YEAR 6 MATHS

1 Number and Place Value

- 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 numbers in context, and calculate intervals across zero
- Solve number and practical problems that involve all of the above

2 Addition and Subtraction (including Algebra)

- Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why
- Use their 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, levels of accuracy
- Perform mental calculations, including with mixed operations and large numbers
- Algebra: Use simple formulae
- Algebra: Generate and describe linear number sequences
- Algebra: Find pairs of numbers that satisfy number sentences involving two unknowns
- Algebra: Express missing number problems algebraically
- Algebra: Enumerate all possibilities of combinations of two variables

3 Multiplication and Division (including Ratio and Proportion and Statistics)

- Use their knowledge of the order of operations to carry out calculations involving the four operations
- 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
- Solve problems involving addition, subtraction, multiplication and division
- Use estimation to check answers to calculations and determine, in the context of a problem, levels of accuracy
- Identify common factors, common multiples and prime numbers
- 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
- Ratio and proportion: Solve problems involving the calculation of percentages (eg of measures) such as 15% of 360 and the use of percentages for comparison
- Ratio and proportion: Solve problems involving similar shapes where the scale factor is known or can be found
- Ratio and proportion: Solve problems involving unequal sharing and grouping using knowledge of fractions and multiples
- Statistics: Interpret and construct pie charts and line graphs and use these to solve problems
- Statistics: Calculate and interpret the mean as an average

4 Fractions

- Use common factors to simplify fractions; use common multiples to express fractions in the same denominations
- 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 (eg 1/4 x 1/2 = 1/8)
- Associate a fraction with division and calculate decimal equivalents (eg 0.375) for a simple fraction (eg 3/8)
- Identify the value of each digit to three decimal places and multiply and divide numbers by 10, 100 and 1000 where the answers are up to three decimal places
- Multiply one-digit numbers with up to two decimal places by whole numbers
- 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
- Divide proper fractions by whole numbers (eg 1/3 ÷ 2 = 1/6)
- Use written division methods in cases where the answer has up to two decimal places

5 Measurement

- 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 measurement 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
- Recognise that shapes with the same area can have different perimeters and vice versa
- Recognise when it is possible to use formulae for area and volume of shapes
- Convert between miles and kilometres
- Calculate the area of parallelograms and triangles
- Calculate, estimate and compare volume of cubes and cuboids using standard units, including centimetre cubed (cm^3) and cubic metres (m^3), and extending to other units such as mm^3 and km^3

6 Geometry

- Draw 2-D shapes using given dimensions and angles (Properties of shape)
- Compare and classify geometric shapes based on their properties and sizes and find unknown angles in any triangles, quadrilaterals and regular polygons (Properties of shape)
- Illustrate and name parts of circles, including radius, diameter and circumference and know that the diameter is twice the radius (Properties of shape)
- Recognise angles where they meet at a point, are on a straight line, or are vertically opposite, and find missing angles (Properties of shape)
- Describe positions on the full coordinate grid (all four quadrants) (Position and direction)
- Recognise, describe and build simple 3-D shapes, including making nets (Properties of shape)
- Draw and translate simple shapes on the coordinate plane, and reflect them in the axes (Position and direction)