



	By the end of Year 4 children should be able to...	By the end of of year 5 children should be able to...	At mastery Level in Year 5 Children Should be able to...
Number and Place Value	<ul style="list-style-type: none"> ■ 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 ■ identify, represent and estimate numbers using different representation ■ round any number to the nearest 10, 100 or 1000 ■ solve number and practical problems that involve all of the above and with increasingly large positive numbers ■ 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. ■ become fluent in the order and place value of numbers beyond 1000, including counting in tens and hundreds, and maintaining fluency in other multiples through varied and frequent practice ■ begin to extend knowledge of the number system to include the decimal numbers and fractions met so far ■ connect estimation and rounding numbers to the use of measuring instruments ■ put Roman numerals in their historical context to understand that there have been different ways to write whole numbers and that the important concepts of zero and place value were introduced over a period of time 	<ul style="list-style-type: none"> ■ read, write, order and compare numbers to at least 1 000 000 and determine the value of each digit ■ count forwards or backwards in steps of powers of 10 for any given number up to 1 000 000 ■ interpret negative numbers in context, count forwards and backwards with positive and negative whole numbers, including 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. ■ identify the place value in large whole numbers ■ continue to use number in context, including measurement, extend and apply understanding of the number system to the decimal numbers and fractions met so far ■ recognise and describe linear number sequences, including those involving fractions and decimals, and find the term-to-term rule. recognise and describe linear number sequences (for example, $3, 3\frac{1}{2}, 4, 4\frac{1}{2} \dots$), including those involving fractions and decimals, and find the term-to-term rule in words (for example, add $\frac{1}{2}$) 	<ul style="list-style-type: none"> ■ read, write, order and compare numbers up to 10 000 000 and determine the value of each digit ■ round any whole number to a required degree of accuracy ■ use negative numbers in context, and calculate intervals across zero ■ solve number and practical problems that involve all of the above ■ use the whole number system, including saying, reading and writing numbers accurately. ■ read, write, order and compare numbers up to 10 000 000 and determine the value of each digit ■ round any whole number to a required degree of accuracy ■ use negative numbers in context, and calculate intervals across zero ■ solve number and practical problems that involve all of the above ■ use the whole number system, including saying, reading and writing numbers accurately.

2 (Year 5)

Addition and subtraction	<ul style="list-style-type: none"> ■ add and subtract numbers with up to 4 digits using the formal written methods of columnar addition and subtraction where appropriate ■ estimate and use inverse operations to check answers to a calculation ■ solve addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why. continue to practise both mental methods and columnar addition and subtraction with increasingly large numbers to aid fluency 	<ul style="list-style-type: none"> ■ add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction) ■ add and subtract numbers mentally with increasingly large numbers ■ use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy ■ solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why practise using the formal written methods of columnar addition and subtraction with increasingly large numbers to aid fluency practise mental calculations with increasingly large numbers to aid fluency (for example, $12\ 462 - 2300 = 10\ 162$). 	<ul style="list-style-type: none"> ■ perform mental calculations, including with mixed operations and large ■ use knowledge of the order of operations to carry out calculations involving the four operations ■ solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why ■ solve problems involving all four operations ■ use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy ■ practise addition and subtraction for larger numbers, using the formal written methods of columnar addition and subtraction ■ undertake mental calculations with increasingly large numbers and more complex calculations ■ round answers to a specified degree of accuracy, for example, to the nearest 10, 20, 50 etc., but not to a specified number of significant figures ■ explore the order of operations using brackets; for example, $2 + 1 \times 3 = 5$ and $(2 + 1) \times 3 = 9$
Multiplication and division	<ul style="list-style-type: none"> ■ recall multiplication and division facts for multiplication tables up to 12×12 ■ 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 ■ recognise and use factor pairs and commutativity in mental calculations 	<ul style="list-style-type: none"> ■ apply all the multiplication tables and related division facts frequently, commit them to memory and use confidently to make larger calculations ■ recognise and use square numbers and cube numbers, and the notation for squared (2) and cubed (3) ■ use and understand the terms: factor; multiple; square number ; 	<ul style="list-style-type: none"> ■ use knowledge of the order of operations to carry out calculations involving the four operations ■ multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication ■ divide numbers up to 4 digits by a two-digit whole number using the formal written method of long division, and

