D and 3D shapes.</p>	<p>Sort 2D shapes according to a single criterion - eg: shapes which have a straight side, shapes with a right angle.</p> <p>Sort 3D shapes or objects according to a single criterion - eg: shapes which have at least 1 square face, shapes that will roll.</p> <p>Sort using Venn and Carroll diagrams.</p>

Year 2 Geometry - Position and Direction

Order and arrange combinations of mathematical objects in patterns and sequences.

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).

Make patterns and sequences with real objects, numbers etc.

Develop a sequence/pattern. Give another child instructions on how to build a model.

Use ordinal numbers to describe the position of an object in a row e.g. the third in the line

Respond to and use positional language

Respond to and use directional language

Describe the position of an object

Understand the concept of turn.

Distinguish between left and right and clockwise and anti - clockwise.

Use when giving directions

Use a programmable toy and include turns and straight lines.

Give directions to other children e.g. In PE.

Use directions to 'find the treasure'

Use barrier games.

Relate a right angle to a quarter turn.

Know that half a turn would have 2 right angles.

Know that a full turn would have 4 right angles.

Know that three-quarter turns would have 3 right angles

Identify right angles in 2D shapes and in the classroom.

Use a right angle checker in their work.

Year 3 Geometry - Shape

<p>Draw 2-D shapes and make 3-D shapes using modelling materials; recognise 3-D shapes in different orientations and describe them.</p>	<p>Recognise angles as a property of shape or a description of a turn.</p>	<p>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.</p>	<p>Identify horizontal and vertical lines and pairs of perpendicular and parallel lines.</p>
<p>Identify and describe the properties of 2-D shapes, including the number of sides and line symmetry in a vertical line.</p> <p>Identify and describe the properties of 3-D shapes, including the number of edges, vertices and faces.</p> <p>Identify 2-D shapes on the surface of 3-D shapes [for example, a circle on a cylinder and a triangle on a pyramid] compare and sort common 2-D and 3-D shapes and everyday objects.</p>	<p>To use mathematical vocabulary to describe position, direction and movement, including movement in a straight line.</p> <p>To distinguish between rotation as a turn and in terms of right angles for quarter, half and three-quarter turns (clockwise and anti-clockwise).</p>	<p>To recognise a right angle</p>	<p>To recognise a right angle</p>

Year 4 Geometry - Shape

<p>Compare and classify geometric shapes, including quadrilaterals and triangles, based on their properties and sizes.</p>	<p>Identify acute and obtuse angles and compare and order angles up to two right angles by size.</p>	<p>Identify lines of symmetry in 2-D shapes presented in different orientations.</p>	<p>Complete a simple symmetric figure with respect to a specific line of symmetry.</p>
<p>Name, describe, draw and sort regular and irregular polygons using a range of properties.</p> <p>Use Venn and Carroll diagrams to sort shapes according to defined criteria.</p> <p>Use shape vocabulary accurately, including side, polygon, diagonal, regular, irregular, common.</p> <p>Know correct names of triangles (isosceles, equilateral, scalene).</p> <p>Know names of quadrilaterals including parallelogram, rhombus, trapezium.</p>	<p>Know vocabulary - acute, obtuse</p> <p>Know acute is less than a right angle</p> <p>Know that obtuse is more than a right angle but less than a straight line angle (2 right angles).</p> <p>Order angles by size.</p> <p>Know and use a protractor.</p>	<p>Understand what symmetry is</p> <p>Find lines of symmetry by folding shapes</p> <p>Understand how to use a mirror line - vertical, horizontal, diagonal (lines not always touching or dissecting the pattern/shape)</p>	<p>Draw symmetrical patterns using a variety of media</p>

Year 4 Geometry - position and direction

Describe positions on a 2-D grid as coordinates in the first quadrant.	Describe movements between positions as translations of a given unit to the left/right and up/down.	Plot specified points and draw sides to complete a given polygon.
<p>Understand coordinates</p> <p>Give coordinates for objects within a grid</p> <p>Use knowledge of co-ordinates to describe position of shapes.</p> <p>Know the first quadrant and x and y points</p>	<p>Physically translate shapes horizontally or vertically.</p> <p>Explain translations</p>	<p>Draw a shape on a quadrant grid given 2 co-ordinates.</p>

Year 5 Geometry

<p>Identify 3-D shapes, including cubes and other cuboids, from 2-D representations</p>	<p>Know angles are measured in degrees: estimate and compare acute, obtuse and reflex angles</p>	<p>Draw given angles, and measure them in degrees (o)</p>	<p>Identify: -angles at a point and one whole turn (total 360°) -angles at a point on a straight line and $\frac{1}{2}$ a turn (total 180°) -other multiples of 90°</p>	<p>Use the properties of rectangles to deduce related facts and find missing lengths and angles</p>	<p>Distinguish between regular and irregular polygons based on reasoning about equal sides and angles.</p>
<p>Understand the difference between 3-D and 2-D.</p> <p>Know the language needed for 2D and 3D vocabulary.</p>	<p>Know known facts i.e. what a reflex angle is.</p> <p>Use easy angles such as 90° to interpret 50° would be $\frac{1}{2}$ of 90°.</p>	<p>Read a protractor.</p> <p>Recognise and know what an angle is.</p> <p>Draw accurately with a ruler.</p> <p>Interpret scales</p>	<p>Multiples of 9 and therefore 90.</p> <p>Understand clockwise and anticlockwise</p> <p>180° is the sum of the angles on a straight line.</p> <p>Know what a quarter, half and $\frac{3}{4}$ represent.</p>	<p>Know that a rectangle has right angles as corners and they're 90°</p> <p>Understand the interior angles add up to 360°</p> <p>That a rectangle has sets of parallel lines which can be paired in length.</p> <p>Apply the facts of a rectangle to any problem.</p>	<p>Understand the interior angles is connected to the amount of sides. Know how to work this out.</p> <p>Distinguish what regular is.</p> <p>Written and verbal reasoning in sentences using technical vocabulary.</p>

Year 6 Geometry - Shape

<p>Draw 2-D shapes using given dimensions and angles</p>	<p>Recognise, describe and build simple 3-D shapes, including making nets</p>	<p>Compare and classify geometric shapes based on their properties and sizes and find unknown angles in any triangles, quadrilaterals, and regular polygons</p>	<p>Illustrate and name parts of circles, including radius, diameter and circumference and know that the diameter is twice the radius</p>	<p>Recognise angles where they meet at a point, are on a straight line, or are vertically opposite, and find missing angles.</p>
<p>Know 2D shape properties (interior angles, sides, length)</p> <p>Measure and draw angles accurately using a protractor</p>	<p>Understand technical language of 3D shape</p> <p>Understand properties of 2D and 3D shape.</p> <p>Accurately measure angles</p> <p>Use practical equipment to concrete knowledge.</p>	<p>Understand properties of shape (angles, no. of sides)</p> <p>Know angles on a straight line</p> <p>Know interior angles for each shape</p> <p>Apply knowledge of different shapes where explanation in technical language must be accurate</p>	<p>Understand radius, diameter and circumference</p> <p>$D=2r$</p>	<p>Know perpendicular and parallel lines</p> <p>Understand angles on a straight line equal 180°</p> <p>Understand that a full rotation is 360°</p> <p>Apply previous knowledge of shape.</p>

Year 6 Geometry - Position and Direction

Describe positions on the full coordinate grid (all four quadrants)

Draw and translate simple shapes on the coordinate plane and reflect them in the axes.

Understand how to read co-ordinates

Draw accurately with a ruler

Understand shape and their properties

Use tracing paper (flip, turn and move)

Be able to explain the position of new shape.

Use mirror lines as an axis.

MULTIPLICATION & DIVISION FACTS					
Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Count in multiples of twos, fives and tens (copied from Number and Place Value)	Count in steps of 2, 3, and 5 from 0, and in tens from any number, forward or backward (copied from Number and Place Value)	Count from 0 in multiples of 4, 8, 50 and 100 (copied from Number and Place Value)	Count in multiples of 6, 7, 9, 25 and 1 000 (copied from Number and Place Value)	Count forwards or backwards in steps of powers of 10 for any given number up to 1 000 000 (copied from Number and Place Value)	Count in decimal steps
	Recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers	Recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables	Recall multiplication and division facts for multiplication tables up to 12×12	Use multiplication and division facts (12×12) to be able to multiply and divide multiples of 10.	Use multiplication and division facts (12×12) to derive decimal multiplication and division facts.
MENTAL CALCULATION					
		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 (appears also in Written Methods)	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	Multiply and divide numbers mentally drawing upon known facts	Perform mental calculations, including with mixed operations and large numbers
	Show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot	Show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot	Recognise and use factor pairs and commutativity in mental calculations (appears also in Properties of Numbers)	Multiply and divide whole numbers and those involving decimals by 10, 100 and 1000	Associate a fraction with division and calculate decimal fraction equivalents (e.g. 0.375) for a simple fraction (e.g. $\frac{3}{8}$) (copied from Fractions)

WRITTEN CALCULATION

Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
	Calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication (\times), division (\div) and equals (=) signs	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 (appears also in Mental Methods)	Multiply two-digit and three-digit numbers by a one-digit number using formal written layout	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	Multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication
	<p>To represent division as repeated subtraction</p> <p>To record division calculations with remainders using a number line ($TO \div O$)</p>	<p>To record division calculations with remainders using a number line ($TO \div O$) ($HTO \div O$)</p>	<p>To record division calculations using formal written method with remainders ($HTO \div O$)</p>	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	Divide numbers up to 4-digits by a two-digit whole number using the formal written method of short division where appropriate for the context 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
					<p><i>Use written division methods in cases where the answer has up to two decimal places (copied from Fractions (including decimals))</i></p>

PROPERTIES OF NUMBERS: MULTIPLES, FACTORS, PRIMES, SQUARE AND CUBE NUMBERS

Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
			Recognise and use factor pairs and commutativity in mental calculations (repeated)	Identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers. Know and use the vocabulary of prime numbers, prime factors and composite (non-prime) numbers Establish whether a number up to 100 is prime and recall prime numbers up to 19	Identify common factors, common multiples and prime numbers <i>use common factors to simplify fractions; use common multiples to express fractions in the same denomination</i> (copied from Fractions)
				Recognise and use square numbers and cube numbers, and the notation for squared (2) and cubed (3)	<i>Calculate, estimate and compare volume of cubes and cuboids using standard units, including centimetre cubed (cm^3) and cubic metres (m^3), and extending to other units such as mm^3 and km^3</i> (copied from Measures)

ORDER OF OPERATIONS					
Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
					Use their knowledge of the order of operations to carry out calculations involving the four operations
INVERSE OPERATIONS, ESTIMATING AND CHECKING ANSWERS					
		<i>Estimate the answer to a calculation and use inverse operations to check answers (copied from Addition and Subtraction)</i>	<i>Estimate and use inverse operations to check answers to a calculation (copied from Addition and Subtraction)</i>	<i>Estimate and use inverse operations to check answers to a calculation (copied from Addition and Subtraction)</i>	Use estimation to check answers to calculations and determine, in the context of a problem, levels of accuracy

PROBLEM SOLVING

Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
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	solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts	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	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	solve problems involving multiplication and division including using their knowledge of factors and multiples, squares and cubes	solve problems involving addition, subtraction, multiplication and division
				solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign	
				solve problems involving multiplication and division, including scaling by simple fractions and problems involving simple rates	<i>solve problems involving similar shapes where the scale factor is known or can be found</i> <i>(copied from Ratio and Proportion)</i>

Year 1 Number - Multiplication and Division

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.

