

MATHEMATICS YEAR 5

NUMBER

NUMBER – NUMBER AND PLACE VALUE

Pupils will be taught to:

- ❖ 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 AND SUBTRACTION

Pupils will be taught to:

- ❖ add and subtract whole numbers with more than 4 digits, including using formal 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.

NUMBER – MULTIPLICATION AND DIVISION

Pupils will be taught to:

- ❖ 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 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 a formal 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 formal 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 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 equals sign
- ❖ solve problems involving multiplication and division, including scaling by simple fractions and problems involving simple rates.

NUMBER – FRACTIONS (INCLUDING DECIMALS AND PERCENTAGES)

Pupils will be taught to:

- ❖ 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 [for example, $\frac{2}{5} + \frac{4}{5} = \frac{6}{5} = 1\frac{1}{5}$]
- ❖ 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 [for example, $0.71 = \frac{71}{100}$]
- ❖ 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 $\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{5}$, $\frac{2}{5}$, $\frac{4}{5}$ and those fractions with a denominator of a multiple of 10 or 25.

MEASUREMENT

Pupils will be taught to:

- ❖ convert between different units of metric measure (for example, 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 such as 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 (cm²) and square metres (m²) and estimate the area of irregular shapes
- ❖ estimate volume [for example, using 1 cm³ blocks to build cuboids (including cubes)] and capacity [for example, using water]
- ❖ solve problems involving converting between units of time
- ❖ use all four operations to solve problems involving measure [for example, length, mass, volume, money] using decimal notation, including scaling.

GEOMETRY

GEOMETRY – PROPERTIES OF SHAPES

Pupils will be taught to:

- ❖ 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 $\frac{1}{2}$ a 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

Pupils will be taught to:

- ❖ 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

Pupils will be taught to:

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