3 (Year 5)

	<ul style="list-style-type: none"> ■ multiply two-digit and three-digit numbers by a one-digit number using formal written layout ■ 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 ■ continue to practise recalling and using multiplication tables and related division facts to aid fluency ■ practise mental methods and extend this to three-digit numbers to derive facts, (for example $600 \div 3 = 200$ can be derived from $2 \times 3 = 6$) ■ become fluent in the formal written method of short multiplication and short division with exact answers through practise ■ write statements about the equality of expressions (for example, use the distributive law $39 \times 7 = 30 \times 7 + 9 \times 7$ and associative law $(2 \times 3) \times 4 = 2 \times (3 \times 4)$). ■ combine knowledge of number facts and rules of arithmetic to solve mental and written calculations for example, $2 \times 6 \times 5 = 10 \times 6 = 60$ solve two-step problems in contexts, choosing the appropriate operation, working with increasingly harder numbers, solving correspondence questions such as the numbers of choices of a meal on a menu, or three cakes shared equally between 10 children 	<ul style="list-style-type: none"> ■ identify multiples and factors, including finding all factor pairs of a number, and common factors of two 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 ■ multiply and divide whole numbers and those involving decimals by 10, 100 and 1000 ■ solve problems involving multiplication and division, including scaling by simple fractions and problems involving simple rates ■ interpret non-integer answers to division by expressing results in different ways according to the context, including with remainders, as fractions, as decimals or by rounding (for example, $98 \div 4 = \frac{98}{4} = 24 \text{ r } 2 = 24 \frac{1}{2} = 24.5 \approx 25$) 	<p>interpret remainders as whole number remainders, fractions, or by rounding, as appropriate for the context</p> <ul style="list-style-type: none"> ■ identify common factors, common multiples and prime numbers ■ practise multiplication and division for larger numbers, using the formal written methods of short and long multiplication, and short and long division ■ undertake mental calculations with increasingly large numbers and more complex calculations ■ continue to use all the multiplication tables to calculate mathematical statements in order to maintain their fluency ■ round answers to a specified degree of accuracy, for example, to the nearest 10, 20, 50 etc., but not to a specified number of significant figures ■ use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy ■ explore the order of operations using brackets; for example, $2 + 1 \times 3 = 5$ and $(2 + 1) \times 3 = 9$ ■ common factors are related to finding equivalent fractions ■ solve problems involving multiplication and division
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4 (Year 5)

Fractions	<ul style="list-style-type: none"> ■ recognise and show, using diagrams, families of common equivalent fractions ■ count up and down in hundredths; recognise that hundredths arise when dividing an object by one hundred and dividing tenths by ten. ■ 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 ■ recognise and write decimal equivalents of any number of tenths or hundredths ■ relate decimal notation to division of whole number by 10 and later 100 ■ recognise and write decimal equivalents to $\frac{1}{4}$, $\frac{1}{2}$, $\frac{3}{4}$ ■ 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 ■ round decimals with one decimal place to the nearest whole number ■ solve simple measure and money problems involving fractions and decimals to two decimal places ■ use number lines to connect fractions, numbers and measures ■ understand the relation between non-unit fractions and multiplication and division of quantities, with particular emphasis on tenths and hundredths ■ use decimal notation and the language associated with it, including in the context of measurements 	<ul style="list-style-type: none"> ■ make connections between fractions of a length, of a shape and as a representation of one whole or set of quantities and use factors and multiples to recognise equivalent fractions and simplify where appropriate (for example, $\frac{6}{9} = \frac{2}{3}$ or $\frac{1}{4} = \frac{2}{8}$) ■ continue to practise adding and subtracting fractions with the same denominator, to become fluent through a variety of increasingly complex problems beyond one whole ■ understand that decimals and fractions are different ways of expressing numbers and proportions ■ practise counting using simple fractions and decimals, both forwards and backwards ■ compare and order fractions whose denominators are all multiples of the same number ■ identify, name and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths ■ recognise mixed numbers and improper fractions and convert from one form to the other and write mathematical statements > 1 as a mixed number [Eg. $\frac{2}{5} + \frac{4}{5} = \frac{6}{5} = 1\frac{1}{5}$] ■ add and subtract fractions with the same denominator and denominators that are multiples of the same number ■ 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 fractions with a denominator of a multiple of 10 or 25 	<ul style="list-style-type: none"> ■ use common factors to simplify fractions and use common multiples to express fractions in the same denomination ■ compare and order fractions, including fractions > 1 ■ add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions ■ multiply simple pairs of proper fractions, writing the answer in its simplest form [Eg. $\frac{1}{4} \times \frac{1}{2} = \frac{1}{8}$] ■ divide proper fractions by whole numbers [Eg. $\frac{1}{3} \div 2 = \frac{1}{6}$] ■ associate a fraction with division and calculate decimal fraction equivalents [Eg. 0.375] for a simple fraction [Eg. $\frac{3}{8}$] ■ identify the value of each digit in numbers given to three decimal places and multiply and divide numbers by 10, 100 and 1000 giving answers up to three decimal places ■ multiply one-digit numbers with up to two decimal places by whole numbers ■ use written division methods in cases where the answer has up to two decimal places ■ solve problems which require answers to be rounded to specified degrees of accuracy ■ recall and use equivalences between simple fractions, decimals and percentages, including in different contexts
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5 (Year 5)