Can group objects into equal groups and share an amount into equal groups.

Derive and recall doubles and halves amounts up to 20.

Link doubles to making 2 equal groups.

Link halves and quarters to sharing

Make different arrays with the same amount of objects.

Year 2 Number - Multiplication and Division

<p>Recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers.</p>	<p>Calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication (\times), division (\div) and equals (=) signs</p>	<p>Show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot</p>	<p>Solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts.</p>
<p>Counting in steps of 2, 5 and 10</p> <p>Combining and counting equal groups</p> <p>Make links to repeated addition</p> <p>Representing as arrays and jumps on a number line. Recall 2, 10 and 5 \times tables</p> <p>Understand the terms 'groups of' / 'grouping'</p> <p>Make links to repeated subtraction (or addition)</p> <p>Facts about multiples of 2, 5, 10</p> <p>Say multiples and pick out multiples from a set (recognise pattern of last digits)</p>	<p>To be able to use the symbols \times, = and \div when working with objects</p> <p>To be able to use the symbols \times, = and \div when interpreting and recording number sentences involving multiplication and division.</p>	<p>Describe an array in 2 ways such as</p> <p style="text-align: center;">* * * *</p> <p style="text-align: center;">* * * *</p> <p style="text-align: center;">$2 \times 4 = 8$</p> <p style="text-align: center;">$4 \times 2 = 8$</p> <p>Recognise from arranging arrays that multiplication can be done in any order. Introduce the word commutative.</p>	<p>To be able to represent repeated addition as an array (or via Numicon/Cuisenaire)</p> <p>To be able to represent division as repeated subtraction (or addition) through use of a no. line or Cuisenaire.</p> <p>To use practical resources to explain strategy used for multiplication and division</p> <p>To be able to use informal written methods for multiplication and division</p> <p>To record division calculations with remainders ($TU \div U$)</p> <p>To demonstrate understanding of how to calculate the value of an unknown number in a \times or \div number sentence.</p> <p>Use \times knowledge to solve problems.</p>

Year 3 Number - Multiplication & Division

<p>Recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables</p>	<p>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</p>	<p>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.</p>	<p>Estimate the answer to a calculation and inverse operations to check.</p>
<p>Understand that division is the inverse of multiplication and vice versa</p> <p>Recall and use multiplication and division facts for the 2 times table</p> <p>Recognise odd and even numbers</p> <p>Show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot</p>	<p>Use the multiplication (\times), division (\div) and equals ($=$) signs</p> <p>To partition two digit numbers</p> <p>Show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot</p> <p>To use a number line ($TO\div O$)</p> <p>($HTO\div O$) with Remainder</p>	<p>Solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts.</p> <p>Understanding vocabulary associated with multiplication and division</p>	<p>Understand inverse operation and be confident in giving sensible answer.</p> <p>Be able to use appropriate written calculation strategies.</p>

Year 4 Number - Multiplication and Division

<p>Recall multiplication and division facts for multiplication tables up to 12 x 12</p>	<p>Use place value, known and derived facts to multiply and divide mentally, including: multiplying by zero and 1; dividing by 1; multiplying together three numbers</p>	<p>Recognise and use factor pairs and commutatively in mental calculations</p>	<p>Multiply 2 digit and 3-digit numbers by a 1 digit number using formal written layout</p>	<p>Solve problems involving multiplying and adding, using the distributive law to multiply 2 digit numbers by 1 digit, integer scaling problems and harder correspondence problems such as n objects are connected to m objects</p>	<p>Use inverse to estimate/check answers to a calculation</p>
<p>Know times tables up to 12x12</p> <p>Know related division facts for each table</p> <p>Use arrays to develop skills with a visual link</p>	<p>Use known facts to calculate mentally larger multiplication and division calculations e.g. $20 \times 3 = 60$ or $20 \times 30 = 600$ derived from $2 \times 3 = 6$; $600 \div 3 = 200$ derived from $6 \div 3 = 2$</p> <p>know multiplying by zero = 0</p> <p>know that $n \times 1 = n$</p>	<p>Understand that \times and \div are inverse and use in calculating</p> <p>Derive all linked \times and \div facts for a set of numbers, e.g., $6 \times 5 = 30$, $5 \times 6 = 30$, $30 \div 5 = 6$, $30 \div 6 = 5$ - blockbuster games and arithmagons</p> <p>Use arrays and diagrams to derive \times facts and secure understanding of \times</p>	<p>Refer to calculation policy of school</p> <p>To use formal written layout to divide $TO \div O$ $HTO \div O$ With remainders</p>	<p>Refer to calculation policy of school</p> <p>Simple one step problems involving \times and \div, where answers are not always whole numbers</p>	<p>Understand inverse operation and be confident in giving sensible answer.</p> <p>Be able to use appropriate written calculation strategies</p>

Year 5 Number - Multiplication and Division

Identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers.	Know and use the vocabulary of prime numbers, prime factors and composite (non-prime) numbers	Establish whether a number up to 100 is prime and recall prime numbers up to 19	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	Multiply and divide numbers mentally drawing upon known facts	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
<p>To understand the vocabulary for multiple and factor and what this means.</p> <p>To know tables to 12x12 and inverse operations - division</p> <p>To use knowledge of tables to identify multiples of any number.</p> <p>To be able to identify factor pairs and what this means.</p> <p>To work</p>	<p>To know that a prime number only has two factors, 1 and itself.</p> <p>To find and investigate prime numbers by applying knowledge of factors.</p> <p>To know that a prime factor is a factor of a number that is also a prime number.</p> <p>To know that any</p>	<p>Apply knowledge of factors to find prime numbers. To work systematically</p> <p>Be able to recite the prime number pattern up to 19.</p>	<p>Apply knowledge of place value to multiplication e.g. $2 \times 4 = 8$ $20 \times 4 = 80$ $200 \times 4 = 800$ $2000 \times 4 = 8000$</p> <p>Apply the above knowledge to formal written methods. Short Multiplication: $TO \times O$ $HTO \times O$ $ThHTO \times O$</p> <p>Long Multiplication $TO \times TO$</p>	<p>To know tables to 12x12 and inverse operations - division</p> <p>Apply knowledge of multiplication and division facts.</p> <p>Apply place value to support mental calculation with larger numbers.</p>	<p>Be able to apply knowledge of division strategies.</p> <p>Apply knowledge of mental methods to support formal written methods.</p> <p>Short Division: $TO \div O$ $HTO \div O$ $ThHTO \div O$ $TO \div TO$ $HTO \div TO$</p> <p>Long Division: $TO \div TO$ $HTO \div TO$</p>

<p>systematically to find all factors of a number.</p> <p>Be able to understand what makes a common factor.</p> <p>Find common factors of 2 or more numbers.</p>	<p>number other than 1 is either a prime number or a composite number (not a prime)</p>		<p>$H \times T \times O$ $T \times H \times O \times T \times O$</p>		<p>$T \times H \times T \times O \div T \times O$</p> <p>Understand what is meant by a remainder.</p> <p>Understand the role of a remainder within a context, whether to round up or down.</p>
--	---	--	---	--	---

Year 6 Number – Multiplication and Division

<p>Count in decimal steps.</p>	<p>Use multiplication and division facts (12x12) to derive decimal multiplication and division facts.</p>	<p>Perform mental calculations, including with mixed operations and large numbers.</p>	<p>Solve problems involving addition, subtraction, multiplication and division.</p>	<p>Multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication.</p>	<p>Divide numbers up to 4-digits by a two-digit whole number using the formal written method of short division where appropriate for the context 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.</p>
<p>Apply knowledge of previous counting in multiples to decimal steps eg 6, 12, 18 0.6, 1.2, 1.8 0.06, 0.12, 0.18 0.006, 0.012, 0.018</p>	<p>Apply knowledge of multiplication and division facts to decimals eg $0.7 \times 3 = 2.1$ $0.07 \times 3 = 0.21$ and apply inverse operation.</p>	<p>To apply mental strategies confidently in all four operations and work on developing increasing complexity.</p>	<p>Apply methods for all four operations to a range of multi-step problems.</p> <p>Make decisions to reason why they have chosen a particular method.</p> <p>Develop the use of efficient methods.</p>	<p>Apply knowledge of different strategies of multiplication accurately.</p>	<p>Choose appropriate division method.</p> <p>Know and use formal written methods of division.</p> <p>Understand remainders within context of the problem.</p> <p>Be able to convert remainders into fractions and round if necessary.</p>

<p>Use their knowledge of the order of operations to carry out calculations involving the four operations.</p>	<p>Use estimation to check answers to calculations and determine, in the context of a problem, levels of accuracy.</p>	<p>Associate a fraction with division and calculate decimal fraction equivalents (e.g. 0.375) for a simple fraction (e.g. $\frac{3}{8}$). (copied from Fractions)</p>	<p>Calculate, estimate and compare volume of cubes and cuboids using standard units, including centimetre cubed (cm^3) and cubic metres (m^3), and extending to other units such as mm^3 and km^3. (copied from Measures)</p>	<p>Solve problems involving similar shapes where the scale factor is known or can be found. (copied from Ratio and Proportion)</p> <p>Use written division methods in cases where the answer has up to two decimal places. (copied from Fractions (including decimals))</p>	<p>Identify common factors, common multiples and prime numbers. Use common factors to simplify fractions; use common multiples to express fractions in the same denomination. (copied from Fractions)</p>
<p>BODMAS Brackets, orders, division, multiplication, addition, subtraction.</p> <p>Apply this to a range of examples and contexts.</p>	<p>Use knowledge of rounding and approximation to understand what a reasonable answer would be for a given problem.</p>				<p>Know what a common factor, common multiple and prime number is and be able to find them.</p>

COUNTING					
Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Count to and across 100, forwards and backwards, beginning with 0 or 1, or from any given number <i>Count using money</i>	<i>Count in fractions such as halves and quarters</i>	<i>Count in 10ths</i>	Count backwards through zero to include negative numbers <i>count in hundredths and decimals</i>	Interpret negative numbers in context, count forwards and backwards with positive and negative whole numbers, including through zero	Use negative numbers in context, and calculate intervals across zero
Count, read and write numbers to 100 in numerals; count in multiples of twos, fives and tens	Count in steps of 2, 3, and 5 from 0, and in tens from any number, forward or backward	Count from 0 in multiples of 4, 8, 50 and 100;	Count in multiples of 6, 7, 9, 25 and 1000	Count forwards or backwards in steps of powers of 10 for any given number up to 1000000	<i>Count forwards or backwards in steps of powers of 10 for any given number up to 1000000.</i>
Given a number, identify one more and one less	<i>10 more/less than any 2-digit numbers</i>	Find 10 or 100 more or less than a given number	Find 1000 more or less than a given number	<i>Find 10000 more or less than a given number</i>	<i>Find 1000000 more or less than a given number</i>
COMPARING NUMBERS					
Use the language of: equal to, more than, less than (fewer), most, least	Compare and order numbers from 0 up to 100; use <, > and = signs	Compare and order numbers up to 1000	Order and compare numbers beyond 1000 <i>Compare numbers with the same number of decimal places up to two decimal places</i> <i>(copied from Fractions)</i>	Read, write, order and compare numbers to at least 1 000 000 and determine the value of each digit	Read, write, order and compare numbers up to 10 000 000 and determine the value of each digit
IDENTIFYING, REPRESENTING AND ESTIMATING NUMBERS					
Identify and represent numbers using objects and pictorial representations including the number line	Identify, represent and estimate numbers using different representations, including the number line	Identify, represent and estimate numbers using different representations	Identify, represent and estimate numbers using different representations		

