

MATHEMATICS - NATIONAL CURRICULUM EXPECTATIONS – UPPER KEY STAGE 2

MATHEMATICS YEAR 5							
Number – Number and Place Value	Number – Addition and subtraction	Number – Multiplication and division	Number – fractions inc decimals & %	Measurement	Geometry – Properties of shape	Geometry – Position and direction	Statistics
<p>Pupils should be taught to: 5.NPV.a. I can read, write, order and compare numbers to at least 1 000 000 and determine the value of each digit</p> <p>5.NPV.b. I can count forwards or backwards in steps of powers of 10 for any given number up to 1 000 000</p> <p>5.NPV.c. I can interpret negative numbers in context, count forwards and backwards with positive and negative whole numbers, including through zero</p>	<p>Pupils should be taught to: 5.NAS.a. I can add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction)</p> <p>5.NAS.b. I can add and subtract numbers mentally with increasingly large numbers</p> <p>5.NAS.c. I can use rounding to check answers to calculations and determine, in the context of a problem,</p>	<p>Pupils should be taught to: 5.NMD.a. I can identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers</p> <p>5.NMD.b. I know and use the vocabulary of prime numbers, prime factors and composite (non-prime) numbers</p> <p>5.NMD.c. I can establish whether a number up to 100 is prime and recall prime numbers up to 19</p> <p>5.NMD.d. I can 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>5.NMD.e. I can multiply and divide numbers mentally drawing upon known facts</p> <p>5.NMD.f. I can divide</p>	<p>Pupils should be taught to: 5.NFD. a. I can compare and order fractions whose denominators are all multiples of the same number</p> <p>5.NFD.b. I can identify, name and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths</p> <p>5.NFD. c. I can recognise mixed numbers and improper fractions and convert from one form to the other and write mathematical statements > 1 as a mixed number [for example, $2/5 + 4/5 = 6/5 = 1 \frac{1}{5}$</p> <p>5.NFD.d. I can add and subtract fractions with the same denominator and denominators that are multiples of the same number</p> <p>5.NFD.e. I can multiply proper fractions and mixed numbers by whole</p>	<p>Pupils should be taught to: 5.M.a. I can 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>5.M.b. I understand and use approximate equivalences between metric units and common imperial units such as inches, pounds and pints</p> <p>5.M.c. I can measure and calculate the perimeter of composite rectilinear shapes in centimetres and metres</p>	<p>Pupils should be taught to: 5.GPS.a. I can identify 3-D shapes, including cubes and other cuboids, from 2-D representations</p> <p>5.GPS.b. I know angles are measured in degrees: estimate and compare acute, obtuse and reflex angles</p> <p>5.GPS.c. I can draw given angles, and measure them in degrees (o)</p> <p>5.GPS.d. I can identify: i. angles at a point and one whole turn (total 360o) ii. angles at a point on a straight line and</p>	<p>Pupils should be taught to: 5.GPD.a.. I can 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>Pupils should be taught to: 5.S.a. I can solve comparison, sum and difference problems using information presented in a line graph</p> <p>5.S.b. I can complete, read and interpret information in tables, including timetables</p>

