Year 5 programme of study Statutory requirements

Number – number and 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, 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.

Number – addition, subtraction, multiplication and division

- + and - whole numbers more than 4 digits, including using formal written methods (columnar addition and subtraction);
- + and - numbers mentally with increasingly large numbers (12 462 – 2300 = 10 162);
- use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy;
- solve + and - multi-step problems in contexts, deciding which operations and methods to use and why;
- 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 to 100 is prime and recall prime numbers up to 19;
- multiply numbers to 4 digits by a one- or two-digit number using a formal written method, including long multiplication for two-digit numbers;
- x and ÷ numbers mentally drawing upon known facts;
- ÷ numbers to 4 digits by a one-digit number using the formal written method of short division and interpret remainders appropriately for the context;
- x and ÷ whole numbers and those involving decimals by 10, 100 and 1000;
- recognise and use square numbers and cube numbers, and the notation for squared (^{2}) and cubed (^{3});
- 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 and a combination of these, including understanding the meaning of the = sign;
- solve problems involving multiplication and division, including scaling by simple fractions and problems involving simple rates.

Number – fractions (including decimals and percentages)

- 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 [$^{2}/_{5} + {}^{4}/_{5} =$ six-fifths = $1\,{}^{1}/_{5}$];
- add and subtract fractions with the same denominator and denominators that are multiples of the same number;
- multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams;
- read and write decimal numbers as fractions [0.71 = 71/100];
- recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents;
- round decimals with two decimal places to the nearest whole number and to one decimal place;
- read, write, order and compare numbers with up to three decimal places;
- solve problems involving number up to three decimal places;
- 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 which require knowing percentage and decimal equivalents of $^{1}/_{2}$, ¼, $^{1}/_{5,}$ $^{2}/_{5}$ and $^{4}/_{5}$ and those fractions with a denominator of a multiple of 10 or 25.

Measurement

- convert between different units of metric measure (kilometre and metre; centimetre and metre; centimetre and millimetre; gram and kilogram; litre and millilitre);
- understand and use approximate equivalences between metric units and common imperial units: inches, pounds and pints;
- measure and calculate the perimeter of composite rectilinear shapes in centimetres and metres;
- 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 [using 1 cm^3 blocks to build cuboids (including cubes)] and capacity [using water];
- 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.

Geometry – properties of shapes

- 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: angles at a point and one whole turn (total 360°); angles at a point on a straight line and ½ 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.

Geometry – position and direction

- 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.

Statistics

- solve comparison, sum and difference problems using information presented in a line graph;
- complete, read and interpret information in tables, including timetables.