READING AND WRITING NUMBERS (including Roman Numerals)					
Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Read and write numbers from 1 to 20 in numerals and words.	Read and write numbers to at least 100 in numerals and in words	Read and write numbers up to 1000 in numerals and in words	Read and write numbers up to 10, 000 in numerals and in words	Read, write, order and compare numbers to at least 1 000 000 and determine the value of each digit (appears also in Comparing Numbers)	Read, write, order and compare numbers up to 10 000 000 and determine the value of each digit (appears also in Understanding Place Value)
		<i>Tell and write the time from an analogue clock, including using Roman numerals from I to XII, and 12-hour and 24-hour clocks</i> (copied from Measurement)		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.	
UNDERSTANDING PLACE VALUE					
Recognise the place value of each digit in a two-digit number (tens, ones) up to 20	Recognise the place value of each digit in a two-digit number (tens, ones)	Recognise the place value of each digit in a three-digit number (hundreds, tens, ones)	Recognise the place value of each digit in a four-digit number (thousands, hundreds, tens, and ones)	Read, write, order and compare numbers to at least 1 000 000 and determine the value of each digit	Read, write, order and compare numbers up to 10 000 000 and determine the value of each digit
			<i>Find the effect of dividing and multiplying a one- or two-digit number by 10 and 100, identifying the value of the digits in the answer as units, tenths and hundredths</i> (copied from Fractions)		

ROUNDING					
Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
			Round any number to the nearest 10, 100 or 1 000	Round any number up to 1 000 000 to the nearest 10, 100, 1 000, 10 000 and 100 000	Round any whole number to a required degree of accuracy
			<i>Round decimals with one decimal place to the nearest whole number</i> <i>(copied from Fractions)</i>	<i>Round decimals with two decimal places to the nearest whole number and to one decimal place</i> <i>(copied from Fractions)</i>	<i>Solve problems which require answers to be rounded to specified degrees of accuracy</i> <i>(copied from Fractions)</i>
PROBLEM SOLVING					
Use place value and number facts to solve problems	Use place value and number facts to solve problems	Solve number problems and practical problems involving these ideas.	Solve number and practical problems that involve all of the above and with increasingly large positive numbers	Solve number problems and practical problems that involve all of the above	Solve number and practical problems that involve all of the above

Year 1 Number and Place Value

Read and write numbers from 1 to 20 in numerals and words.	Given a number, identify one more and one less	Count to and across 100, forwards and backwards, beginning with 0 or 1, or from any given number	Identify and represent numbers using objects and pictorial representations including the number line, and use the language of: equal to, more than, less than (fewer), most, least	Count, read and write numbers to 100 in numerals; count in multiples of twos, fives and tens
<p>Recognise numbers in sequential order. (1-20 in digits and words)</p> <p>Recognise numbers out of sequence. (1-20 in digits and words)</p> <p>Write a given number when asked. (1-20 in digits)</p> <p>Write a given number after counting objects. (1-20 in digits).</p> <p>Know ordinal numbers Teen and ty numbers</p>	<p>Order sequential numbers then order random numbers</p> <p>Add 1 more to a group of objects and relate to counting on a 100 square or number line</p> <p>Take away 1 from a small group of objects and relate to counting on a 100 square or number line</p> <p>Identify number word after or number word before. 10 more/less</p>	<p>Rote counting forwards and backwards starting from different points</p> <p>Rote counting within decades and across decades</p>	<p>Count out the right amount of objects in response to written or spoken number</p> <p>Count a given group of objects using 1-1 correspondence</p> <p>Say which group of objects is more by comparing size of groups then using number line or 100 square etc</p> <p>Explain the relative value of numbers in comparison to another.</p> <p>Place value of numbers up to 20 in terms of tens and ones and zero as a place holder.</p>	<p>Read numbers to 100 in and out of context</p> <p>Write numbers to 100 in numerals in and out of context in and out of order</p> <p>Count objects in 2s using stress then skip counting</p> <p>Rote counting in 2s relate to patterns</p> <p>Count in 5s/10s looking at patterns</p> <p>Count objects such as straw bundles in 10s</p>

Year 2 Number and Place Value

Count in steps of 2, 3, and 5 from 0, and in tens from any number, forward or backward	Recognise the place value of each digit in a two-digit number (tens, ones)	Identify, represent and estimate numbers using different representations, including the number line	Compare and order numbers from 0 up to 100; use <, > and = signs	Read and write numbers to at least 100 in numerals and in words	Use place value and number facts to solve problems.
Being able to count in FNWS Being able to back backwards in BNWS Count in different steps from different starting points To identify if sequence is counting forwards or backwards in regular steps Forward number counting in 10s, 2s, 5s and 3s from 0. Count from any number in 10s forwards and backwards. Be able to state a number 10	To be able to group count accurately (<i>structured apparatus Numicon, unstructured - counters</i>) To be able to recognise the value of what each digit represents up to 100 To be able to partition 2 digit numbers up to 100 To be able to recombine 2 digit numbers up to 100 <i>make any 2 digit numbers with structured</i>	To be able to count with 1-1 correspondence. To be able to subitise regular and irregular patterns To be able to estimate a number of physical objects <i>eg. Given a jar of shells say that there are between 20 and 30.</i> To be able to estimate a number using visual cards To be able to use a number line confidently to position within a	Understanding of number sequence to 100 Use comparative vocabulary when comparing 2 numbers Say whether numbers are 'close together' or 'far apart' To be able to order consecutive numbers To be able to order within a decade To be able to order over a decade To be able to order non consecutive	Being able to count in FNWS Recognition of 2 and 3 digit numbers in figures Identify 2 and 3 digit numbers in figures and words To be able to write 2 and 3 digit numbers in figures and words up to 100	Count and explain how many altogether. Copy and continue a simple pattern made up of numbers or objects. Use mathematical vocabulary accurately to describe. <i>e.g. pick 3 digit cards and make all the 2-digit numbers you can and then order the numbers.</i>

<p>more/less than any given 2-digit number. To be able to count on a number line eg Counting stick. Scaled line, counting toy etc</p>	<p><i>apparatus eg cubes, Numicon, bead strings. Unstructured eg Straws.</i></p> <p>To be able to group non manipulative (dotty pictures) objects 5 and bit partition Partition 2 digit numbers in different ways e.g. $23 = 10 + 13$</p>	<p>decade to recognise which 10 the number is closest to To understand the rule 5 or more rounds up, 4 or less rounds down To know FNWS and BNWS within each decade</p>	<p>numbers To be able to place some missing numbers on a given number line eg Counting stick. Scaled line. Understand the vocabulary of more than and less than and use the symbols. < ></p> <p>To understand what the term odd and even means</p> <p>To recognise the pattern of odd and even</p>		
---	--	---	--	--	--

Year 3 Number, Place Value & Rounding

Read and write numbers up to 1000 in numerals and in words	Recognise the place value of each digit in a three-digit number (hundreds, tens, ones)	Find 10 or 100 more or less than a given number	Compare and order numbers up to 1000	Identify, represent and estimate numbers using different representations	Count from 0 in multiples of 4, 8, 50 and 100;	Solve number problems and practical problems involving these ideas.
<p>Read and write numbers up to 1000 in numerals and words</p> <p>Revise '0' as a place holder in 2 and 3 digit numbers</p>	<p>Know place value of three digit numbers (hundreds, tens, ones)</p> <p>Partition two and 3 digit numbers into hundreds, tens and ones</p> <p>To be able to recognise the value of what each digit represents up to 1000</p> <p>To be able to partition 3 digit numbers up to 1000</p> <p>To be able to recombine 2 and 3 digit numbers up to 1000.</p> <p>To partition numbers in different ways e.g. $46 = 30 + 16$</p> <p>Introduce place value grid for HTO</p>	<p>Find one, ten or hundred more or less from given number to up 1000</p> <p>Bridge 10 and 100</p> <p>Know place value of three digit numbers (hundreds, tens, ones)</p> <p>Count in 100s from any number</p>	<p>Compare and order numbers to 100</p> <p>Know place value of two, three and four digit numbers (hundred, tens, ones)</p> <p>Read and write numbers up to 1000</p> <p>Use $<$, $>$ and $=$ signs</p>	<p>Know place value of two and three digit numbers (hundreds, tens, ones)</p> <p>Partition two and three digit numbers into hundreds, tens and ones</p> <p>Represent amounts in different ways such as pictures, tally charts, diagrams, pictograms</p>	<p>Count forwards</p> <p>Count in steps of 1, 2, 3, 4, 5 8, 50 and 100</p> <p>Link 2, 4 and 8</p> <p>Link 50 and 100</p> <p>Understand odd and even numbers</p>	<p>Use place value and number facts to solve problems</p> <p>Solve number problems up to 1000 (999)</p>

Year 4 Number - Place Value

Count in multiples of 6, 7, 9, 25 and 1000	Find 1000 more or less than a given number	Count backwards through zero to include negative numbers	Recognise the place value of each digit in a four-digit number (thousands, hundreds, tens, and ones)	Order and compare numbers beyond 1000 up to 10,000
Count in multiples of 1, 2, 3, 4, 5, 6, 7, 8, 9	Understand place value up to 10000	Count backwards crossing the decade	Understand ThHTO	Compare and order numbers up to 10,000
Relate multiple of 3 to multiple of 6, multiple of 4 to multiple of 8	Find 1, 10, 100 & 1000 more/less up to 10,000	Understand a negative number SCIENCE link - temperature	Give value of each digit Partition numbers in different and more complex ways	Understand the place value of each digit
Identify patterns		Use of - in front of number to indicate negative numbers	Use place value grid for Thousands hundreds tens and ones Problem solve up to and beyond 10,000	Read numbers beyond 1,000 in both words and figures

Year 4 Number - Place Value


<p>Identify, represent and estimate numbers using different representations</p>	<p>Round any number to the nearest 10, 100 or 1000</p>	<p>Solve number and practical problems that involve all of the above and with increasingly large positive numbers</p>	<p>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</p>
<p>Represent amounts in different ways such as pictures, tally charts, diagrams, pictograms with numbers up to 10,000</p>	<p>Understand that numbers 0-4 round down and 5-9 round up</p> <p>Know that to round numbers to 100 - you look at the value of the 10's</p> <p>Know which digit to look at when rounding</p> <p>Know that to round numbers to 1,000 - you look at the value of the 100's</p> <p>Round a two digit number to the nearest 10.</p>	<p>Opportunities to solve practical problems involving number and measure</p> <p>Problems involving numbers up to and beyond 1,000 and less than 10,000</p>	<p>Understand the value of each roman numeral digit</p> <p>Find examples of Roman Numerals</p>

