MATHEMATICS

By the end of Year 6 pupils should be able to:

Number, Place Value, Approximation and Estimation
➢ Read, write, order and compare numbers to at least 10 000 000 and determine the value of each digit
➢ Round any whole number to a required degree of accuracy
➢ Use negative number is context, and calculate intervals across zero
➢ Solve number problems and practical problems that involve all of the above

Addition and Subtraction
➢ Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why.
➢ Perform mental calculations, including with mixed operations and large numbers
➢ Use their knowledge of the order of operation to carry out caluclations involving the four operations
➢ 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.

Multiplication and Division
➢ 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
➢ Identify common factors, common multiples and prime numbers
➢ Perform mental calculations, including with mixed operations and large numbers
➢ Use my knowledge of the order of operations to carry out calculations involving the four operations
➢ 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.

Fractions
➢ 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 the same 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, ¼ x ½ = 1/8)

➢ Divide proper fractions by whole numbers (for example, 1/3 ÷ 2= 1/6)
➢ Associate a fraction with division and calculate decimal fraction equivalents (for example, 0.375) for a simple fraction (for example, 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 different contexts.

Measures
➢ Sole 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 unis, 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 perimetres 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, estiate and compare volume of cubes and cuboids using standard units, including cubic centimetres (cm3) and cubic metres (m3), and extending to other units (for example, mm3 and km3).

Geometry: properties of shapes
➢ 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
➢ Describe positions on the full coordinate grid (all four quadrants)
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Statistics
➢ Interpret and construct pie charts and line graphs and use these to solve problems
➢ Calculate and interpret the mean as an average.

Ratio and Proportion

➢ 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

➢ 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.