**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*
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| **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 $\frac{3}{8}$ )
* 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. $\frac{1}{4}$ x $\frac{1}{2}$ = $\frac{1}{8}$ )
* Divide proper fractions by whole numbers (e.g. $\frac{1}{3}$ ÷ 2 = $\frac{1}{6}$ )
* *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
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| **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
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| * 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
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| **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
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| **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
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