Year 5 Number - Place Value

Read, write, order and compare numbers to at least 1 000 000 and determine the value of each digit	Count forwards or backwards in steps of powers of 10 for any given number up to 1 000 000	Interpret negative numbers in context, count forwards and backwards with positive and negative whole numbers through zero	Round any number up to 1 000 000 to the nearest 10, 100, 1000, 10 000 and 100 000	Solve number problems and practical problems that involve all of the above	Read Roman numerals to 1000 (M) and recognise years written in Roman numerals.																					
<p>To understand the value of each digit in a number up to 1,000,000</p> <p>Use and understand a place value (grid/chart/line)</p> <p>Be able to read/say a number with up to 7 digits.</p> <p>Compare and order numbers with a different amount of digits.</p> <p>Arrange numbers in ascending/descending</p>	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 15%;"><i>One</i></td> <td style="width: 15%; text-align: center;">10^0</td> <td style="width: 70%;">1. "ten to the zero"</td> </tr> <tr> <td><i>ten</i></td> <td style="text-align: center;">10^1</td> <td>10. "ten to the one"</td> </tr> <tr> <td><i>hundred</i></td> <td style="text-align: center;">10^2</td> <td>100. "ten to the two"</td> </tr> <tr> <td><i>thousand</i></td> <td style="text-align: center;">10^3</td> <td>1,000. "ten to the three"</td> </tr> <tr> <td><i>ten thousand</i></td> <td style="text-align: center;">10^4</td> <td>10,000. "ten to the four"</td> </tr> <tr> <td><i>hundred thousand</i></td> <td style="text-align: center;">10^5</td> <td>100,000. "ten to the five"</td> </tr> <tr> <td><i>million</i></td> <td style="text-align: center;">10^6</td> <td>1,000,000. "ten to the six"</td> </tr> </table> <p>Understand a power of 10.</p>	<i>One</i>	10^0	1. "ten to the zero"	<i>ten</i>	10^1	10. "ten to the one"	<i>hundred</i>	10^2	100. "ten to the two"	<i>thousand</i>	10^3	1,000. "ten to the three"	<i>ten thousand</i>	10^4	10,000. "ten to the four"	<i>hundred thousand</i>	10^5	100,000. "ten to the five"	<i>million</i>	10^6	1,000,000. "ten to the six"	<p>To know that numbers extend beyond 0.</p> <p>To know the value of negative numbers - e.g. more/less greater/smaller</p> <p>Extend number sequences beyond 0. E.g. -2,-4, -6,</p> <p>Apply ideas to temperature/ money including Debt.</p>	<p>To understand the value of each digit.</p> <p>Understand the rule of rounding.</p> <p>To know which digit/s to look at when rounding to the nearest 10,100,1000, 10 000, 100 000.</p>	<p>Numbers up to 1,000,000</p> <p>Use fractions, decimals, money, time etc</p>	<p>Recap on Roman Numerals up to 100 (C)</p> <p>Learn the symbols for numerals that represent numbers to 1000.</p> <p>Interpret numbers written in numerals.</p> <p>Write the numeral for a</p>
<i>One</i>	10^0	1. "ten to the zero"																								
<i>ten</i>	10^1	10. "ten to the one"																								
<i>hundred</i>	10^2	100. "ten to the two"																								
<i>thousand</i>	10^3	1,000. "ten to the three"																								
<i>ten thousand</i>	10^4	10,000. "ten to the four"																								
<i>hundred thousand</i>	10^5	100,000. "ten to the five"																								
<i>million</i>	10^6	1,000,000. "ten to the six"																								

<p>order according to the digit value.</p> <p>Place significant numbers on a number line. Place other numbers correctly in relation to these.</p> <p>Be able to suggest a number larger/smaller (close/far) than a number with up to 7 digits.</p>					<p>number up to 4 digits.</p> <p>Match numbers with numerical digits to Roman Numerals.</p>
--	--	--	--	--	---

Year 6 Number – Place Value

Use negative numbers in context, and calculate intervals across zero	Read, write, order and compare numbers up to 10 000 000 and determine the value of each digit	Identify the value of each digit to three decimal places and multiply and divide numbers by 10, 100 and 1000 where the answers are up to three decimal places	Round any whole number to a required degree of accuracy	Solve number and practical problems that involve all of the above
<p>To know that numbers extend beyond 0.</p> <p>To know the value of negative numbers - e.g. more/less greater/smaller</p> <p>Extend number sequences beyond 0. E.g. -2,-4, -6,</p> <p>Apply ideas to temperature/ money? Debt.</p> <p>Use appropriate strategies to find differences that bridge zero.</p>	<p>To understand the value of each digit in a number up to 10,000,000</p> <p>Use and understand a place value (grid/chart/line)</p> <p>Be able to read/say a number with up to 8 digits.</p> <p>Compare and order numbers with a different amount of digits.</p> <p>Arrange numbers in ascending/descending order according to the digit value.</p> <p>Place significant numbers on a number line. Place other numbers correctly in relation to these.</p> <p>Be able to suggest a number larger/ smaller (close/far) than a number with up to 8 digits.</p>	<p>To know place value and what each digit represents up to thousandths.</p> <p>Understand the value of each of the places, HTO. 1/10,1/100,1/1000</p> <p>To know that the decimal point does not move.</p> <p>To understand that when a number is x 10, the digits physically move X10 = 1 place left X100 = 2 places left X1000 = 3 places left.</p> <p>÷10 = 1 place right ÷100 = 2 places right ÷1000 = 3 places right.</p> <p>Apply knowledge of place value to multiplication e.g. $2 \times 4 = 8$ $20 \times 4 = 80$ $200 \times 4 = 800$</p>	<p>To understand the value of each digit.</p> <p>Understand the rule of rounding.</p> <p>To know which digit/s to look at when rounding to the nearest 10, 100, 1000, 10 000, 100 000, 1000000.</p>	<p>See previous and apply in problems.</p> 

$$2000 \times 4 = 8000$$

Apply knowledge of place value to division e.g.

$$8 \div 4 = 2$$

$$8 \div 40 = 0.2$$

$$8 \div 400 = 0.02$$

$$8 \div 4000 = 0.002$$

POS Ratio and Proportion

Statements only appear in Year 6 but should be connected to previous learning, particularly fractions and multiplication and division

			Year 4	Year 5	Year 6
			Pupils are taught throughout that decimals and fractions are different ways of expressing numbers and proportions.	Pupils use multiplication and division as inverses to support the introduction of ratio in year 6, for example, by multiplying and dividing by powers of 10 in scale drawings or by multiplying and dividing by powers of a 1000 in converting between units such as kilometres and metres.	Solve problems involving the relative sizes of two quantities where missing values can be found by using integer multiplication and division facts
				Pupils should be taught throughout that percentages, decimals and fractions are different ways of expressing proportions.	Solve problems involving the calculation of percentages [for example, of measures, and such as 15% of 360] and the use of percentages for comparison
				They recognise that percentages are proportions of quantities as well as operators on quantities.	Solve problems involving similar shapes where the scale factor is known or can be found
					Solve problems involving unequal sharing and grouping using knowledge of fractions and multiples.

Year 4 Ratio and Proportion

Pupils are taught throughout that decimals and fractions are different ways of expressing numbers and proportions.

Understand vocabulary

To know that a fraction is a proportion of a whole

To know that a decimal is a fraction

Year 5 Ratio and Proportion

<p>Pupils use multiplication and division as inverses to support the introduction of ratio in year 6, for example, by multiplying and dividing by powers of 10 in scale drawings or by multiplying and dividing by powers of a 1000 in converting between units such as kilometres and metres.</p>	<p>Pupils should be taught throughout that percentages, decimals and fractions are different ways of expressing proportions.</p>	<p>They recognise that percentages are proportions of quantities as well as operators on quantities.</p>
<p>Understand to the power of 10</p> <p>Understand and use place value</p> <p>Solve simple ratio problems</p>	<p>Understand vocabulary</p> <p>To know that a fraction is a proportion of a whole</p> <p>To know that a decimal is a fraction</p> <p>To know that a percentage is a decimal and a fraction. To make relationship links between all three</p>	<p>To calculate percentages</p> <p>Understand vocabulary</p>

Year 6 Ratio and Proportion

<p>Solve problems involving the relative sizes of two quantities where missing values can be found by using integer multiplication and division facts</p>	<p>Solve problems involving the calculation of percentages (e.g. of measures) such as 15% of 360 and the use of percentages for comparison</p>	<p>Solve problems involving similar shapes where the scale factor is known or can be found</p>	<p>Solve problems involving unequal sharing or grouping using knowledge of fractions and multiples</p>
<p>Know multiplication and division facts</p> <p>Solve missing number problems relating to direct proportion</p> <p>Solve simple ratio problems</p>	<p>Know how to calculate a percentage of a quantity (with and without calculators)</p> <p>To convert percentages to decimals</p> <p>To convert percentages to fractions</p> <p>Solve problems</p>	<p>Understand scale as ratio notation</p> <p>Calculate simple scales (greater and smaller)</p> <p>Compare two shapes and find the simple scale factor</p>	<p>Compare parts of a whole quantity using fraction/decimal/percentage and ratio notation.</p>

COUNTING					
Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Count to and across 100, forwards and backwards, beginning with 0 or 1, or from any given number <i>Count using money</i>	<i>Count in fractions such as halves and quarters</i>	<i>Count in 10ths</i>	Count backwards through zero to include negative numbers <i>count in hundredths and decimals</i>	Interpret negative numbers in context, count forwards and backwards with positive and negative whole numbers, including through zero	Use negative numbers in context, and calculate intervals across zero
Count, read and write numbers to 100 in numerals; count in multiples of twos, fives and tens	Count in steps of 2, 3, and 5 from 0, and in tens from any number, forward or backward	Count from 0 in multiples of 4, 8, 50 and 100;	Count in multiples of 6, 7, 9, 25 and 1000	Count forwards or backwards in steps of powers of 10 for any given number up to 1000000	<i>Count forwards or backwards in steps of powers of 10 for any given number up to 1000000.</i>
Given a number, identify one more and one less	<i>10 more/less than any 2-digit numbers</i>	Find 10 or 100 more or less than a given number	Find 1000 more or less than a given number	<i>Find 10000 more or less than a given number</i>	<i>Find 1000000 more or less than a given number</i>
COMPARING NUMBERS					
Use the language of: equal to, more than, less than (fewer), most, least	Compare and order numbers from 0 up to 100; use <, > and = signs	Compare and order numbers up to 1000	Order and compare numbers beyond 1000 <i>Compare numbers with the same number of decimal places up to two decimal places</i> <i>(copied from Fractions)</i>	Read, write, order and compare numbers to at least 1 000 000 and determine the value of each digit	Read, write, order and compare numbers up to 10 000 000 and determine the value of each digit
IDENTIFYING, REPRESENTING AND ESTIMATING NUMBERS					
Identify and represent numbers using objects and pictorial representations including the number line	Identify, represent and estimate numbers using different representations, including the number line	Identify, represent and estimate numbers using different representations	Identify, represent and estimate numbers using different representations		

