

Progression of Knowledge, Skills and Vocabulary

Year 5

	Number and place value	Addition and subtraction	Multiplication and Division	Fractions	Measurement	Position and Direction	Geometry: Shape	Statistics
<b>I know...</b>	<p>Each digit in a number represents a different value and can identify them all to a million.</p> <p>Ones round to tens, tens round to hundreds, hundreds round to thousands, thousands round to hundred thousands and hundred thousands round to millions.</p> <p>Numbers can be smaller than zero and how they are represented as negatives.</p> <p>Numbers can be represented as numerals and that M = 1000, C = 100, X = 10 and V = 5.</p>	<p>Problems require different methods of calculation and how column addition/subtraction is applied for larger numbers.</p> <p>Mental calculation strategies can help with additions and subtractions less than three digits.</p> <p>Rounding can be used to create an estimate.</p>	<p>Short and long multiplication require different calculation methods and how to apply them.</p> <p>Short division requires the bus stop calculation.</p> <p>Factor pairs are found by dividing a number and that multiples are found by multiplying a number.</p> <p>A prime number only is divisible by one and itself.</p> <p>I know that: a square number is the result of a number multiplied by itself.</p> <p>When a number is multiplied and divided by 10, 100 and 1,000 the place value is moved to the left/right accordingly.</p>	<p>Fractions can be represented as mixed and improper fractions.</p> <p>To compare fractions multiplication/division must be used to create common denominators.</p> <p>Common denominators must be used to compare and order fractions.</p> <p>Common denominators must be used to add and subtract fractions.</p> <p>When a fraction is multiplied by a fraction the answer will be a smaller fraction.</p> <p>When a fraction is divided by a whole number the answer will be a smaller fraction.</p> <p>Decimal places are a continuation of a whole number and operate infinitely.</p> <p>A tenth follows a one, a hundredth follows a tenth and thousandth follows a hundredth.</p> <p>Percentage means 'number of parts per hundred' / Fractions divide to create decimals and how a percentage is also a representation out of 100.</p>	<p>Metric measurements relate to one another and g/kg represent weight, cm,m,km represent distance/height and that ml,l represent capacity.</p> <p>Kilo means 1000. Cent means 100 and milli means 1000 and this can help solve problems of conversion.</p> <p>Area is the space inside a 2d shape and that perimeter is the distance around the edge.</p> <p>There are 24 hours in a day, seven days in a week, 60 minutes in an hour and 60 seconds in a minute.</p> <p>There are x amount of days are in each month.</p>	<p>A grid must be read on the x axis followed by the y axis.</p> <p>Shapes can be moved through reflections and translations across a grid and how these move differently.</p>	<p>Protractors measure in degrees and can be read inside/outside</p> <p>A right angle is 90 degrees.</p> <p>An acute angle is smaller than 90 degrees.</p> <p>An obtuse angle is bigger than 90 degrees but smaller than 180 degrees.</p> <p>A reflex angle is between 180 and 360 degrees.</p> <p>I know that: all 3d shapes have a set amount of faces and that these are present in a 2d representation.</p> <p>Angles in a quadrilateral add up to 360. And that each corner should be 90 degrees.</p>	<p>Data can be represented in various forms.</p> <p>Line graphs are a representation of continuous data.</p> <p>Tmetables can display information for different starts, finishes and intervals.</p>

