

Year 5

Number - place value	Addition and subtraction
<ul style="list-style-type: none"> • Count forwards or backwards in steps of powers of 10 for any given number up to 1 000 000 • Count forwards and backwards in decimal steps (tenths, hundredths and thousandths) • Read, write, order and compare numbers (using <, > and =) to at least 1 000 000 and determine the value of each digit • Read, write, order and compare numbers (using <, > and =) with up to 3 decimal places • Identify the value of each digit to three decimal places • Partition numbers with up to 3 decimal places • Add or subtract a power of 10 from any given number up to 1000 000 • Add or subtract 0.1 or 0.01 from a number with up to 2 decimal places. • Identify represent and estimate numbers using the number line • Find 0.01, 0.1, 1, 10, 100, 100 and other powers of 10 more or less than a given number • Round any number up to 1 000 000 to the nearest 10, 100, 1000, 10 000 and 100 000 • Round decimals with two decimal places to the nearest whole number and to one decimal place • Multiply/divide whole numbers and decimals by 10, 100 and 1000 where the answers are up to 2 decimal places. • Interpret negative numbers in context, count on and back with positive and negative whole numbers, including through zero • Describe and extend number sequences including those with multiplication/division steps and where the step size is a decimal • Read Roman numerals to 1000 (M); recognise years written as such • Solve number and practical problems that involve all of the above 	<ul style="list-style-type: none"> • Choose an appropriate strategy to solve a calculation based upon the numbers involved (recall a known fact, calculate mentally, use a jotting, written method) • Select a mental strategy appropriate for the numbers involved in the calculation • Recall and use addition and subtraction facts for 1 and 10 (with decimal numbers to one decimal place) • Derive and use addition and subtraction facts for 1 (with decimal numbers to two decimal places) e.g. $0.83 + 0.17 = 1$ • Recall pairs of 3 digit numbers with a total of 1000 and derive related subtraction facts • Add and subtract numbers mentally with increasingly large numbers and decimals to two decimal places • Add and subtract whole numbers with more than 4 digits and decimals with two decimal places, including using formal written methods (columnar addition and subtraction) – including a mix of whole numbers and decimals and decimals with different numbers of decimal places • Use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy • Continue to use appropriate strategies to check answers • Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why • Solve addition and subtraction problems involving missing numbers • Begin to use brackets
	<p>VOCABULARY:</p> <p>Accurately understand, read and spell vocabulary related to addition: add, altogether, total,... more than..., plus, the sum of, increase</p> <p>Accurately understand, read and spell vocabulary related to subtraction: Take away, subtract, how many are left, how many more to make, how many more, how many fewer, ...less than....., leave, how many have</p>