READING AND WRITING NUMBERS (including Roman Numerals)					
Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Read and write numbers from 1 to 20 in numerals and words.	Read and write numbers to at least 100 in numerals and in words	Read and write numbers up to 1000 in numerals and in words	Read and write numbers up to 10, 000 in numerals and in words	Read, write, order and compare numbers to at least 1 000 000 and determine the value of each digit (appears also in Comparing Numbers)	Read, write, order and compare numbers up to 10 000 000 and determine the value of each digit (appears also in Understanding Place Value)
		<i>Tell and write the time from an analogue clock, including using Roman numerals from I to XII, and 12-hour and 24-hour clocks</i> (copied from Measurement)		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.	
UNDERSTANDING PLACE VALUE					
Recognise the place value of each digit in a two-digit number (tens, ones) up to 20	Recognise the place value of each digit in a two-digit number (tens, ones)	Recognise the place value of each digit in a three-digit number (hundreds, tens, ones)	Recognise the place value of each digit in a four-digit number (thousands, hundreds, tens, and ones)	Read, write, order and compare numbers to at least 1 000 000 and determine the value of each digit	Read, write, order and compare numbers up to 10 000 000 and determine the value of each digit
			<i>Find the effect of dividing and multiplying a one- or two-digit number by 10 and 100, identifying the value of the digits in the answer as units, tenths and hundredths</i> (copied from Fractions)		

ROUNDING					
Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
			Round any number to the nearest 10, 100 or 1 000	Round any number up to 1 000 000 to the nearest 10, 100, 1 000, 10 000 and 100 000	Round any whole number to a required degree of accuracy
			<i>Round decimals with one decimal place to the nearest whole number</i> <i>(copied from Fractions)</i>	<i>Round decimals with two decimal places to the nearest whole number and to one decimal place</i> <i>(copied from Fractions)</i>	<i>Solve problems which require answers to be rounded to specified degrees of accuracy</i> <i>(copied from Fractions)</i>
PROBLEM SOLVING					
Use place value and number facts to solve problems	Use place value and number facts to solve problems	Solve number problems and practical problems involving these ideas.	Solve number and practical problems that involve all of the above and with increasingly large positive numbers	Solve number problems and practical problems that involve all of the above	Solve number and practical problems that involve all of the above

Year 1 Number and Place Value

Read and write numbers from 1 to 20 in numerals and words.	Given a number, identify one more and one less	Count to and across 100, forwards and backwards, beginning with 0 or 1, or from any given number	Identify and represent numbers using objects and pictorial representations including the number line, and use the language of: equal to, more than, less than (fewer), most, least	Count, read and write numbers to 100 in numerals; count in multiples of twos, fives and tens
<p>Recognise numbers in sequential order. (1-20 in digits and words)</p> <p>Recognise numbers out of sequence. (1-20 in digits and words)</p> <p>Write a given number when asked. (1-20 in digits)</p> <p>Write a given number after counting objects. (1-20 in digits).</p> <p>Know ordinal numbers Teen and ty numbers</p>	<p>Order sequential numbers then order random numbers</p> <p>Add 1 more to a group of objects and relate to counting on a 100 square or number line</p> <p>Take away 1 from a small group of objects and relate to counting on a 100 square or number line</p> <p>Identify number word after or number word before. 10 more/less</p>	<p>Rote counting forwards and backwards starting from different points</p> <p>Rote counting within decades and across decades</p>	<p>Count out the right amount of objects in response to written or spoken number</p> <p>Count a given group of objects using 1-1 correspondence</p> <p>Say which group of objects is more by comparing size of groups then using number line or 100 square etc</p> <p>Explain the relative value of numbers in comparison to another.</p> <p>Place value of numbers up to 20 in terms of tens and ones and zero as a place holder.</p>	<p>Read numbers to 100 in and out of context</p> <p>Write numbers to 100 in numerals in and out of context in and out of order</p> <p>Count objects in 2s using stress then skip counting</p> <p>Rote counting in 2s relate to patterns</p> <p>Count in 5s/10s looking at patterns</p> <p>Count objects such as straw bundles in 10s</p>

Year 2 Number and Place Value

Count in steps of 2, 3, and 5 from 0, and in tens from any number, forward or backward	Recognise the place value of each digit in a two-digit number(tens, ones)	Identify, represent and estimate numbers using different representations, including the number line	Compare and order numbers from 0 up to 100; use <, > and = signs	Read and write numbers to at least 100 in numerals and in words	Use place value and number facts to solve problems.
<p>Being able to count in FNWS Being able to back backwards in BNWS Count in different steps from different starting points To identify if sequence is counting forwards or backwards in regular steps Forward number counting in 10s, 2s, 5s and 3s from 0. Count from any number in 10s forwards and backwards.</p>	<p>To be able to group count accurately <i>(structured apparatus Numicon, unstructured - counters)</i> To be able to recognise the value of what each digit represents up to 100 To be able to partition 2 digit numbers up to 100 To be able to recombine 2 digit numbers up to 100 <i>make any 2</i></p>	<p>To be able to count with 1-1 correspondence. To be able to subitise regular and irregular patterns To be able to estimate a number of physical objects <i>eg. Given a jar of shells say that there are between 20 and 30.</i> To be able to estimate a number using visual cards To be able to use a number line</p>	<p>Understanding of number sequence to 100 Use comparative vocabulary when comparing 2 numbers Say whether numbers are 'close together' or 'far apart' To be able to order consecutive numbers To be able to order within a decade To be able to order over a decade To be able to</p>	<p>Being able to count in FNWS Recognition of 2 and 3 digit numbers in figures Identify 2 and 3 digit numbers in figures and words To be able to write 2 and 3 digit numbers in figures and words up to 100</p>	<p>Count and explain how many altogether. Copy and continue a simple pattern made up of numbers or objects. Use mathematical vocabulary accurately to describe. <i>e.g. pick 3 digit cards and make all the 2-digit numbers you can and then order the numbers.</i></p>

<p>Be able to state a number 10 more/less than any given 2-digit number. To be able to count on a number line eg Counting stick. Scaled line, counting toy etc</p>	<p><i>digit numbers with structured apparatus eg cubes, Numicon, bead strings. Unstructured eg. Straws.</i></p> <p>To be able to group non manipulative (dotty pictures) objects 5 and bit partition Partition 2 digit numbers in different ways e.g. $23 = 10 + 13$</p>	<p>confidently to position within a decade to recognise which 10 the number is closest to To understand the rule 5 or more rounds up, 4 or less rounds down To know FNWS and BNWS within each decade</p>	<p>order non consecutive numbers To be able to place some missing numbers on a given number line eg Counting stick. Scaled line. Understand the vocabulary of more than and less than and use the symbols. $< >$</p> <p>To understand what the term odd and even means</p> <p>To recognise the pattern of odd and even</p>		
--	---	--	---	--	--

Year 3 Number, Place Value & Rounding

Read and write numbers up to 1000 in numerals and in words	Recognise the place value of each digit in a three-digit number (hundreds, tens, ones)	Find 10 or 100 more or less than a given number	Compare and order numbers up to 1000	Identify, represent and estimate numbers using different representations	Count from 0 in multiples of 4, 8, 50 and 100;	Solve number problems and practical problems involving these ideas.
<p>Read and write numbers up to 1000 in numerals and words</p> <p>Revise '0' as a place holder in 2 and 3 digit numbers</p>	<p>Know place value of three digit numbers (hundreds, tens, ones)</p> <p>Partition two and 3 digit numbers into hundreds, tens and ones</p> <p>To be able to recognise the value of what each digit represents up to 1000</p> <p>To be able to partition 3 digit numbers up to 1000</p> <p>To be able to recombine 2 and 3 digit numbers up to 1000.</p> <p>To partition numbers in different ways e.g. $46 = 30 + 16$</p> <p>Introduce place value grid for HTO</p>	<p>Find one, ten or hundred more or less from given number to up 1000</p> <p>Bridge 10 and 100</p> <p>Know place value of three digit numbers (hundreds, tens, ones)</p> <p>Count in 100s from any number</p>	<p>Compare and order numbers to 100</p> <p>Know place value of two, three and four digit numbers (hundred, tens, ones)</p> <p>Read and write numbers up to 1000</p> <p>Use $<$, $>$ and $=$ signs</p>	<p>Know place value of two and three digit numbers (hundreds, tens, ones)</p> <p>Partition two and three digit numbers into hundreds, tens and ones</p> <p>Represent amounts in different ways such as pictures, tally charts, diagrams, pictograms</p>	<p>Count forwards</p> <p>Count in steps of 1, 2, 3, 4, 5 8, 50 and 100</p> <p>Link 2, 4 and 8</p> <p>Link 50 and 100</p> <p>Understand odd and even numbers</p>	<p>Use place value and number facts to solve problems</p> <p>Solve number problems up to 1000 (999)</p>

Year 4 Number - Place Value

Count in multiples of 6, 7, 9, 25 and 1000	Find 1000 more or less than a given number	Count backwards through zero to include negative numbers	Recognise the place value of each digit in a four-digit number (thousands, hundreds, tens, and ones)	Order and compare numbers beyond 1000 up to 10,000
Count in multiples of 1, 2, 3, 4, 5, 6, 7, 8, 9	Understand place value up to 10000	Count backwards crossing the decade	Understand ThHTO	Compare and order numbers up to 10,000
Relate multiple of 3 to multiple of 6, multiple of 4 to multiple of 8	Find 1, 10, 100 & 1000 more/less up to 10,000	Understand a negative number SCIENCE link - temperature	Give value of each digit Partition numbers in different and more complex ways	Understand the place value of each digit
Identify patterns		Use of - in front of number to indicate negative numbers	Use place value grid for Thousands hundreds tens and ones Problem solve up to and beyond 10,000	Read numbers beyond 1,000 in both words and figures

Year 4 Number – Place Value


<p>Identify, represent and estimate numbers using different representations</p>	<p>Round any number to the nearest 10, 100 or 1000</p>	<p>Solve number and practical problems that involve all of the above and with increasingly large positive numbers</p>	<p>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</p>
<p>Represent amounts in different ways such as pictures, tally charts, diagrams, pictograms with numbers up to 10,000</p>	<p>Understand that numbers 0-4 round down and 5-9 round up</p> <p>Know that to round numbers to 100 - you look at the value of the 10's</p> <p>Know which digit to look at when rounding</p> <p>Know that to round numbers to 1,000 - you look at the value of the 100's</p> <p>Round a two digit number to the nearest 10.</p>	<p>Opportunities to solve practical problems involving number and measure</p> <p>Problems involving numbers up to and beyond 1,000 and less than 10,000</p>	<p>Understand the value of each roman numeral digit</p> <p>Find examples of Roman Numerals</p>

