**Key Learning in Mathematics – Year 6**

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| **Number – number and place value** | **Number – addition and subtraction** | **Number – multiplication and division** |
| * *Count forwards or backwards in steps of integers, decimals, powers of 10* * Read, write, order and compare numbers up to 10 000 000 and determine the value of each digit * Identify the value of each digit to three decimal places * *Identify, represent and estimate numbers using the number line* * *Order and compare numbers including integers, decimals and negative numbers* * *Find 0.001, 0.01, 0.1, 1, 10 and powers of 10 more/less than a given number* * Round any whole number to a required degree of accuracy * *Round decimals with three decimal places to the nearest whole number or one or two decimal places* * Multiply and divide numbers by 10, 100 and 1000 giving answers up to three decimal places * Use negative numbers in context, and calculate intervals across zero * *Describe and extend number sequences including those with multiplication and division steps, inconsistent steps, alternating steps and those where the step size is a decimal* * Solve number and practical problems that involve all of the above | * *Choose an appropriate strategy to solve a calculation based upon the numbers involved (recall a known fact, calculate mentally, use a jotting, written method)* * *Select a mental strategy appropriate for the numbers in the calculation* * *Recall and use addition and subtraction facts for 1 (with decimals to two decimal places)* * Perform mental calculations including with mixed operations and large numbers *and decimals* * *Add and subtract whole numbers and decimals using formal written methods (columnar addition and subtraction)* * Use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy * Use knowledge of the order of operations to carry out calculations * Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why * Solve problems involving all four operations, *including those with missing numbers* | * *Choose an appropriate strategy to solve a calculation based upon the numbers involved (recall a known fact, calculate mentally, use a jotting, written method)* * Identify common factors, common multiples and prime numbers * *Use partitioning to double or halve any number* * Perform mental calculations, including with mixed operations and large numbers * Multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication * Multiply one-digit numbers with up to two decimal places by whole numbers * Divide numbers up to 4 digits by a two-digit whole number using the formal written methods of short or long division, and interpret remainders as whole number remainders, fractions, or by rounding, as appropriate for the context * Use written division methods in cases where the answer has up to two decimal places * Use estimation *and inverse* to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy * Use knowledge of the order of operations to carry out calculations * Solve problems involving all four operations, *including those with missing numbers* |
| **Number – fractions, decimals and percentages** | **Geometry – properties of shapes** |
| * Compare and order fractions, including fractions > 1 *(including on a number line)* * Use common factors to simplify fractions; use common multiples to express fractions in the same denomination * Recall and use equivalences between simple fractions, decimals and percentages, including in different contexts * Associate a fraction with division and calculate decimal fraction equivalents (e.g. 0.375 and ) * 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. x = ) * Divide proper fractions by whole numbers (e.g. ÷ 2 = ) * *Find simple percentages of amounts* * *Solve problems involving fractions* * Solve problems which require answers to be rounded to specified degrees of accuracy * Solve problems involving the calculation of percentages (e.g. of measures and such as 15% of 260) and the use of percentages for comparison | * Compare/classify geometric shapes based on the properties and sizes * Draw 2-D shapes using given dimensions and angles * Illustrate and name parts of circles, including radius, diameter and circumference and know that the diameter is twice the radius * Recognise, describe and build simple 3-D shapes, including making nets * Recognise angles where they meet at a point, are on a straight line, or are vertically opposite, and find missing angles * Find unknown angles in any triangles, quadrilaterals, regular polygons |
| **Measurement** |
| **Geometry – position and direction** | * Use, read and write standard units of length, mass, volume and time using decimal notation to three decimal places * Convert between standard units of length, mass, volume and time using decimal notation to three decimal places * Convert between miles and kilometres * Recognise that shapes with the same areas can have different perimeters and vice versa * Calculate the area of parallelograms and triangles * Recognise when it is possible to use formulae for area and volume of shapes * Calculate, estimate and compare volume of cubes and cuboids using standard units, including cubic centimetres (cm3) and cubic metres (m3), and extending to other units (e.g. mm3 and km3) * *Calculate differences in temperature, including those that involved a positive and negative temperature* * Solve problems involving the calculation and conversion of units of measure, using decimal notation up to three decimal places where appropriate |
| * 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** |
| * *Continue to complete and interpret information in a variety of sorting diagrams (including sorting properties of numbers and shapes)* * Interpret and construct pie charts and line graphs and use these to solve problems * *Solve comparison, sum and difference problems using information presented in all types of graph* * 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 using integer multiplication/division facts * Solve problems involving unequal sharing and grouping using knowledge of fractions and multiples * Solve problems involving similar shapes where the scale factor is known or can be found | **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 |