

The Year 5 Learner

Number

Counting and understanding number

Children will read, write, order and compare numbers to at least 1 000 000 and determine the value of each digit. They will count forwards or backwards in steps of powers of 10 for any given number up to 1 000 000. Children will interpret negative numbers in context, count forwards and backwards with positive and negative whole numbers through zero. They will round any number up to 1 000 000 to the nearest 10, 100, 1000, 10 000 and 100 000. Children will solve number problems and practical problems that involve all of the above. They will read Roman numerals to 1000 (M) and recognise years written in Roman numerals.

Calculating

Children will add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction). They will add and subtract numbers mentally with increasingly large numbers. Children will use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy. They will solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why. Children will identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers. They will know and use the vocabulary of prime numbers, prime factors and composite (non-prime) numbers. Children will establish whether a number up to 100 is prime and recall prime numbers up to 19. They will 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. Children will multiply and divide numbers mentally drawing upon known facts. They will 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. Children will multiply and divide whole numbers and those involving decimals by 10, 100 and 1000.

They will recognise and use square numbers and cube numbers, and the notation for squared (2) and cubed (3). Children will solve problems involving multiplication and division including using their knowledge of factors and multiples, squares and cubes. They will solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign. Children will solve problems involving multiplication and division, including scaling by simple fractions and problems involving simple rates.

Fractions

Children will compare and order fractions whose denominators are all multiples of the same number. They will identify, name and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths. Children will recognise mixed numbers and improper fractions and convert from one form to the other and write mathematical statements > 1 as a mixed number (for example, $\frac{2}{5} + \frac{4}{5} = \frac{6}{5} = 1\frac{1}{5}$). They will add and subtract fractions with the same denominator and denominators that are multiples of the same number. Children will multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams. They will read and write decimal numbers as fractions (for example, $0.71 = \frac{71}{100}$). Children will recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents. They will round decimals with two decimal places to the nearest whole number and to one decimal place. Children will read, write, order and compare numbers with up to three decimal places. They will solve problems involving number up to three decimal places. Children will 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. They will 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.

Geometry

Position and direction

Children will 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.

Geometry

Properties of shape

Children will identify 3-D shapes, including cubes and other cuboids, from 2-D representations. They will know angles are measured in degrees: estimate and compare acute, obtuse and reflex angles. Children will draw given angles, and measure them in degrees ($^{\circ}$). They will 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°) and other multiples of 90° . Children will use the properties of rectangles to deduce related facts and find missing lengths and angles. They will distinguish between regular and irregular polygons based on reasoning about equal sides and angles.

Measurement

Children will convert between different units of metric measure (for example, kilometre and metre; centimetre and metre; centimetre and millimetre; gram and kilogram; litre and millilitre). They will understand and use approximate equivalences between metric units and common imperial units such as inches, pounds and pints. Children will measure and calculate the perimeter of composite rectilinear shapes in centimetres and metres. They will calculate and compare the area of rectangles (including squares) using standard units, square centimetres (cm^2) and square metres (m^2) and estimate the area of irregular shapes. Children will estimate volume [for example, using 1 cm^3 blocks to build cuboids (including cubes)] and capacity (for example, using water). They will solve problems involving converting between units of time. Children will use all four operations to solve problems involving measure [for example, length, mass, volume, money] using decimal notation including scaling.

Statistics

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