<p>5.NPV.d. I can round any number up to 1 000 000 to the nearest 10, 100, 1000, 10 000 and 100 000</p> <p>5.NPV.e. I can solve number problems and practical problems that involve all of the above numerals to 1000 (M) and recognise years written in Roman numerals.</p>	<p>levels of accuracy</p> <p>5.NAS.d. I can solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why.</p>	<p>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>5.NMD.g. I can multiply and divide whole numbers and those involving decimals by 10, 100 and 1000</p> <p>5.NMD.h. I can recognise and use square numbers and cube numbers, and the notation for squared (2) and cubed (3)</p> <p>5.NMD.i. I can solve problems involving multiplication and division including using their knowledge of factors and multiples, squares and cubes</p> <p>5.NMD.j. I can solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign</p> <p>5.NMD.k. I can solve problems involving multiplication and division, including scaling by simple fractions and problems involving simple rates.</p>	<p>numbers, supported by materials and diagrams</p> <p>5.NFD.f. I can read and write decimal numbers as fractions [for example, $0.71 = 71/100$]</p> <p>5.NFD. g. I can recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents</p> <p>5.NFD.h. I can round decimals with two decimal places to the nearest whole number and to one decimal place compare numbers with up to three decimal places</p> <p>5.NFD.i. I can solve problems involving number up to three decimal places</p> <p>5.NFD.j. I can 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>5.NFD.k. I can solve problems which require knowing percentage and decimal equivalents of $\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{5}$, $\frac{2}{5}$ and $\frac{4}{5}$ and those fractions with a denominator of a multiple of 10 or 25.</p>	<p>5.M.d. I can calculate and compare the area of rectangles (including squares), and including using standard units, square centimetres (cm²) and square metres (m²) and estimate the area of irregular shapes</p> <p>5.M.e. I can estimate volume [for example, using 1 cm³ blocks to build cuboids (including cubes)] and capacity [for example, using water]</p> <p>5.M.f. I can solve problems involving converting between units of time</p> <p>5.M.g. I can use all four operations to solve problems involving measure [for example, length, mass, volume, money] using decimal notation, including scaling.</p>	<p>$\frac{1}{2}$ a turn (total 180o) iii. other multiples of 90o</p> <p>5.GPS.e. I can use the properties of rectangles to deduce related facts and find missing lengths and angles</p> <p>5.GPS.f. I can distinguish between regular and irregular polygons based on reasoning about equal sides and angles.</p>		
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MATHEMATICS							YEAR 6
Number – Number and Place Value	Number – Addition and subtraction, Multiplication and division	Number – Fractions inc decimals & %	Ratio & Proportion	Algebra	Measurement	Geometry Properties of shape	Geometry Position & Direction
<p>Pupils should be taught to: 6.NPV.a. I can read, write, order and compare numbers up to 10 000 000 and determine the value of each digit</p> <p>6.NPV.b. I can round any whole number to a required degree of accuracy</p> <p>6.NPV.c. I can use negative numbers in context, and calculate intervals across zero</p> <p>6.NPV.d. I can solve number and practical problems that involve all of the above</p>	<p>Pupils should be taught to: 6.NAS.a. I can multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication</p> <p>6.NAS.b. I can 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</p> <p>6.NAS.c. I can 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>6.NAS.d. I can perform mental calculations, including with mixed operations and large</p>	<p>Pupils should be taught to: 6.NFD.a. I can use common factors to simplify fractions; use common multiples to express fractions in the same denomination</p> <p>6.NFD.b. I can compare and order fractions, including fractions > 1</p> <p>6.NFD.c. I can add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions</p> <p>6.NFD.d. I can multiply simple pairs of proper fractions, writing the answer in its simplest form [for example, $1/4 \times 1/8$]</p> <p>6.NFD.e. I can divide proper fractions by whole numbers [for example, $1/3 \div 2 = 1/6$]</p> <p>6.NFD.f. I can associate a fraction with division and calculate decimal</p>	<p>Pupils should be taught to: 6.RP.a.a I can solve problems involving the relative sizes of two quantities where missing values can be found by using integer multiplication and division facts</p> <p>6.RP.b. I can solve problems involving the calculation of percentages [for example, of measures, and such as 15% of 360] and the use of percentages for comparison</p> <p>6.RP.c. I can solve problems involving similar shapes where the scale factor is known or can be found</p> <p>6.RP.d. I can solve problems involving unequal sharing</p>	<p>Pupils should be taught to: 6.A.a. I can use simple formulae</p> <p>6.A.b. I can generate and describe linear number sequences</p> <p>6.A.c. I can express missing number problems algebraically</p> <p>6.A.d. I can find pairs of numbers that satisfy an equation with two unknowns</p> <p>6.A.e. I can enumerate possibilities of combinations of two variables.</p>	<p>Pupils should be taught to: 6.M.a. I can solve problems involving the calculation and conversion of units of measure, using decimal notation up to three decimal places where appropriate</p> <p>6.M.b. I can 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 up to three decimal places</p> <p>6.M.c. I can convert between miles and kilometres</p>	<p>Pupils should be taught to: 6.GPS.a. I can draw 2-D shapes using given dimensions and angles</p> <p>6.GPS.b. I can recognise, describe and build simple 3-D shapes, including making nets</p> <p>6.GPS.c. I can compare and classify geometric shapes based on their properties and sizes and find unknown angles in any triangles, quadrilaterals, and regular polygons</p> <p>6.GPS.d. I can illustrate and name parts of circles, including radius, diameter and circumference and know that the diameter is twice the radius</p> <p>6.GPS.e. I can</p>	<p>Pupils should be taught to: 6.GPD.a. I can describe positions on the full coordinate grid (all four quadrants)</p> <p>6.GPD.b. I can draw and translate simple shapes on the coordinate plane, and reflect them in the axes.</p>

	<p>numbers</p> <p>6.NAS.e. I can identify common factors, common multiples and prime numbers</p> <p>6.NAS.f. I can use my knowledge of the order of operations to carry out calculations involving the four operations</p> <p>6.NAS.g. I can solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why</p> <p>6.NAS.h. I can solve problems involving addition, subtraction, multiplication and division</p> <p>6.NAS.j. I can use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy.</p>	<p>fraction equivalents [for example, 0.375] for a simple fraction [for example, $\frac{3}{8}$]</p> <p>6.NFD.g. I can 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>6.NFD.h. I can multiply one-digit numbers with up to two decimal places by whole numbers</p> <p>6.NFD.i. I can use written division methods in cases where the answer has up to two decimal places which require answers to be rounded to specified degrees of accuracy</p> <p>6.NFD.j. I can recall and use equivalences between simple fractions, decimals and percentages, including in different contexts.</p>	<p>and grouping using knowledge of fractions and multiples.</p>		<p>6.M.d. I can recognise that shapes with the same areas can have different perimeters and vice versa</p> <p>6.M.e. I can recognise when it is possible to use formulae for area and volume of shapes</p> <p>6.M.f. I can calculate the area of parallelograms and triangles</p> <p>6.M.g. I can 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].</p>	<p>recognise angles where they meet at a point, are on a straight line, or are vertically opposite, and find missing angles.</p>	
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