Measurements	<ul style="list-style-type: none"> ▪ convert between different units of measure [Eg. km to m; ml to l; 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 ▪ build on understanding of place value and decimal notation to record metric measures, including money ▪ use multiplication to convert from larger to smaller units ▪ express perimeter algebraically as $2(a + b)$ where a and b are the dimensions in the same unit ▪ relate area to arrays and multiplication 	<ul style="list-style-type: none"> ▪ convert between different units of metric measure (Eg. Km and m; cm and m; cm and mm; g and kg; l and ml) using knowledge of place value and multiplication and division ▪ understand and use approximate equivalences between metric units and common imperial units such as inches, pounds and pints ▪ measure and calculate the perimeter of composite rectilinear shapes in centimetres and metres including using the relations of perimeter or area to find unknown lengths ▪ calculate and compare the area of rectangles (including squares), and including using standard units, square centimetres (cm^2) and square metres (m^2) and estimate the area of irregular shapes ▪ estimate volume [Eg. using 1 cm^3 blocks to build cuboids, including cubes] and capacity [Eg. using water] ▪ solve problems involving converting between units of time ▪ use all four operations to solve problems involving measure [Eg. length, mass, volume, money] using decimal notation, including scaling ▪ express missing measures questions algebraically, Eg. $4 + 2b = 20$ for a rectangle of sides 2 cm and b cm and perimeter of 20cm ▪ calculate the area from scale drawings using given measurements ▪ use all four operations in problems involving time and money, including conversions (for example, days to weeks, expressing the answer as weeks and days) 	<ul style="list-style-type: none"> ▪ solve problems involving the calculation and conversion of units of measure, using decimal notation up to three decimal places where appropriate ▪ 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 ▪ convert between miles and kilometres ▪ recognise that shapes with the same areas can have different perimeters and vice versa ▪ recognise when it is possible to use formulae for area and volume of shapes ▪ calculate the area of parallelograms and triangles ▪ calculate, estimate and compare volume of cubes and cuboids using standard units, including cubic centimetres (cm^3) and cubic metres (m^3), and extending to other units [Eg. mm^3 and km^3] ▪ connect conversion (Eg. from kilometres to miles) to a graphical representation as preparation for understanding linear/proportional graphs ▪ know approximate conversions and are able to tell if an answer is sensible ▪ use number lines to add and subtract positive and negative integers for measures such as temperature ▪ relate the area of rectangles to parallelograms and triangles, Eg. by dissection, and calculate their areas, understanding and using the formulae (in words or symbols) to do this ▪ become familiar with compound units for speed, such as miles per hour, and apply this knowledge in science or other subjects as appropriate
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6 (Year 5)

