Pirton Hill Primary School Assessment Framework for Maths

Year 6 Expectations

Number and Place Value

- Read, write, order and compare numbers up to 10 000 000 and determine the value of each digit.
- Can demonstrate an understanding of place value, including large numbers and decimals e.g. understands the value of the '7' in 276,541?; find the difference between the largest and smallest whole numbers that can be made from using three digits; 8.09 = 8 + 9/?; 28.13 = 28 + ? + 0.03
- Use negative numbers in context, and calculate intervals across 0 Solve number and practical problems that involve all of the above.

Addition, Subtraction, Multiplication and Division

- Calculate mentally, using efficient strategies such as manipulating expressions using commutative and distributive properties to simplify the calculation.
- 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.
- Perform mental calculations, including with mixed operations and large numbers, method of short division where appropriate, interpreting remainders according to the context Identify common factors, common multiples and prime numbers.
- Use their knowledge of the order of operations to carry out calculations involving the 4 operations.
- Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why.
- Use formal methods to solve multi-step problems involving addition, subtraction, multiplication and division (e.g. find the change from £20 for three items that cost "1.24, £7.92 and £2.55; a roll of material is 6m long: how much is left when 5 pieces of 1.15m are cut from the roll?; a bottle of drink is 1.5 litres, how many cups of 175ml can be filled from the bottle, and how much drink is left?).
- Use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy.

Fractions (including decimals & percentages)

- Can recognise the relationship between fractions, decimals and percentages and can express them as equivalent quantities.
- 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 (e.g. ¼ x1/2 = 1/8).
- Divide proper fractions by whole numbers (e.g. 1/3÷2 = 1/6).
- Associate a fraction with division and calculate decimal fraction (e.g. 0.375) equivalents for a simple fraction (e.g. 3/8).
- Calculate using fractions, decimals or percentages (e.g. knowing that 7 divided by 21 is the same as 7/21 and that this is equal to 1/3; 15% of 60; 1 ½ + ¾; 7/9 of 108; 0.8 x 70).
- Identify the value of each digit in numbers given to three decimal places and multiply and divide numbers by 10, 100 and 1,000 giving answers are up to three decimal places.
- Multiply one-digit numbers with up to 2 decimal places by whole numbers.

- Use written division methods in cases where the answer has up to 2 decimal place.
- 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 & Proportion

- Solve problems involving the relative sizes of two quantities where missing values can be found by using integer multiplication and division fact.
- Solve problems involving the calculation of percentages (e.g. 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.
- Substitute values into a simple formula to solve problems e.g. perimeter of a rectangle or area of a triangle.
- 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 2 variables.

Measurement

- Solve problems involving the calculation and conversion of units of measure, using decimal notation up to 2 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 3 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 (cm^3) and cubic metres (m^3), and extending to other units (e.g. mm^3 and km^3).
- Calculate with measures (e.g. calculate length of a bus journey given start and end times; convert 0.05km into m and then into cm).

Properties of Shape

- 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 polygon 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.
- Use mathematical reasoning to find missing angles (e.g. the missing angle in an isosceles triangle when one of the angles is given; the missing angle in more complex diagram using knowledge about angles at a point and vertically opposite angles).

Geometry – Position and direction

- Describe positions on the full coordinate grid (all 4 quadrants).
- Draw and translate simple shapes on the coordinate plane, and reflect them in the axes

Statistics

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