



Example Planning – Year 6 Maths

Teacher		Pre-Prep		Year	6	No of pupils		Subject	Maths
Term	Autumn							No. of lessons	

About this Unit Number and place value, Negative Numbers & Roman Numerals, Multiplication, Division, Algebra, Fractions, Ratio and Proportion, Problem Solving, Geometry.

Session	No of days	Teaching Focus/Activity Description	Key Vocabulary
Number Number and place value Week 1	5	<p>Read and write numbers to 10,000,000; order and compare numbers within 10,000,000</p> <p>Round numbers up to 10,000,000 to the nearest 10, 100, 1000, 10,000, 100,000 and 1,000,000</p> <p>Recognise the place value of each digit in a seven-digit number</p> <p>Partition seven-digit numbers into millions, hundred thousands, ten thousands, thousands, hundreds, tens and ones/units; continue to use place value cards and charts to support, if necessary</p> <p>Use knowledge of place value to solve number problems by adding and subtracting 10, 100, 1000, 10,000, 100,000 or 1,000,000 to any number up to 10,000,000 e.g.</p> <p>A house in Chelsea is for sale for £1,365,000. The house next door is £100,000 cheaper. How much does the house next door cost?</p> <p>The population of London is approximately 8,300,000. If the population increases by 200,000 over the next year, what will the population be?</p> <p>Count forwards and backwards in steps through zero to include positive and negative whole numbers,</p>	<p>Partition, Place Value</p> <p>Digit, number</p> <p>Units/ones, Tens, Hundreds, Thousands, Ten thousands, Hundred thousands, Millions</p> <p>Order</p> <p>Compar</p> <p>e</p> <p>More than, Less than, <, ></p> <p>Round</p> <p>Positive, negative</p>

<p>Number</p> <p>Negative Numbers & Roman Numerals</p> <p>Week 2</p>	<p>3</p> <p>2</p>	<p>e.g. 12, 7, 2, -3, -8 (describe the term to term rule)</p> <p>Interpret and use negative numbers in context e.g. temperature or depth below sea level</p> <p>Respond to questions about negative numbers e.g. fill in the missing numbers on a number line; put these temperatures in order from coldest to warmest (8°C, 18°C, - 18°C , - 8°C, 0°C)</p> <p>Calculate intervals including those across zero e.g. the average nightly temperature in September was 15°C and in February it was - 2°C. How many degrees colder was it in February?</p> <p>Yesterday the temperature during the day was 8°C. It dropped by 10 degrees last night. What was the temperature during the night? A diver is swimming below the surface of the water at - 30m. He swims up 12m and then down 4 metres. Where is he now?</p> <p>Consolidate reading and writing Roman numerals to 1000 (M); recognise years written in Roman numerals e.g. How do you write this year in Roman numerals? Write the year of your birth in Roman numerals (taken from Y5 programmes of study)</p> <p>Extend with more challenging examples e.g. The Great Fire of London was in MDCLXVI - what year was this?</p>	<p>(numbers)</p> <p>Temperature, ° C degrees Celsius</p> <p>interval, depth</p> <p>Roman numerals I, V, X, L, C, D, M</p>
<p>Number</p> <p>Multiplication</p> <p>Week 3</p>	<p>5</p>	<p>Consolidate writing and calculating mathematical statements for all multiplication tables (up to 12 x 12) ; include multiplying by 0; solve missing number problems; use knowledge of multiplication facts and place value to derive other facts e.g. if you know that 7 x 8 = 56 what else do you know? How does 9 x 12 = 108 help you to calculate 18 x 6?</p> <p>Consolidate recognising and using square numbers up to 12 x 12 and the notation for squared number (²); consolidate recognising and using cube numbers and the notation e.g. 4³ = 4 x 4 x 4 = 64; 10³ = 10 x 10 x 10 = 1,000; relate to volume of a cube and cm³</p> <p>Consolidate the formal written method of short multiplication to multiply a two-digit number, a three digit-number or a four-digit number by a single digit number; multiply decimal numbers by a single digit number, including in the context of money and measurement (See Calculation Policy)</p> <p>Consolidate the formal written method of long multiplication to multiply a two-digit number, a three-digit number or a four digit number by a two-digit number; multiply decimal numbers by a two-digit number, including in the context of money and measurement (See Calculation Policy)</p> <p>Solve word problems, which involve short and long multiplication, including money and measures problems</p>	<p>Square numbers (²) Cube numbers (³)</p> <p>Multiply, multiplication, times, product</p> <p>Formal method of short multiplication</p> <p>Formal method of long multiplication</p>