Year 5 Number - Place Value

<p>Read, write, order and compare numbers to at least 1 000 000 and determine the value of each digit</p>	<p>Count forwards or backwards in steps of powers of 10 for any given number up to 1 000 000</p>	<p>Interpret negative numbers in context, count forwards and backwards with positive and negative whole numbers through zero</p>	<p>Round any number up to 1 000 000 to the nearest 10, 100, 1000, 10 000 and 100 000</p>	<p>Solve number problems and practical problems that involve all of the above</p>	<p>Read Roman numerals to 1000 (M) and recognise years written in Roman numerals.</p>																					
<p>To understand the value of each digit in a number up to 1,000,000</p> <p>Use and understand a place value (grid/chart/line)</p> <p>Be able to read/say a number with up to 7digits.</p> <p>Compare and order numbers with a different amount of digits.</p> <p>Arrange numbers in ascending/descending order according to the digit value.</p>	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 15%;"><i>One</i></td> <td style="width: 15%; text-align: center;">10^0</td> <td style="width: 70%;">1. "ten to the zero"</td> </tr> <tr> <td><i>ten</i></td> <td style="text-align: center;">10^1</td> <td>10. "ten to the one"</td> </tr> <tr> <td><i>hundred</i></td> <td style="text-align: center;">10^2</td> <td>100. "ten to the two"</td> </tr> <tr> <td><i>thousand</i></td> <td style="text-align: center;">10^3</td> <td>1,000. "ten to the three"</td> </tr> <tr> <td><i>ten thousand</i></td> <td style="text-align: center;">10^4</td> <td>10,000. "ten to the four"</td> </tr> <tr> <td><i>hundred thousand</i></td> <td style="text-align: center;">10^5</td> <td>100,000. "ten to the five"</td> </tr> <tr> <td><i>million</i></td> <td style="text-align: center;">10^6</td> <td>1,000,000. "ten to the six"</td> </tr> </table> <p>Understand a power of 10.</p>	<i>One</i>	10^0	1. "ten to the zero"	<i>ten</i>	10^1	10. "ten to the one"	<i>hundred</i>	10^2	100. "ten to the two"	<i>thousand</i>	10^3	1,000. "ten to the three"	<i>ten thousand</i>	10^4	10,000. "ten to the four"	<i>hundred thousand</i>	10^5	100,000. "ten to the five"	<i>million</i>	10^6	1,000,000. "ten to the six"	<p>To know that numbers extend beyond 0.</p> <p>To know the value of negative numbers - e.g. more/less greater/smaller</p> <p>Extend number sequences beyond 0. E.g. -2,-4, -6,</p> <p>Apply ideas to temperature/ money including Debt.</p>	<p>To understand the value of each digit.</p> <p>Understand the rule of rounding.</p> <p>To know which digit/s to look at when rounding to the nearest 10,100,1000, 10 000, 100 000.</p>	<p>Numbers up to 1,000,000</p> <p>Use fractions, decimals, money, time etc</p>	<p>Recap on Roman Numerals up to 100 (C)</p> <p>Learn the symbols for numerals that represent numbers to 1000.</p> <p>Interpret numbers written in numerals.</p> <p>Write the numeral for a number up to 4 digits.</p>
<i>One</i>	10^0	1. "ten to the zero"																								
<i>ten</i>	10^1	10. "ten to the one"																								
<i>hundred</i>	10^2	100. "ten to the two"																								
<i>thousand</i>	10^3	1,000. "ten to the three"																								
<i>ten thousand</i>	10^4	10,000. "ten to the four"																								
<i>hundred thousand</i>	10^5	100,000. "ten to the five"																								
<i>million</i>	10^6	1,000,000. "ten to the six"																								

<p>Place significant numbers on a number line. Place other numbers correctly in relation to these.</p> <p>Be able to suggest a number larger/smaller (close/far) than a number with up to 7 digits.</p>					<p>Match numbers with numerical digits to Roman Numerals.</p>
---	--	--	--	--	---

Year 6 Number – Place Value

Use negative numbers in context, and calculate intervals across zero	Read, write, order and compare numbers up to 10 000 000 and determine the value of each digit	Identify the value of each digit to three decimal places and multiply and divide numbers by 10, 100 and 1000 where the answers are up to three decimal places	Round any whole number to a required degree of accuracy	Solve number and practical problems that involve all of the above
<p>To know that numbers extend beyond 0.</p> <p>To know the value of negative numbers - e.g. more/less greater/smaller</p> <p>Extend number sequences beyond 0. E.g. -2,-4, -6,</p> <p>Apply ideas to temperature/ money? Debt.</p> <p>Use appropriate strategies to find differences that bridge zero.</p>	<p>To understand the value of each digit in a number up to 10,000,000</p> <p>Use and understand a place value (grid/chart/line)</p> <p>Be able to read/say a number with up to 8 digits.</p> <p>Compare and order numbers with a different amount of digits.</p> <p>Arrange numbers in ascending/descending order according to the digit value.</p> <p>Place significant numbers on a number line. Place other numbers correctly in relation to these.</p> <p>Be able to suggest a number larger/ smaller (close/far) than a number with up to 8 digits.</p>	<p>To know place value and what each digit represents up to thousandths.</p> <p>Understand the value of each of the places, HTO. 1/10,1/100,1/1000</p> <p>To know that the decimal point does not move.</p> <p>To understand that when a number is x 10, the digits physically move X10 = 1 place left X100 = 2 places left X1000 = 3 places left.</p> <p>÷10 = 1 place right ÷100 = 2 places right ÷1000 = 3 places right.</p> <p>Apply knowledge of place value to multiplication e.g. $2 \times 4 = 8$ $20 \times 4 = 80$ $200 \times 4 = 800$</p>	<p>To understand the value of each digit.</p> <p>Understand the rule of rounding.</p> <p>To know which digit/s to look at when rounding to the nearest 10, 100, 1000, 10 000, 100 000, 1000000.</p>	<p>See previous and apply in problems.</p> 

$$2000 \times 4 = 8000$$

Apply knowledge of place value to division e.g.

$$8 \div 4 = 2$$

$$8 \div 40 = 0.2$$

$$8 \div 400 = 0.02$$

$$8 \div 4000 = 0.002$$

INTERPRETING, CONSTRUCTING AND PRESENTING DATA					
Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Interpret and construct simple pictograms and block graphs using practical equipment.	Interpret and construct simple pictograms, tally charts, block diagrams and simple tables	Interpret and present data using bar charts, pictograms and tables	Interpret and present discrete and continuous data using appropriate graphical methods, including bar charts and time graphs	Complete, read and interpret information in tables, including timetables	Interpret and construct pie charts and line graphs and use these to solve problems
Ask and answer simple questions by counting the number of objects in each category and sorting the categories by quantity	Ask and answer simple questions by counting the number of objects in each category and sorting the categories by quantity				
	Ask and answer questions about totalling and comparing categorical data				
SOLVING PROBLEMS					
		Solve one-step and two-step questions [e.g. 'How many more?' and 'How many fewer?'] using information presented in scaled bar charts and pictograms and tables.	Solve comparison, sum and difference problems using information presented in bar charts, pictograms, tables and other graphs.	Solve comparison, sum and difference problems using information presented in a line graph	Calculate and interpret the mean as an average

Year One Statistics-

Interpret and construct simple pictograms and block graphs using practical equipment.

Ask and answer simple questions by counting the number of objects in each category and sorting the categories by quantity

Use objects and pictures to create simple block graphs.

Present information simple graphs where one symbol or block represents one unit.

Use objects and pictures to create simple pictograms.

Understanding vocabulary such as sort, group, set.

Allow children to sort a range of objects and to decide their own criteria eg use a sorting jar with different objects in.

Respond to questions about how they sorted objects and why each object belongs in a set.

Respond to questions such as 'How many?' 'Which is the most/least?'

Year Two Statistics-

<p>Interpret and construct simple pictograms, tally charts, block diagrams and simple tables</p>	<p>Ask and answer simple questions by counting the number of objects in each category and sorting the categories by quantity</p>	<p>Ask and answer questions about totalling and comparing categorical data.</p>
<p>Collect a range of data.</p> <p>Record data as a list</p> <p>Record data as a table.</p> <p>Use objects and pictures to create simple block graphs.</p> <p>Present information in lists, tables and simple graphs where one symbol or block represents one unit.</p> <p>Use objects and pictures to create simple pictograms.</p> <p>Use block graphs and pictograms where one unit equals one and one unit equals more than one.</p>	<p>Understanding vocabulary such as sort, group, set, list, table, most common, most popular, least popular, least common.</p> <p>Allow children to sort a range of objects and to decide their own criteria eg use a sorting jar with different objects in.</p> <p>Respond to questions about how they sorted objects and why each object belongs in a set.</p> <p>Sort a given set of shapes using two criterion such as triangle/not triangle blue /not blue.</p> <p>Ask children to explain their reasons.</p> <p>Use graphs and tables etc which they have recorded to communicate their findings.</p>	<p>Enter data into a simple computer data base.</p> <p>Collect and sort data to test a simple hypothesis eg. Count a show of hands to test the hypothesis 'most children in our class are in bed by 7:30'</p> <p>Respond to questions about the data they have represented eg. How many of our names have five letters?</p> <p>Pose similar questions for others about their data</p>

Year 3 Statistics

Interpret and present data using bar charts, pictograms and tables

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.

Collect data, interpret and construct simple pictograms.

Collect data, interpret and construct simple tally charts.

Collect data, interpret and construct simple block diagrams.

Collect data, interpret and construct simple tables.

Construct and interpret simple Venn diagrams and Carroll diagrams.

To know which operation to use to solve a given problem

Ask and answer simple questions by counting the number of objects in each category and sorting the categories by quantity.

Ask and answer questions about totalling and comparing categorical data.

Year 4 Statistics

Interpret and present discrete and continuous data using appropriate graphical methods, including bar charts and time graphs	Solve comparison, sum and difference problems using information presented in bar charts, pictograms, tables and other graphs	To find the mode and range of data.
<p>Read /collate tally charts</p> <p>Draw/read and interpret bar charts/graphs</p> <p>Draw/read and interpret line graphs</p> <p>Draw/read and interpret pictogram scales</p> <p>Read a variety of different scales</p> <p>Changes over time</p>	<p>Understand the vocabulary of comparison, sum, difference</p> <p>Solve problems that involve two steps or more</p> <p>Find starting points and identify key information</p> <p>Understand how to read various tables</p>	<p>To know the vocabulary of mode/range.</p> <p>Find the mode of data.</p> <p>Find the range of data.</p>

Year 5 - Statistics

Complete, read and interpret information in tables, including timetables.	Solve comparison, sum and difference problems using information presented in a line graph	To find the mode, median, mean and range of data.
<p>Interpret the information required from tables from the headings/ labels, including Venn diagrams and Carroll diagrams.</p> <p>Gather the data to complete a table.</p> <p>Answer questions related to the data gathered.</p> <p>Be able to read 12hr and 24hr times.</p> <p>Give a time that a bus/train arrives at a particular station by interpreting a timetable.</p> <p>Be able to calculate intervals of time.</p> <p>Give times of a bus, if it comes every 25mins.</p>	<p>To understand the main differences between a bar chart and line graph.</p> <p>To be able to interpret the x and y axis of a graph.</p> <p>To understand that a line graph show continuous data.</p> <p>To recognise basic trends in a line graph.</p> <p>Be able to interpret a line graph - e.g. the temperature at particular times, explaining how they know.</p> <p>Be able to compare e.g. temperatures at different times.</p> <p>Identify an increase/ decrease of a given number?</p> <p>Look at a range of data presented in a few different ways, evaluate their effectiveness.</p> <p>Be able to explain which ones are appropriate and which ones are not and why.</p> <p>Make decisions about how to present a set of data they have, explaining and justifying their choices.</p>	<p>To know the vocabulary of mode/range/median/mean.</p> <p>Find the mode of data.</p> <p>Find the range of data.</p> <p>Find the median of data.</p> <p>Find the mean of data.</p>

Year 6 - Statistics

Interpret and construct pie charts and line graphs and use these to solve problems

Calculate and interpret the mean as an average.

