# QPS: Year 6 Mathematics end of year goals (based on statutory and non-statutory DFE mathematical guidance and the DFE Ready to Progress Criteria)

| Number and Place Value | Addition, Subtraction, Multiplication and Division | Fractions | Ratio and Proportion | Algebra |
|---|---|---|---|---|
| Reasoning and problem solving | Reasoning and problem solving | Reasoning and problem solving | Reasoning and problem solving | Reasoning and problem solving |
| **Read, write, order and compare numbers up to 10,000,000 and determine the value of each digit.**<br><br>**Round any whole number to a required degree of accuracy.**<br><br>**Use negative numbers in context and calculate intervals across zero**<br><br>**Solve number and practical problems that involve all of the above.** | **Multiply multi-digit numbers up to 4 digits by a two-digit whole number using formal written method of long multiplication.**<br><br>**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**<br><br>**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.**<br><br>**Perform mental calculations, including with mixed operations and large numbers**<br><br>**Identify common factors, common multiples and prime numbers**<br><br>Find prime factors of 2 digit numbers, and testing for prime numbers beyond 100.<br><br>**Use their knowledge of the order of operations to carry out calculations involving the four operations**<br><br>**Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why.**<br><br>Add and subtract any set of whole numbers and decimals using an appropriate written method.<br><br>**Solve problems involving addition, subtraction, multiplication and division**<br><br>Use mental arithmetic strategies when appropriate<br><br>**Use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy.**<br><br>Complements to 100 to 2 d.p.<br><br>Can solve calculations involving brackets. | **Use common factors to simplify fractions; use common multiples to express fractions in the same denomination.**<br><br>**Compare and order fractions, including fractions > 1**<br><br>**Add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions**<br><br>Recall and use equivalences between simple fractions, decimals and percentages, inc. in different contexts.<br><br>**Multiply simple pairs of proper fractions, writing the answer in its simplest form [for example, 1/4 × ½ = 1/8)**<br><br>**Divide proper fractions by whole numbers [for example, 1/3 ÷ 2 = 1/6)**<br><br>**Associate a fraction with division and calculate decimal fraction equivalents [for example, 0.375] for a simple fraction [for example, 3/8 ]**<br><br>**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**<br><br>**Solve problems involving nmbr up to 3 d.p.**<br><br>Solve problems which require answers to be rounded to a specified degrees of accuracy.<br><br>**Solve problems which require knowing percentage and decimal equivalents of 1/2 ,1/4 ,1/5 ,2/5, 4/5 and those fractions with a denominator of a multiple of 10 or 25.**<br><br>**Multiply one-digit numbers with up to 2 d.p. by whole numbers.**<br><br>**Use written division methods with an answer has up to 2 d.p.**<br><br>Recurring decimals.<br><br>Rounding decimals and recurring decimals to 1, 2 and 3 dp. | **Solve problems involving the relative sizes of two quantities where missing values can be found by using integer multiplication and division facts**<br><br>**Solve problems involving the calculation of percentages [for example, of measures, and such as 15% of 360] and the use of percentages for comparison**<br><br>**Solve problems involving similar shapes where the scale factor is known or can be found**<br><br>**Solve problems involving unequal sharing and grouping using knowledge of fractions and multiples.**<br><br>Consolidate understanding of ratio when comparing quantities, sizes and scale drawings by solving a variety of problems. They might use the notation *a:b* | **Use simple formulae**<br><br>**Generate and describe linear number sequences**<br><br>**Express missing number problems algebraically**<br><br>**Find pairs of numbers that satisfy an equation with two unknowns**<br><br>**Enumerate possibilities of combinations of two variables.**<br><br>Use symbols and letters to represent variables and unknowns. |

| Measurement | Geometry Properties of Shape Position, Direction & Motion | Statistics |
|---|---|---|
| **Reasoning and problem solving** | **Reasoning and problem solving** | **Reasoning and problem solving** |
| **Solve problems involving the calculation and conversion of units of measure, using decimal notation up to three decimal places where appropriate**<br><br>**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**<br><br>**Convert between miles and kilometres**<br><br>**Recognise that shapes with the same areas can have different perimeters and vice versa**<br><br>**Recognise when it is possible to use formulae for area and volume of shapes**<br><br>**Calculate the area of parallelograms and triangles**<br><br>**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 [for example, $mm^3$ and $km^3$].**<br><br>Add and subtract positive and negatives integers for measures such as temperature. | **Draw 2-D shapes using given dimensions and angles**<br><br>**Recognise, describe and build simple 3-D shapes, including making nets**<br><br>**Compare and classify geometric shapes based on their properties and sizes and find unknown angles in any triangles, quadrilaterals, and regular polygons**<br><br>**Illustrate and name parts of circles, including radius, diameter and circumference and know that the diameter is twice the radius**<br><br>**Recognise angles where they meet at a point, are on a straight line, or are vertically opposite, and find missing angles.**<br><br>Can use conventional markings and labels for lines and angles.<br><br>Relationship between angles and lengths expressed algebraically, for example, $d = 2 \times r$, $a = 180 - (b+c)$.<br><br>**Describe positions on the full coordinate grid (all four quadrants)**<br><br>**Draw and translate simple shapes on the coordinate plane, and reflect them in the axes.** | **Interpret and construct pie charts and line graphs and use these to solve problems**<br><br>**Calculate and interpret the mean as an average** and know when this is appropriate.<br><br>Draw graphs relating two variables. |