<p><b>So I can...</b></p>	<p>Read, write, order and compare numbers to at least 1 000 000 and determine the value of each digit</p> <p>Count forwards or backwards in steps of powers of 10 for any given number up to 1 000 000</p> <p>Interpret negative numbers in context, count forwards and backwards with positive and negative whole numbers.</p> <p>Round any number up to 1 000 000 to the nearest 10, 100, 1000, 10 000 and 100 000</p> <p>Solve number problems and practical</p>	<p>Add and subtract whole numbers with more than 4 digits, including using formal written methods</p> <p>Add and subtract numbers mentally with increasingly large numbers</p> <p>Use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy</p> <p>Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why.</p>	<p>Identify multiples and factors, including finding all factor pairs of a number, and common factors of 2 numbers</p> <p>Use the vocabulary of prime numbers, prime factors and composite (non-prime) numbers</p> <p>Establish whether a number up to 100 is prime and recall prime numbers up to 19</p> <p>Multiply numbers up to 4 digits by a one- or two-digit number using a formal written method, including long multiplication for two-digit numbers</p> <p>Multiply and divide numbers</p>	<p>Compare and order fractions whose denominators are all multiples of the same number</p> <p>Identify, name and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths</p> <p>Recognise mixed numbers and improper fractions and convert from one form to the other and write mathematical statements <math>&gt;1</math> as a mixed number [for example, <math>2\frac{2}{5} + 4\frac{4}{5} = 6\frac{6}{5} = 11\frac{1}{5}</math>]</p> <p>Add and subtract fractions with the same denominator and denominators that are multiples of the same number</p> <p>Multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams</p>	<p>Convert between different units of metric measure (for example, kilometre and metre; centimetre and metre; centimetre and millimetre; gram and kilogram; litre and millilitre)</p> <p>Measure and calculate the perimeter of composite rectilinear shapes in centimetres and metres</p> <p>Calculate and compare the area of rectangles using standard units, square centimetres (cm<sup>2</sup>) and square metres (m<sup>2</sup>) and</p>	<p>Identify, describe and represent the position of a shape following a reflection or translation, using the appropriate language, and know that the shape has not changed.</p>	<p>Identify 3-D shapes, including cubes and other cuboids, from 2-D representations</p> <p>Know angles are measured in degrees: estimate and compare acute, obtuse and reflex angles</p> <p>Draw given angles, and measure them in degrees (°)</p> <p>Identify angles at a point and one whole turn</p> <p>Use the properties of rectangles to deduce related facts and find missing lengths and angles So that I can: distinguish between regular and</p>	<p>Solve comparison, sum and difference problems using information presented in a line graph So that I can: complete, read and interpret information in tables, including timetables.</p>
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	<p>problems that involve all of the above</p> <p>Read Roman numerals to 1000 (M) and recognise years written in Roman numerals.</p>		<p>mentally, drawing upon known facts</p> <p>Divide numbers up to 4 digits by a one-digit number using the formal written method of short division and interpret remainders appropriately for the context</p> <p>Multiply and divide whole numbers and those involving decimals by 10, 100 and 1,000</p> <p>Recognise and use square numbers and cube numbers, and the notation for squared (<sup>2</sup>) and cubed (<sup>3</sup>) So that I can: solve problems involving multiplication and division, including using their knowledge of</p>	<p>Read and write decimal numbers as fractions [for example, <math>0.71 = \frac{71}{100}</math>]</p> <p>Recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents</p> <p>Round decimals with two decimal places to the nearest whole number and to one decimal place</p> <p>Read, write, order and compare numbers with up to three decimal places</p> <p>Solve problems involving number up to three decimal places</p> <p>Recognise the per cent symbol (%) and understand that per cent relates to 'number of parts per hundred', and write percentages as a fraction with denominator 100, and as a decimal</p>	<p>estimate the area of irregular shapes</p> <p>Estimate volume [for example, using 1 cm<sup>3</sup> blocks to build cuboids (including cubes)] and capacity [for example, using water]</p> <p>Solve problems involving converting between units of time</p> <p>Use all four operations to solve problems involving measure [for example, length, mass, volume, money] using decimal notation, including scaling.</p>		<p>irregular polygons based on reasoning about equal sides and angles.</p>	
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factors and multiples, squares and cubes

Solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign

Solve problems involving multiplication and division, including scaling by simple fractions and problems involving simple rates

<b>Vocabulary I will use...</b>	greater than or equal to $\geq$ less than or equal to $\leq$  ascending order, descending order  round to the nearest 10000 and 100000  $\approx$ is approximately equal to, approximation  square/d number cube/d number to the power of...  prime number  composite number  one squared, two squared etc million  term-to-term rule  Roman numerals to 1000 (M)	Ones boundary  tenths boundary	divisibility  common factor  prime factor  divisor  factorise	common fraction,  simple fraction,  vulgar fraction  proper fraction  improper fraction   mixed number,  mixed fraction   reduced to  cancel  ninth twelfth  thousandth  percentage  per cent %	discount  currency   gallon   square millimetre (mm <sup>2</sup> )  volume in cm <sup>3</sup>   imperial unit inch   pound (lb) pint   arrive  depart	rotation  symmetry  protractor	congruent  octahedron   axis of symmetry  reflective  symmetry degrees   angle/s on a straight line,  diagonal   angle/s at a point  reflex angle	database line, graph  bar line chart  timetable mode   range  maximum/minimum value  outcome   x-axis  y-axis
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