**Alder Brook Stage 6 Progression Map**

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| **Domain** | **National Curriculum attainment target** |
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| **Number – Number and place value** | Read, write, order and compare numbers up to 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 |
| **Number – Addition, subtraction, 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 |
| Perform mental calculations, including with mixed operations and large numbers |
| Identify common factors, common multiples and prime numbers |
| Use their knowledge of the order of operations to carry out calculations involving the four operations |
| Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why |
| 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 |
| **Number – Fractions (including decimals and percentages)** | 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 [for example,  ×  = ] |
| Divide proper fractions by whole numbers [for example,  ÷ 2 = ] |
| Associate a fraction with division and calculate decimal fraction equivalents [for example, 0·375] for a simple fraction [for example, ] |
| 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 in different contexts |

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| **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 |
| **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 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 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 (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) |
| Draw and translate simple shapes on the coordinate plane, and reflect them in the axes |
| Design, write and debug programs that accomplish specific goals; including controlling or simulating physical systems and solving problems by decomposing them into smaller parts. |
| Use sequence, selection and repetition in programs; work with variables and various forms of input and output. |
| Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs |
| **Statistics** | Interpret and construct pie charts and line graphs and use these to solve problems |
| Calculate and interpret the mean as an average |