	gone, minus, the difference between, how much more is...than, how much less is....than, decrease
<h3 style="text-align: center;">Multiplication and division</h3>	<h3 style="text-align: center;">Fractions, decimals and percentages</h3>
<ul style="list-style-type: none"> • Choose an appropriate strategy to solve a calculation based upon the numbers involved (recall a known fact, calculate mentally, use a jotting, written method) • Understand scaling by simple fractions, simple rates for multiplication • Continue to relate division and fractions • Understand division as: Scaling by simple fractions Simple rates Begin to understand links to ratio • Continue to understand the distributive, commutative and associative laws for multiplication and the distributive law for division • Count forwards or backwards in steps of powers of 10 for any given number up to 1 000 000 • Identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers • Use factors to construct equivalence statements • Continue to recall multiplication facts for tables up to 12 x 12 fluently and derive and use related facts • 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 • Recognise and use square (²) and cube (³) numbers, and notation • Use partitioning to double or halve any number, including decimals to two decimal places • Derive doubles of decimals (to one decimal place) and corresponding halves using knowledge of place value • Multiply and divide numbers mentally drawing upon known facts • Multiply and divide whole numbers and those involving decimals by 10, 100 and 1000 • Begin to multiply and divide tenths and one digit whole numbers and tenths by one digit whole numbers e.g. 5.7 x 6, 3.6 ÷ 3 • Solve problems involving multiplication and division including using their knowledge of factors and multiples, squares and cubes 	<ul style="list-style-type: none"> • Recognise mixed numbers and improper fractions and convert from one form to the other • Read and write decimal numbers as fractions (e.g. 0.71 = $\frac{71}{100}$) • Count on and back in mixed number steps such as $1\frac{1}{2}$ • Compare and order fractions whose denominators are all multiples of the same number (including on a number line) • Identify, name and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths • Recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents • Add and subtract fractions with denominators that are the same and that are multiples of the same number (using diagrams) • Round decimals with 2 decimal places to the nearest whole number and to one decimal place • Read, write, order and compare numbers with up to 3 decimal places • Write statements > 1 as a mixed number (e.g. $\frac{2}{5} + \frac{4}{5} = \frac{6}{5} = 1\frac{1}{5}$) • Multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams • Recognise the per cent symbol (%) and understand that per cent relates to 'number of parts per hundred', and write percentages as a fraction with denominator 100, and as a decimal • Solve problems involving fractions and decimals to three 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 fractions with a denominator of a multiple of 10 or 25

<ul style="list-style-type: none"> • 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 • 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 numbers with up to one decimal place by a one digit whole number • 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 • Use estimation/inverse to check answers to calculations; determine, in the context of a problem, an appropriate degree of accuracy • 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 • Begin to use brackets • Continue to solve missing number problems 	
<p>VOCABULARY</p> <p>Understand, read and spell the vocabulary involved in multiplying: Double, pattern, array, row, column, groups of, lots of, multiple, multiply, times, table, once, twice, three, ten ...times as big, repeated addition, product, factor</p> <p>New for year 5: square, cube, prime numbers, prime factors, composite numbers</p> <p>Understand, read and spell the vocabulary involved in dividing: Share, halve, array, row, column, equal groups of, divide, left over, in every, remainder, for every, quotient, divisible by, factor</p> <p>New for year 5: prime numbers, prime factors, composite numbers</p>	
Measurement	Statistics
<ul style="list-style-type: none"> • Use, read and write standard units of length and mass 	<ul style="list-style-type: none"> • Complete and interpret information in a variety of sorting diagrams (including those used to sort properties of numbers and shapes)

- Estimate (and calculate) volume ((e.g., using 1 cm³ blocks to build cuboids (including cubes)) and capacity (e.g. using water)
- Understand the difference between liquid volume and solid volume
- Continue to order temperatures including those below 0°C
- Convert between different units of metric measure e.g. km and m; cm and m; cm and mm; g and kg; l and ml
- 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
- Calculate and compare the area of rectangle, use standard units square centimetres (cm²) and square metres (m²) and estimate the area of irregular shapes
- Continue to read, write and convert time between analogue and digital 12 and 24-hour clocks
- Solve problems involving converting between units of time
- Use all four operations to solve problems involving measure (length, mass, volume, money) using decimal notation, including scaling

- Complete, read and interpret information in tables and timetables
- Solve comparison, sum and difference problems using information presented in all types of graph including a line graph
- Calculate and interpret the mode, median and range

Science:

Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs

Geometry - properties of shapes

- Distinguish between regular and irregular polygons based on reasoning about equal sides and angles
- Use the properties of rectangles to deduce related facts and find missing lengths and angles
- Identify 3-D shapes 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:
 - angles at a point and one whole turn (total 360°)
 - angles at a point on a straight line and half a turn (total 180°)
 - other multiples of 90°

Geometry - position and direction

- Describe positions on the first quadrant of a coordinate grid
- Plot specified points and complete shapes
- 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

Black = National Curriculum objectives

Black = Additional objectives added by Lgfl

Red = Additional objectives added by maths development group