

Year 6

Number - place value	Addition and subtraction
<ul style="list-style-type: none"> Count forwards or backwards in steps of integers, decimals, powers of 10 Continue to count up or down in tenths, hundredths and thousandths Read, write, order and compare numbers up to 10 000 000 and determine the value of each digit Continue to read and write numbers with up to 3 decimal places Identify the value of each digit to three decimal places Identify, represent and estimate numbers using the number line Order and compare numbers including integers (up to at least 10 000 000), decimals and negative numbers using the signs $<$, $>$, $=$ Continue to order and compare numbers with up to 3 decimal places Use negative numbers in context and calculate intervals across zero Find 0.001, 0.01, 0.1, 1, 10 and powers of 10 more/less than a given number with up to 3 decimal places Add or subtract a power of 10 from any given number up to 10 000 000 Round any whole number to a required degree of accuracy Round decimals with three decimal places to the nearest whole number or one or two decimal places Multiply and divide numbers by 10, 100 and 1000 giving answers up to three decimal places Use negative numbers in context, and calculate intervals across zero Describe and extend number sequences including those with multiplication and division steps, inconsistent steps, alternating steps and those where the step size is a decimal 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 in the calculation Perform mental calculations, including with mixed operations, large numbers and decimals Add positive and negative integers (in context such as temperature) Recall and use addition and subtraction facts for 1 (with decimals to two decimal places) Know the complements to the next whole number e.g. $7.632 + ? = 8$ Continue to use knowledge of addition/subtraction facts and place value to derive related facts with numbers to 2 decimal places Add and subtract whole numbers and decimals (up to 3 decimal places) using formal written methods (columnar addition and subtraction) Use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy Use knowledge of the order of operations to carry out calculations Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why Solve problems involving all four operations, including those with missing numbers Explore the order of operations using brackets
Multiplication and division	Fractions, decimals and percentages
<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) Continue to understand multiplication as scaling by fractions and rate Continue to relate division and fractions Continue to understand division as: Scaling by fractions 	<ul style="list-style-type: none"> Compare and order fractions, including fractions > 1 (including on a number line) Use common factors to simplify fractions; use common multiples to express fractions in the same denomination Recall and use equivalences between simple fractions, decimals and percentages, including in different contexts

Rate

Links to ratio problems

- Continue to recall multiplication facts for tables up to 12 x 12 fluently and derive and use related facts
- **Identify common factors, common multiples and prime numbers**
- Continue to use square and cube numbers
- Use partitioning and knowledge of place value to double or halve any number (including decimals to 2 places)
- **Perform mental calculations, including with mixed operations and large numbers**
- **Multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication**
- Multiply one-digit numbers with up to two decimal places by 1 digit and 2 digit whole numbers
- **Divide numbers up to 4 digits by a two-digit whole number using the formal written methods of short or long division, and interpret remainders as whole number remainders, fractions, or by rounding, as appropriate for the context**
- Use written division methods in cases where the answer has up to two decimal places
- Calculate decimal fraction equivalents
- **Use estimation and inverse to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy**
- Interpret remainders as whole number remainders, fractions, decimals or by rounding as appropriate for the context
- Use knowledge of the order of operations to carry out calculations
- **Solve problems involving all four operations, including those with missing numbers**
- Explore the order of operations using brackets

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, square, cube, prime numbers, prime factors, composite numbers

New for year 6: **common factor, common multiple**

Understand, read and spell the vocabulary involved in dividing:

- **Associate a fraction with division and calculate decimal fraction equivalents (e.g. 0.375 and $\frac{3}{8}$)**
- **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 (e.g. $\frac{1}{4} \times \frac{1}{2} = \frac{1}{8}$)**
- **Divide proper fractions by whole numbers (e.g. $\frac{1}{3} \div 2 = \frac{1}{6}$)**
- **Identify the value of each digit in numbers given to 3 decimal places and multiply and divide numbers by 10, 100 and 1000 giving answers to 3 decimal places**
- **Multiply one digit numbers with up to 2 decimal places by whole numbers**
- **Use written division methods in cases where the answer has up to 2 decimal places**
- Find simple percentages of amounts
- Solve problems involving fractions
- **Solve problems which require answers to be rounded to specified degrees of accuracy**
- Solve problems involving the calculation of percentages (e.g. of measures and such as 15% of 260) and the use of percentages for comparison

<p>Share, halve, array, row, column, equal groups of, divide, left over, in every, remainder, for every, quotient, divisible by, factor, prime numbers, prime factors, composite numbers</p> <p>New for year 6: common factor, common multiple</p>	
<p style="text-align: center;">Measurement</p>	<p style="text-align: center;">Statistics</p>
<ul style="list-style-type: none"> • Use, read and write standard units of length, mass, volume and time using decimal notation to three decimal places • Convert between standard units of length, mass, volume and time using decimal notation to three decimal places • Convert between miles and kilometres • Recognise that shapes with the same areas can have different perimeters and vice versa • Calculate the area of parallelograms and triangles • Recognise when it is possible to use formulae for area and volume of shapes • 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) • Calculate differences in temperature, including those that involved a positive and negative temperature • Solve problems involving the calculation and conversion of units of measure, using decimal notation up to three decimal places where appropriate 	<ul style="list-style-type: none"> • Continue to complete and interpret information in a variety of sorting diagrams (including sorting properties of numbers and shapes) • Interpret and construct pie charts and line graphs and use these to solve problems • Solve comparison, sum and difference problems using information presented in all types of graph • Calculate and interpret the mean as an average <p>Science:</p> <p>Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs</p>
<p style="text-align: center;">Geometry - properties of shapes</p>	<p style="text-align: center;">Geometry - position and direction</p>
<ul style="list-style-type: none"> • Compare/classify geometric shapes based on the properties and sizes • Draw 2-D shapes using given dimensions and angles • Illustrate and name parts of circles, including radius, diameter and circumference and know that the diameter is twice the radius • Recognise, describe and build simple 3-D shapes, including making nets • Recognise angles where they meet at a point, are on a straight line, or are vertically opposite, and find missing angles • Find unknown angles in any triangles, quadrilaterals, regular polygons 	<ul style="list-style-type: none"> • 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

Ratio and proportion	Algebra
<ul style="list-style-type: none"> • Solve problems involving the relative sizes of two quantities where missing values can be found using integer multiplication/division facts • Solve problems involving the calculation of percentages e.g. of measures and such as 15% of 360, and the use of percentages for comparison • Solve problems involving unequal sharing and grouping using knowledge of fractions and multiples • Solve problems involving similar shapes where the scale factor is known or can be found 	<ul style="list-style-type: none"> • Use simple formulae • Generate and describe linear number sequences • Express missing number problems algebraically • Find pairs of numbers that satisfy an equation with two unknowns • Enumerate possibilities of combinations of two variables

Bold black = National Curriculum objectives

Black = Additional objectives added by Lgfl

Red = Additional objectives added by maths development group