Geometry properties of Shapes	<ul style="list-style-type: none"> ■ compare and classify geometric shapes, including quadrilaterals and triangles, based on their properties and sizes (Eg. isosceles, equilateral, scalene, parallelogram, rhombus, trapezium) ■ identify acute and obtuse angles' compare and order angles up to two right angles by size and decide if a polygon is regular or irregular ■ identify lines of symmetry in 2-D shapes presented in different orientations ■ complete a simple symmetric figure with respect to a specific line of symmetry <p>draw symmetric patterns using a variety of media to become familiar with different orientations of lines of symmetry; and recognise line symmetry in a variety of diagrams, including where the line of symmetry does not dissect the original shape</p>	<ul style="list-style-type: none"> ■ identify 3-D shapes, including cubes and other cuboids, from 2-D representations ■ know angles are measured in degrees: estimate and compare acute, obtuse and reflex angles ■ draw given angles, and measure them in degrees (°) ■ identify: <ul style="list-style-type: none"> ➤ 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° ■ 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 ■ become accurate in drawing lines with a ruler to the nearest millimetre, and measuring with a protractor and use conventional markings for parallel lines and right angles ■ use the term diagonal and make conjectures about the angles formed between sides, and between diagonals and parallel sides, and other properties of quadrilaterals, Eg. using dynamic geometry ICT tools <p>use angle sum facts and other properties to make deductions about missing angles and relate these to missing number problems</p>	<ul style="list-style-type: none"> ■ draw 2-D shapes using given dimensions and angles ■ recognise, describe and build simple 3-D shapes, including making nets ■ compare and classify geometric shapes based on their properties and sizes and find unknown angles in any triangles, quadrilaterals, and regular polygons ■ illustrate and name parts of circles, including radius, diameter and circumference and know that the diameter is twice the radius ■ recognise angles where they meet at a point, are on a straight line, or are vertically opposite, and find missing angles ■ draw shapes and nets accurately, using measuring tools and conventional markings and labels for lines and angles ■ describe the properties of shapes and explain how unknown angles and lengths can be derived from known measurements <p>Begin to express relationships algebraically Eg. $d = 2 \times r$ and $a = 180 - (b + c)$</p>
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7 (Year 5)

<p>Geometry Position and Direction</p>	<ul style="list-style-type: none"> ■ 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 ■ draw a pair of axes in one quadrant, with equal scales and integer labels read, write and use pairs of coordinates, for example (2, 5), including using coordinate-plotting ICT tools 	<ul style="list-style-type: none"> ■ 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 ■ recognise and use reflection and translation in a variety of diagrams, including continuing to use a 2-D grid and coordinates in the first quadrant and reflection should be in lines that are parallel to the axes 	<ul style="list-style-type: none"> ■ describe positions on the full coordinate grid (all four quadrants) ■ draw and label a pair of axes in all four quadrants with equal scaling. This extends their knowledge of one quadrant to all four quadrants, including the use of negative numbers ■ draw and label rectangles (including squares), parallelograms and rhombuses, specified by coordinates in the four quadrants, predicting missing coordinates using the properties of shapes ■ draw and translate simple shapes on the coordinate plane, and reflect them in the axes begin to express translations algebraically Eg. translating vertex (a, b) to (a - 2, b + 3); (a, b) and (a + d, b + d) being opposite vertices of a square of side d
<p>Data Handling</p>	<ul style="list-style-type: none"> ■ 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 ■ understand and use a greater range of scales in their representations begin to relate the graphical representation of data to recording change over time 	<ul style="list-style-type: none"> ■ solve comparison, sum and difference problems using information presented in a line graph ■ complete, read and interpret information in tables, including timetables ■ connect work on coordinates and scales to interpretation of time graphs ■ begin to decide which representations of data are most appropriate and why 	<ul style="list-style-type: none"> ■ interpret and construct pie charts and line graphs and use these to solve problems ■ calculate and interpret the mean as an average ■ connect work on angles, fractions and percentages to the interpretation of pie charts ■ encounter and draw graphs relating two variables, arising from own enquiry and in other subjects ■ connect conversion from km to miles in measurement to its graphical representation know when it is appropriate to find the mean of a data set

Key performance indicators are in BOLD.