

## MATHEMATICS YEAR 6

### NUMBER

#### NUMBER – NUMBER AND PLACE VALUE

Pupils will be taught to:

- ❖ read, write, order and compare numbers up to 10 000 000 and determine the value of each digit
- ❖ round any whole number to a required degree of accuracy
- ❖ use negative numbers in context, and calculate intervals across zero
- ❖ solve number and practical problems that involve all of the above.

#### NUMBER – ADDITION, SUBTRACTION, MULTIPLICATION AND DIVISION

Pupils will be taught to:

- ❖ multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication
- ❖ divide numbers up to 4 digits by a two-digit whole number using the formal written method of long division, and interpret remainders as whole number remainders, fractions, or by rounding, as appropriate for the context
- ❖ divide numbers up to 4 digits by a two-digit number using the formal written method of short division where appropriate, interpreting remainders according to the context
- ❖ perform mental calculations, including with mixed operations and large numbers
- ❖ identify common factors, common multiples and prime numbers
- ❖ use their knowledge of the order of operations to carry out calculations involving the four operations
- ❖ solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why
- ❖ solve problems involving addition, subtraction, multiplication and division
- ❖ use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy.

#### NUMBER – FRACTIONS (INCLUDING DECIMALS AND PERCENTAGES)

Pupils will be taught to:

- ❖ use common factors to simplify fractions; use common multiples to express fractions in the same denomination
- ❖ compare and order fractions, including fractions  $> 1$
- ❖ 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 [for example,  $\frac{1}{4} \times \frac{1}{2} = \frac{1}{8}$ ]
- ❖ divide proper fractions by whole numbers [for example,  $\frac{1}{3} \div 2 = \frac{1}{6}$ ]
- ❖ associate a fraction with division and calculate decimal fraction equivalents [for example, 0.375] for a simple fraction [for example,  $\frac{3}{8}$ ]
- ❖ identify the value of each digit in numbers given to three decimal places and multiply and divide numbers by 10, 100 and 1000 giving answers up to three decimal places
- ❖ multiply one-digit numbers with up to two decimal places by whole numbers
- ❖ use written division methods in cases where the answer has up to two decimal places
- ❖ solve problems which require answers to be rounded to specified degrees of accuracy
- ❖ recall and use equivalences between simple fractions, decimals and percentages, including in different contexts.

#### RATIO AND PROPORTION

Pupils will be taught to:

- ❖ solve problems involving the relative sizes of two quantities where missing values can be found by using integer multiplication and division facts
- ❖ solve problems involving the calculation of percentages [for example, of measures, and such as 15% of 360] and the use of percentages for comparison
- ❖ solve problems involving similar shapes where the scale factor is known or can be found
- ❖ solve problems involving unequal sharing and grouping using knowledge of fractions and multiples.

#### ALGEBRA

Pupils will be taught to:

- ❖ 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.

#### MEASUREMENT

Pupils will be taught to:

- ❖ solve problems involving the calculation and conversion of units of measure, using decimal notation up to three decimal places where appropriate
- ❖ use, read, write and convert between standard units, converting measurements of length, mass, volume and time from a smaller unit of measure to a larger unit, and vice versa, using decimal notation to up to three decimal

places

- ❖ convert between miles and kilometres
- ❖ recognise that shapes with the same areas can have different perimeters and vice versa
- ❖ recognise when it is possible to use formulae for area and volume of shapes
- ❖ calculate the area of parallelograms and triangles
- ❖ calculate, estimate and compare volume of cubes and cuboids using standard units, including cubic centimetres ( $\text{cm}^3$ ) and cubic metres ( $\text{m}^3$ ), and extending to other units [for example,  $\text{mm}^3$  and  $\text{km}^3$ ].

## GEOMETRY

### GEOMETRY – PROPERTIES OF SHAPES

Pupils will be taught to:

- ❖ draw 2-D shapes using given dimensions and angles
- ❖ recognise, describe and build simple 3-D shapes, including making nets
- ❖ compare and classify geometric shapes based on their properties and sizes and find unknown angles in any triangles, quadrilaterals, and regular polygons
- ❖ illustrate and name parts of circles, including radius, diameter and circumference and know that the diameter is twice the radius
- ❖ recognise angles where they meet at a point, are on a straight line, or are vertically opposite, and find missing angles.

### GEOMETRY – POSITION AND DIRECTION

Pupils will be taught to:

- ❖ 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.

## STATISTICS

Pupils will be taught to:

- ❖ interpret and construct pie charts and line graphs and use these to solve problems
- ❖ calculate and interpret the mean as an average.