<p>Number</p> <p>Division</p> <p>Week 4</p>	<p>5</p>	<p>Consolidate all mathematical vocabulary related to division including the terms divisor, dividend, quotient e.g. In this calculation, what is the divisor, the dividend and the quotient? $120 \div 12 = 10$</p> <p>Find all factors of a given number, common factors of two given numbers, and prime factors of a given number; understand that prime numbers have exactly two factors; recall prime numbers up to 19; establish whether a number, up to 100, is prime</p> <p>Consolidate the formal written method of short division with and without remainders (See Calculation Policy); interpret remainders as whole number remainders, fractions or decimals depending on the context</p> <p>Introduce the formal written method of long division of three and four digit whole numbers by a 2-digit divisor (See Calculation Policy); interpret remainders as whole number remainders, fractions or decimals depending on the context</p> <p>Solve word problems, which involve short and long division, with and without remainders; interpret remainders appropriately for the context</p>	<p>Divide, division, divisor, dividend, quotient</p> <p>Factors, common factors, prime factors, prime numbers</p> <p>Short division, long division</p> <p>Formal layout $\overline{) }$</p> <p>Round up/down, remainder</p>
<p>Algebra</p> <p>Week 5</p>	<p>5</p>	<p>Use simple formulae using symbols/ letters to represent variables and unknowns in mathematical situations throughout the year e.g. formulae for finding perimeter and area, finding missing angles</p> <p>Express missing number problems algebraically e.g. $180 - n = 135$, $n = 45$; $9n = 63$, $n = 7$</p> <p>Find pairs of numbers that satisfy an equation with two unknowns e.g. $9 \times a = 20 + b$, $a = 3$ and $b = 7$</p> <p>Enumerate all possibilities of combinations of two variables e.g. $n \times m = 48$. What are the possible values of m and n? (use knowledge of factor pairs)</p> <p>Recognise, generate and describe linear number sequences, first using words and then algebra e.g. describe and extend this sequence: 4, 8, 12, 16, 20, 24... (multiples of 4), in words (add 4 each time); write a formula for the nth term ($4 \times n$ or $4n$); 1, 6, 11, 16, 21...(multiples of 5 plus 1), formula for the nth term $5n + 1$</p> <p>Solve mathematical problems and describe rules using a formula, first in words then algebraically e.g. 'Paddy's Party'; 'The handshake problem'</p>	<p>Algebra, symbol, equation, formula, variable, unknown, n^{th} term</p> <p>Problem, puzzle, solution, rule</p>

<p>Number</p> <p>Fractions (including decimals and percentages)</p> <p>Week 6</p>	<p>5</p>	<p>Consolidate understanding of fractions in problem solving contexts e.g. I have saved £450 in my bank account. I spend $\frac{2}{9}$ of my savings on new trainers. How much do my trainers cost? How much money do I have left? What fraction of my savings do I have left?</p> <p>Add and subtract fractions with different denominators and mixed numbers in problem solving contexts e.g. I have $\frac{1}{2}$ a cheese and tomato pizza and $\frac{3}{8}$ of a mushroom pizza. How much pizza do I have on my plate?</p> <p>There are $1\frac{3}{4}$ pizzas in the fridge and I eat $\frac{7}{8}$ of a pizza. How much pizza is left for later?</p> <p>Multiply simple pairs of proper fractions, writing the answer in its simplest form $\frac{2}{3} \times \frac{1}{2} = \frac{2}{6} = \frac{1}{3}$ (consider the use of diagrams to support understanding)</p> <p>Introduce dividing proper fractions by whole numbers e.g. $\frac{1}{2} \div 2 = \frac{1}{4}$; $\frac{1}{3} \div 2 = \frac{1}{6}$; $\frac{3}{4} \div 3 = \frac{1}{4}$ (consider the use of diagrams to support understanding)</p> <p>Consolidate understanding of fraction, decimal and percentage equivalents e.g. understand that $43\% = 0.43 = \frac{43}{100}$; know decimal and percentage equivalents of $\frac{1}{2}$, $\frac{1}{4}$, $\frac{3}{4}$, $\frac{1}{5}$, $\frac{2}{5}$, $\frac{4}{5}$ and those fractions with a denominator of a multiple of 10 or 25</p> <p>Associate fractions with division e.g. $\frac{3}{4} = 0.75$ because $3 \div 4 = 0.75$ (use a calculator to support understanding)</p> <p>Reason about fractions, decimals and percentages e.g. put these in order starting with the smallest- 0.28, 25%, $\frac{1}{5}$, $\frac{3}{10}$, 0.35. How did you work it out?</p>	<p>Numerator, denominator Equivalent fractions, mixed number, improper fractions</p> <p>Common factors, common multiples</p> <p>Decimal, fraction, percentage equivalents, %</p>
<p>Ratio and proportion</p> <p>(including percentages)</p>	<p>2</p> <p>1</p>	<p>Find percentages of whole number quantities e.g. 10% of £86 = £8.60; 20% of £86 = £17.20; 5% of £86 = £4.30; 1% of £86 = 86p; extend with 15% of £86 = £8.60 + £4.30 = £12.90</p> <p>Solve problems involving the calculation of percentages and the use of percentages for comparison e.g. A computer game costs £37. Today there is a 10% off sale. How much does the game cost today? What if there was a 15% off sale?</p> <p>Anthony scored $\frac{23}{50}$ in a test. What was his percentage score? Emily scored $\frac{13}{25}$ in a different test. Who did better, Anthony or Emily?</p> <p>Consolidate ratio and understand that it is a comparison of part to part e.g. in this recipe, for every egg you need three spoonfuls of flour; use the notation 1:3 (a:b)</p> <p>Describe ratio using words and notation e.g. Make a drink with 100ml of orange squash and 500ml of water. What is the ratio of orange squash to water in this recipe?</p> <p>Explain how to use integer multiplication or division to make larger or smaller amounts of drink?</p>	<p>Per cent, percentages, %</p> <p>Ratio (:)</p>

