



Year Five Mathematics



By the end of Year 5 pupils should be able to:

Number, Place Value, Approximation and Estimation

- 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 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.

Addition and Subtraction

- Add and subtract whole numbers with more than 4 digits, including using efficient 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.

Multiplication and Division

- Identify multiples and factors, including finding all factor pairs
- Solve problems involving multiplication and division where larger numbers are used by decomposing them into their factors
- 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
- Multiply numbers up to 4 digits by a one- or two-digit number using an efficient 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 efficient 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
- Recognise and use square numbers and cube numbers, and the notation for squared (2) and cubed (3)
- 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.

Fractions

- Compare and order fractions whose denominators are all multiples of the same number
- Recognise mixed numbers and improper fractions and convert from one form to the other
- Add and subtract fractions with the same denominator and related fractions; write mathematical statements >1 as a mixed number (e.g. $2/5 + 4/5 = 6/5 = 1\frac{1}{5}$)
- Multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams.

Decimals and Fractions

- Read and write decimal numbers as fractions (e.g. $0.71 = 71/100$)
- 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.

Percentages. Decimals and Fractions

- 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 hundred, and as a decimal fraction
- Solve problems which require knowing percentage and decimal equivalents of $1/2$, $1/4$, $1/5$, $2/5$, $4/5$ and those with a denominator of a multiple of 10 or 25.

Measures

- Convert between different units of measure (e.g. kilometre and metre; metre and centimetre; centimetre and millimetre; kilogram and gram; litre and millilitre)
- Understand and use basic equivalences between metric and common imperial units and express them in approximate terms
- Measure and calculate the perimeter of composite rectilinear shapes in centimetres and metres
- Calculate and compare the area of squares and rectangles including using standard units, square centimetres (cm^2) and square metres (m^2) and estimate the area of irregular shapes
- Recognise and estimate volume (e.g. using 1 cm^3 blocks to build cubes and cuboids) and capacity (e.g. using water)
- Solve problems involving converting between units of time
- Solve problems involving addition and subtraction of units of measure (e.g. length, mass, volume, money) using decimal notation.

Geometry: properties of shapes

- identify 3-D shapes, including cubes and cuboids, from 2-D representations
- Know angles are measured in degrees; estimate and measure them and draw a given angle, writing its size in degrees ($^\circ$)

Identify:

- Multiples of 90°
- Angles at a point on a straight line and $\frac{1}{2}$ a turn (total 180°)
- Angles at a point and one whole turn (total 360°)
- Reflex angles, and
- compare different angles
- Draw shapes using given dimensions and angles
- State and use the properties of a rectangle (including squares) to deduce related facts
- Distinguish between regular and irregular polygons based on reasoning about equal sides and angles.

Geometry: Position, Direction and Motion

- 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.

Data

- Solve comparison, sum and difference problems using information presented in line graphs
- Complete, read and interpret information in tables, including timetables.