Make decisions about how different types of data can be presented.

Consider the type of data that could be presented in a line graph.

Be able to interpret a pie chart.

Compare the different segments of a pie chart.

Interpret simple fractions of a pie chart - $\frac{1}{2}$, $\frac{1}{4}$, $\frac{3}{4}$, $\frac{1}{3}$ etc when the total amount represented is known.

Be able to answer questions related to both line graphs and pie charts by interpreting the representation.



Be able to explain what the mean is.

To explain what an average is and how and when it can be useful.

Give an example of when the mean of a set of data is useful.




Find the mean of a set of data.

When given the mean, suggest possible set of data. (Inverse working)

COUNTING IN FRACTIONAL STEPS					
Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
	<i>Pupils should count in fractions up to 10, starting from any number and using the 1/2 and 2/4 equivalence on the number line</i>	Count up and down in tenths	Count up and down in hundredths and tenths.	Count up and down in tenths, hundredths and thousandths.	Count up and down in whole number intervals, fractions, decimals and percentages.
RECOGNISING FRACTIONS					
Recognise, find and name a half as one of two equal parts of an object, shape or quantity	Recognise, find, name and write fractions $\frac{1}{3}$, $\frac{1}{4}$, $\frac{2}{4}$ and $\frac{3}{4}$ of a length, shape, set of objects or quantity	Recognise, find and write fractions of a discrete set of objects: unit fractions and non-unit fractions with small denominators	Recognise that hundredths arise when dividing an object by one hundred and dividing tenths by ten	Recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents (appears also in Equivalence)	
		Recognise that tenths arise from dividing an object into 10 equal parts and in dividing one – digit numbers or quantities by 10.			
Recognise, find and name a quarter as one of four equal parts of an object, shape or quantity		Recognise and use fractions as numbers: unit fractions and non-unit fractions with small denominators			
COMPARING FRACTIONS					
		Compare and order unit fractions, and fractions with the same denominators		Compare and order fractions whose denominators are all multiples of the same number	Compare and order fractions, including fractions >1

COMPARING DECIMALS					
Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
			Compare numbers with the same number of decimal places up to two decimal places	Read, write, order and compare numbers with up to three decimal places	Identify the value of each digit in numbers given to three decimal places
ROUNDING INCLUDING DECIMALS					
			Round decimals with one decimal place to the nearest whole number	Round decimals with two decimal places to the nearest whole number and to one decimal place	Solve problems which require answers to be rounded to specified degrees of accuracy
EQUIVALENCE (INCLUDING FRACTIONS, DECIMALS AND PERCENTAGES)					
	Write simple fractions e.g. $\frac{1}{2}$ of 6 = 3 and recognise the equivalence of $\frac{2}{4}$ and $\frac{1}{2}$.	Recognise and show, using diagrams, equivalent fractions with small denominators	Recognise and show, using diagrams, families of common equivalent fractions	Identify, name and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths	Use common factors to simplify fractions; use common multiples to express fractions in the same denomination
			Recognise and write decimal equivalents of any number of tenths or hundredths	Read and write decimal numbers as fractions (e.g. $0.71 = \frac{71}{100}$) Recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents	Associate a fraction with division and calculate decimal fraction equivalents (e.g. 0.375) for a simple fraction (e.g. $\frac{3}{8}$)
			Recognise and write decimal equivalents to $\frac{1}{4}$; $\frac{1}{2}$; $\frac{3}{4}$	Recognise the per cent symbol (%) and understand that per cent relates to "number of parts per hundred", and write percentages as a fraction with denominator 100 as a decimal fraction	Recall and use equivalences between simple fractions, decimals and percentages, including in different contexts.

ADDITION AND SUBTRACTION OF FRACTIONS					
Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
		Add and subtract fractions with the same denominator within one whole (e.g. $\frac{5}{7} + \frac{1}{7} = \frac{6}{7}$)	Add and subtract fractions with the same denominator	Add and subtract fractions with the same denominator and multiples of the same number Recognise mixed numbers and improper fractions and convert from one form to the other and write mathematical statements > 1 as a mixed number (e.g. $\frac{2}{5} + \frac{4}{5} = \frac{6}{5} = 1\frac{1}{5}$)	Add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions
MULTIPLICATION AND DIVISION OF FRACTIONS					
				Multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams	Multiply simple pairs of proper fractions, writing the answer in its simplest form (e.g. $\frac{1}{4} \times \frac{1}{2} = \frac{1}{8}$) Multiply one-digit numbers with up to two decimal places by whole numbers
					divide proper fractions by whole numbers (e.g. $\frac{1}{3} \div 2 = \frac{1}{6}$)

MULTIPLICATION AND DIVISION OF DECIMALS					
Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
					Multiply one-digit numbers with up to two decimal places by whole numbers
			Find the effect of dividing a one- or two-digit number by 10 and 100, identifying the value of the digits in the answer as ones, tenths and hundredths		Identify the value of each digit to three decimal places and multiply and divide numbers by 10, 100 and 1000 where the answers are up to three decimal places
					Use written division methods in cases where the answer has up to two decimal places
PROBLEM SOLVING					
Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
		Solve problems that involve all of the above	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	Solve problems involving numbers up to three decimal places	
			Solve simple measure and money problems involving fractions and decimals to two decimal places.	Solve problems which require knowing percentage and decimal equivalents of $\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{5}$,	

				$\frac{2}{5}, \frac{4}{5}$ and those with a denominator of a multiple of 10 or 25.	
--	--	--	--	--	--

Year 1 Fractions

Recognise, find and name a half as one of two equal parts of an object, shape or quantity.

Recognise, find and name a quarter as one of four equal parts of an object, shape or quantity.

To recognise a shape or amount has been shared into two equal parts.

To recognise a shape or amount has been shared into four equal parts.

To share an amount into two equal amounts.

To share an amount into four equal amounts.

To know half can be in different contexts e.g. length, money, time, etc.

To know a quarter can be in different contexts e.g. length, money, time, etc.

To read and write the word 'half' and the symbol.

To read and write the word 'quarter' and the symbol.

Year 2 Fractions

Recognise, find, name and write fractions $\frac{1}{3}$, $\frac{1}{4}$, $\frac{2}{4}$ and $\frac{3}{4}$ of a length, shape, set of objects or quantity

Write simple fractions for example, $\frac{1}{2}$ of 6 = 3 and recognise the equivalence of $\frac{2}{4}$ and $\frac{1}{2}$.

To have an understanding of one whole

To understand the term equal

To divide sets of objects to 20 into $\frac{1}{2}$ and $\frac{1}{4}$ s

To understand irregular shapes dividing into $\frac{1}{2}$ and $\frac{1}{4}$ eg cup of water, potato, piece of string.

To know a quarter is half a half. Understand that $\frac{3}{4}$ is made up of 3, one quarter parts.

To know that a third is sharing or dividing something into 3 equal parts.

Counting fractions up to ten from any number (Forwards and backwards).

Know how to write a fraction accurately.

Investigate and find how some fractions are equivalent e.g. $\frac{2}{4}$ and $\frac{1}{2}$. Use folding of shapes/ string / answers to calculations to show that they are the same.

Year 3 Fractions

<p>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.</p>	<p>Recognise, find and write fractions of a discrete set of objects: unit fractions and non-unit fractions with small denominators.</p>	<p>Recognise and use fractions as numbers: unit fractions and non-unit fractions with small denominators.</p>	<p>Recognise and show, using diagrams, equivalent fractions with small denominators.</p>
<p>Understand that fractions need to be equal parts</p> <p>Linking fractions to division, understanding for example that $8/10$ is actually 8 divided by 10.</p> <p>Start to recognise link between a tenth and 0.1 etc.</p>	<p>Recognise, find, name and write fractions $\frac{1}{3}$, $\frac{1}{4}$, $\frac{2}{4}$ and $\frac{3}{4}$ of a length, shape, set of objects or quantity</p> <p>Understand how to find one part by dividing and then multiplying to find given fraction.</p> <p>E.g. $\frac{3}{4}$ of 24</p>	<p>Know simple fractions of numbers for example $\frac{1}{2}$ of 6 = 3</p> <p>Link halving and doubling</p>	<p>To know that when the numerator and denominator are the same it is a whole one.</p> <p>Know simple equivalent fractions for example $\frac{2}{4}$ and $\frac{1}{2}$</p>

Year 3 Fractions

Add and subtract fractions with the same denominator within one whole [for example, $\frac{5}{7} + \frac{1}{7} = \frac{6}{7}$]	Compare and order unit fractions, and fractions with the same denominator	Solve problems that involve all of the previous.	
<p>Understand language associated with fractions.</p> <p>Addition can be done in any order, subtraction cannot.</p> <p>To have fast recall of addition and subtraction facts</p>	<p>To recognise simple fractions for example $\frac{1}{2}$ $\frac{1}{3}$ $\frac{1}{4}$ of shapes and numbers.</p> <p>Count in simple fractions up to 10 and position on a number line in halves and quarters forwards and backwards.</p>	<p>To know which operation to use to solve a word problem.</p> <p>To understand how division is related to fractions.</p>	

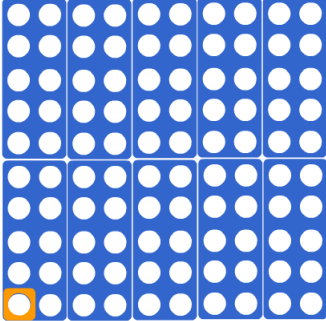
Year 4 Fractions

<p>Recognise and show, using diagrams, families of common equivalent fractions.</p>	<p>Count up and down in hundredths; recognise that hundredths arise when dividing an object by a hundred and dividing tenths by ten.</p>	<p>Solve problems involving increasingly harder fractions to calculate quantities, and fractions to divide quantities, including non-unit fractions where the answer is a whole number.</p>	<p>Add and subtract fractions with the same denominator.</p>	<p>Recognise and write decimal equivalents of any number of tenths or hundredths.</p>
<p>Understand vocabulary - fraction, equivalent Represent fractions in different shapes Build fraction walls Using fraction wall to find equivalent fractions</p>	<p>Can count forwards and backwards in 100th Understand how decimals and fractions are linked Know equivalent decimal and fraction 1/10th and 100th Use models and images including number lines. Make connections to division.</p>	<p>Non-unit fraction is any fraction where the numerator is greater than 1 Solve problems that involve fractions involving one or more steps Find quantities of numbers</p>	<p>Know that the denominator will stay the same each time To add and subtract numbers - including mixed numbers To convert mixed numbers to improper fractions and vice versa</p>	<p>Know equivalent decimal and fraction 1/10th and 100th Use models and images including number lines.</p>

