

**Year 6 Maths Knowledge and Skills Progression**

Working Toward	At	Above
<p>Demonstrate an understanding of place value including decimals e.g. <math>28.13 = 28 + ? + 0.03</math>                      Perform mental calculations with mixed operations to carry out calculations involving the four operations</p> <p>Identify common multiples                      Use his/her knowledge of the order of operations to carry out calculations involving the four operations</p>	<p>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 ordering and comparing numbers to 10 000 000, rounding to a required degree of accuracy, using negative numbers and calculating intervals across zero                      Solve multi-step problems in contexts, deciding which operations and methods to use and why 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?</p> <p>Solve problems involving addition and subtraction                      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</p>	<p>Use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy                      Use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy                      Express missing number problems algebraically</p>

<p>Multiply simple pairs of proper fractions, writing the answer in its simplest form e.g. <math>\frac{1}{4} \times \frac{1}{2} = \frac{1}{8}</math></p> <p>Divide proper fractions by whole numbers e.g. <math>\frac{1}{3} \div 2 = \frac{1}{6}</math></p> <p>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</p> <p>Multiply one-digit numbers with up to two decimal places by whole numbers</p> <p>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</p>	<p>remainders as whole number remainders, fractions, or by rounding, as appropriate for the context</p> <p>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</p> <p>Perform mental calculations, including with mixed operations and large numbers</p> <p>Identify common factors, common multiples and prime numbers</p> <p>Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why</p> <p>Solve problems involving addition, subtraction, multiplication and division</p> <p>Use common factors to simplify fractions; use common multiples to express fractions in the same denomination</p> <p>Compare and order fractions, including fractions <math>&gt; 1</math></p> <p>Add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions</p> <p>Associate a fraction with division and calculate decimal fraction equivalents e.g. know that 7 divided by 21 is the same as <math>\frac{7}{21}</math> and that this is equal to <math>\frac{1}{3}</math> and e.g. 0.375 is equivalent to <math>\frac{3}{8}</math></p> <p>Use written division methods in cases where the answer has up to two decimal places</p> <p>Recall and use equivalences between simple fractions, decimals and percentages, including in different contexts e.g. one piece of cake that</p>	
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<p>Recognise, describe and build simple 3-D shapes, including making nets</p> <p>Illustrate and name parts of circles, including radius, diameter and circumference and know that the diameter is twice the radius</p> <p>Draw and translate simple shapes on the coordinate plane, and reflect them in the axis</p>	<p>has been cut into 5 equal slices can be expressed as <math>\frac{1}{5}</math> or 0.2 or 20% of the whole cake</p> <p>Solve problems involving the calculation and conversion of units of measure, using decimal notation up to three decimal places where appropriate</p> <p>Convert between miles and kilometres</p> <p>Recognise that shapes with the same areas can have different perimeters and vice versa</p> <p>Recognise when it is possible to use formulae for area and volume of shapes</p> <p>Calculate the area of parallelograms and triangles</p> <p>Calculate, estimate and compare volume of cubes and cuboids using standard units, including cubic centimetres (<math>\text{cm}^3</math>) and cubic metres (<math>\text{m}^3</math>), and extending to other units e.g. <math>\text{mm}^3</math> and <math>\text{km}^3</math></p> <p>Draw 2-D shapes using given dimensions and angles</p> <p>Compare and classify geometric shapes based on their properties and sizes and find unknown angles in any triangles, quadrilaterals, and regular polygons</p> <p>Recognise angles where they meet at a point, are on a straight line, or are vertically opposite, and find missing angles</p> <p>Describe positions on the full coordinate grid (all four quadrants)</p> <p>Interpret and construct pie charts and line graphs and use these to solve problems</p> <p>Calculate and interpret the mean as an average</p>	
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Solve problems involving the relative sizes of two quantities where missing values can be found by using integer multiplication and division facts e.g. find  $\frac{7}{9}$  of 108

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

Use simple formulae e.g. perimeter of a rectangle or area of a triangle

Generate and describe linear number sequences

Find pairs of numbers that satisfy an equation with two unknowns

Enumerate possibilities of combinations of two variables