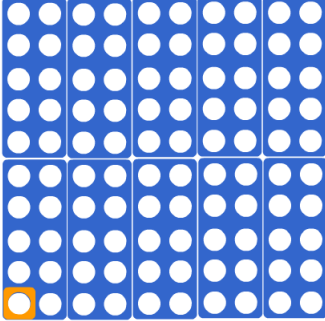

Year 4 Fractions

<p>Recognise and write decimal equivalents to $\frac{1}{4}$; $\frac{1}{2}$; $\frac{3}{4}$.</p>	<p>Find the effect of dividing a one- or two-digit number by 10 and 100, identifying the value of the digits in the answer as units, tenths and hundredths.</p>	<p>Round decimals with one decimal place to the nearest whole number.</p>	<p>Compare numbers with the same number of decimal places up to two decimal places.</p>	<p>Solve simple measure and money problems involving fractions and decimals to two decimal places.</p>
<p>Use calculator to find equivalent decimals Identify position on number line</p>	<p>Can give a value to each digit Recognise landmark numbers, e.g., 10s, 100s etc. Estimate and place nos. on a number line or grid Relate to contexts of Measure, money Recognise change of position of digits when $\times \div 10, 100$</p>	<p>Understand rounding numbers up and down</p>	<p>Understand place value to 100^{th} Relate to money, measure Compare different amounts of money</p>	<p>Solve problems involving one step in relation to money and measures</p>

Year 5 Fractions

Recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents.	Compare and order fractions whose denominators are all multiples of the same number.	Read, write, order and compare numbers with up to three decimal places.	Round decimals with two decimal places to the nearest whole number and to one decimal place.	Identify, name and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths.
<p>To know what a 10th, 100th and 1000th represents</p> <p>To understand a whole and how this is broken up.</p> <p>Understanding of place value and its relationship.</p> <p>To be able to link to decimal equivalents.</p> <p>e.g. $\frac{3}{100} = 0.03$ $\frac{56}{100} = 0.56$ $\frac{63}{1000} = 0.063$</p>	<p>To understand and know what a numerator and denominator are.</p> <p>To apply their knowledge of factors and multiples to fractions.</p> <p>To be able to find a lowest common multiple.</p> <p>To be able to find a lowest common multiple of a set of fractions using the denominators as a starting point.</p> <p>To be able to compare and order similar fractions</p> <p>e.g. $\frac{3}{5}, \frac{7}{10}, \frac{16}{25}$</p> <p>lowest common multiple equals 50, therefore</p> <p>$\frac{30}{50}, \frac{35}{50}, \frac{32}{50}$</p> <p>Reordered to</p> <p>$\frac{3}{5}, \frac{16}{25}, \frac{7}{10}$</p>	<p>To know what a 10th, 100th and 1000th represents</p> <p>To understand a whole and how this is broken up.</p> <p>Understanding of place value and its relationship.</p>	<p>To apply knowledge of the rules of rounding from previous year groups.</p> <p>Understanding of place value and its relationship.</p> <p>To be able to use and apply decimals in real life context eg money.</p>	 <p>Use visual representations to show fractions that are equivalent such as Numicon, 100 square, Cuisenaire, decimal square.</p> <p>$\frac{1}{100} = \frac{2}{200}$</p>

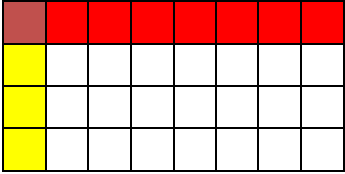
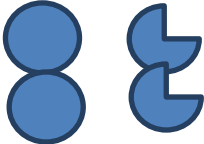
Year 5 Fractions

<p>Read and write decimal numbers as fractions (e.g. $0.71 = \frac{71}{100}$).</p>	<p>Recognise the per cent symbol (%) and understand that per cent relates to “number of parts per hundred”, and write percentages as a fraction with denominator 100 as a decimal fraction.</p>	<p>Add and subtract fractions with the same denominator and multiples of the same number.</p>	<p>Recognise mixed numbers and improper fractions and convert from one form to the other and write mathematical statements > 1 as a mixed number (e.g. $\frac{2}{5} + \frac{4}{5} = \frac{6}{5} = 1\frac{1}{5}$).</p>	<p>Multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams.</p>
<p>To know what a 10^{th}, 100^{th} and 1000^{th} represents To understand a whole and how this is broken up. Understanding of place value and its relationship. To be able to link to decimal equivalents. e.g. $\frac{3}{100} = 0.03$ $\frac{56}{100} = 0.56$ $\frac{63}{1000} = 0.063$</p>	 <p>Understand the relationships between fractions, decimals and percentages. $13\% = 0.13$</p>	<p>To know that when you add or subtract a fraction the denominator always stays the same. $\frac{2}{8} + \frac{4}{8} = \frac{6}{8}$</p>	<p>To know what a proper fraction, improper fraction and mixed number is. To know how to convert between improper fractions and mixed numbers.</p>	 <p>$5 \times 0.3 =$</p> <p>Use visual representations to show fractions that are equivalent such as Numicon, 100 square, Cuisenaire, decimal square.</p>

Year 6 Fractions

<p>Compare and order fractions, including fractions >1.</p>	<p>Identify the value of each digit in numbers given to three decimal places.</p>	<p>Solve problems which require answers to be rounded to specified degrees of accuracy.</p>	<p>Use common factors to simplify fractions; use common multiples to express fractions in the same denomination.</p>	<p>Associate a fraction with division and calculate decimal fraction equivalents (e.g. 0.375) for a simple fraction (e.g. $\frac{3}{8}$).</p>
<p>Understand decimal conversions. Know pictorially what the fraction would look like. Understand a whole. Understand improper fractions. Identify where on a number line the fraction would appear.</p>	<p>Understand tenths, hundredths and thousandths. Be able to order them explaining why.</p>	<p>Children know which column to look at when rounding. i.e. the one to the right. Know rounding rules. Understand that if the fraction equates to a half or more then it will be rounded to a whole.</p>	<p>Know factors and multiples as well as how they can be worked out. Be able to use knowledge to find same common denominator. Be able to order, add or subtract.</p>	<p>Understand and manipulate rules such as an eighth is a whole, halved, halved again and then again. Then be able to multiply this by three. Know the basic conversion of fractions and decimals (as well as inverse).</p>

Year 6 Fractions

<p>Recall and use equivalences between simple fractions, decimals and percentages, including in different contexts.</p>	<p>Add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions.</p>	<p>Multiply simple pairs of proper fractions, writing the answer in its simplest form (e.g. $\frac{1}{4} \times \frac{1}{2} = \frac{1}{8}$).</p>	<p>Multiply one-digit numbers with up to two decimal places by whole numbers.</p>	<p>Divide proper fractions by whole numbers (e.g. $\frac{1}{3} \div 2 = \frac{1}{6}$).</p>
<p>Know relationship between fractions, decimals and percentages.</p> <p>Be able to manipulate between each stage as to use whichever the child feels most confident.</p>	<p>Understand the concept of equivalent fraction starting with $\frac{1}{2}$ and $\frac{2}{4}$. Use pictures, decimals and percentages. Identify common denominators. Common denominator will stay the same. Only add or subtract numerator (The actual real life piece you have).</p>	<p>Multiplying a proper fraction by a proper fraction will end up with a smaller number.</p> <p>Use arrays to show how;</p>  <p>$\frac{1}{7} = \text{yellow}$ $\frac{1}{4} = \text{red}$ So $\frac{1}{4} \times \frac{1}{7} = \frac{1}{28} = \text{orange}$.</p>	<p>Understand the process pictorially. Know conversions between fractions and decimals. So 1 and $\frac{3}{4}$ multiplied by 2 can be shown pictorially and manipulated.</p>  <p>With decimals also represented so 2 lots of 1 and 2 lots of 0.75.</p>	<p>Show in as many different ways both pictorially and through real life experiences. In a division a denominator is actually multiplied by the whole number.</p>

Year 6 Fractions

<p>Identify the value of each digit to three decimal places and multiply and divide numbers by 10, 100 and 1000 where the answers are up to three decimal places.</p>	<p>Use written division methods in cases where the answer has up to two decimal places.</p>			
<p>Not moving decimal point or adding zeros. This will confuse when multiplying decimals later in education. Move up and down the columns. Children know the column names</p>	<p>Children understand that $\frac{1}{2}$ is actually dividing by 2. $\frac{1}{3}$ is dividing by 3. When using remainders, they can still be divided therefore giving a decimal answer.</p>			

POS Ratio and Proportion

Statements only appear in Year 6 but should be connected to previous learning, particularly fractions and multiplication and division

			Year 4	Year 5	Year 6
			Pupils are taught throughout that decimals and fractions are different ways of expressing numbers and proportions.	Pupils use multiplication and division as inverses to support the introduction of ratio in year 6, for example, by multiplying and dividing by powers of 10 in scale drawings or by multiplying and dividing by powers of a 1000 in converting between units such as kilometres and metres.	Solve problems involving the relative sizes of two quantities where missing values can be found by using integer multiplication and division facts
				Pupils should be taught throughout that percentages, decimals and fractions are different ways of expressing proportions.	Solve problems involving the calculation of percentages [for example, of measures, and such as 15% of 360] and the use of percentages for comparison
				They recognise that percentages are proportions of quantities as well as operators on quantities.	Solve problems involving similar shapes where the scale factor is known or can be found
					Solve problems involving unequal sharing and grouping using knowledge of fractions and multiples.

Year 4 Ratio and Proportion

Pupils are taught throughout that decimals and fractions are different ways of expressing numbers and proportions.

Understand vocabulary

To know that a fraction is a proportion of a whole

To know that a decimal is a fraction

Year 5 Ratio and Proportion

<p>Pupils use multiplication and division as inverses to support the introduction of ratio in year 6, for example, by multiplying and dividing by powers of 10 in scale drawings or by multiplying and dividing by powers of a 1000 in converting between units such as kilometres and metres.</p>	<p>Pupils should be taught throughout that percentages, decimals and fractions are different ways of expressing proportions.</p>	<p>They recognise that percentages are proportions of quantities as well as operators on quantities.</p>
<p>Understand to the power of 10</p> <p>Understand and use place value</p> <p>Solve simple ratio problems</p>	<p>Understand vocabulary</p> <p>To know that a fraction is a proportion of a whole</p> <p>To know that a decimal is a fraction</p> <p>To know that a percentage is a decimal and a fraction. To make relationship links between all three</p>	<p>To calculate percentages</p> <p>Understand vocabulary</p>

Year 6 Ratio and Proportion

<p>Solve problems involving the relative sizes of two quantities where missing values can be found by using integer multiplication and division facts</p>	<p>Solve problems involving the calculation of percentages (e.g. of measures) such as 15% of 360 and the use of percentages for comparison</p>	<p>Solve problems involving similar shapes where the scale factor is known or can be found</p>	<p>Solve problems involving unequal sharing or grouping using knowledge of fractions and multiples</p>
<p>Know multiplication and division facts</p> <p>Solve missing number problems relating to direct proportion</p> <p>Solve simple ratio problems</p>	<p>Know how to calculate a percentage of a quantity (with and without calculators)</p> <p>To convert percentages to decimals</p> <p>To convert percentages to fractions</p> <p>Solve problems</p>	<p>Understand scale as ratio notation</p> <p>Calculate simple scales (greater and smaller)</p> <p>Compare two shapes and find the simple scale factor</p>	<p>Compare parts of a whole quantity using fraction/decimal/percentage and ratio notation.</p>