<p>Week 7</p>	<p>2</p>	<p>Introduce proportion as a way to express relationships using fractions e.g. in this tower there are 3 blue bricks and 5 green bricks. What proportion of the bricks is blue? $\frac{3}{8}$. What proportion of the bricks is green? $\frac{5}{8}$; Make a drink with 100ml of orange squash and 500ml of water. What proportion (fraction) of the drink is orange squash? ($\frac{1}{6}$) What proportion is water? ($\frac{5}{6}$) Solve ratio and proportion problems</p>	<p>Proportion, fraction</p>
<p>Geometry Properties of shapes</p> <p>Week 8</p>	<p>1</p> <p>3</p> <p>1</p>	<p>Consolidate identifying, describing, comparing and classifying 2-D shapes, including all triangles and quadrilaterals, using the properties taught in previous years (acute/obtuse/reflex/right angle; regular/irregular; lines of symmetry/symmetric/symmetrical; 'pairs of parallel sides'); use conventional marking for parallel lines and right angles</p> <p>Use knowledge that angles in a straight line total 180° and that angles at a point total 360° to calculate and reason about missing angles on a straight line and at a point; express missing numbers algebraically</p> <p>Know the internal angles of a triangle total 180° and the internal angles of a quadrilateral total 360°; use a protractor to check; calculate and reason about missing angles in triangles and quadrilaterals; express missing angles algebraically; extend with knowledge of internal angles of other polygons</p> <p>Know that vertically opposite angles are equal; use a protractor to check; calculate and reason about missing angles that are vertically opposite; express the missing angle algebraically</p> <p>Introduce the names of the parts of a circle: radius, diameter, circumference; know that the diameter is twice the radius; extend by expressing the relationship algebraically ($d = 2 \times r$)</p>	<p>All relevant vocabulary from previous years</p> <p>Degrees $^\circ$</p> <p>Internal angles, vertically opposite angles</p> <p>Radius, diameter, circumference</p>
<p>Measurement (perimeter, area and volume)</p> <p>Week 9</p>	<p>5</p>	<p>Solve problems involving similar shapes where the scale factor is known or can be found e.g. draw a rectangle with given dimensions. What is the perimeter? What is the area? Enlarge by a scale factor of two (double the lengths of the sides). What is the new perimeter? What is the new area? Understand that a scale factor of three means multiply the lengths by 3</p> <p>Extend by calculating the area of triangles and then parallelograms by dissecting and relating to the area of a rectangle; understand and use the formula (in words and symbols) for the area of triangles and parallelograms</p> <p>Consolidate understanding of volume and express the formula for finding the volume of a cube/cuboid in words and using letters/symbols (algebraically); use the terms and standard units cubic centimetres, cm^3, and cubic metres, m^3; extend to other units e.g. mm^3</p> <p>Solve problems relating to volume e.g. A cereal box is 30cm tall, 6cm deep and 20cm wide. What is its volume? A 180cm^3 cuboid is 10cm long and 3cm deep. What is its width?</p>	<p>Scale factor, enlarge, Perimeter Area</p> <p>Square centimetres, cm^2, square metres, m^2, square millimetres, mm^2, square kilometres, km^2</p> <p>Volume, cube, cuboid Cubic centimetres, cm^3, mm^3</p>

<p>Number</p> <p>Problem solving with all operations</p> <p>Week 10</p>	<p>5</p>	<p>Solve one-step, two-step and multi-step word problems, including money and measures problems (using decimal notation, where appropriate), using all 4 operations, deciding which operation to use; use rounding and inverse operations to estimate and check answers to calculations</p> <p>e.g. There is space in the multi-storey car park for 17 rows of 30 cars on each of the 4 floors. How many cars can park in this car park? What if there were already 154 cars in the car park - how many spaces would be left?</p> <p>One toffee apple needs: 1 stick, 100g of sugar and 1 apple 50 sticks cost £6.50, 1kg of sugar costs £1.20 and 100 apples cost £22.50 Children make 100 toffee apples for charity. They sell them for £1 each. The profit goes to charity. Work out how much money goes to charity.</p> <p>Solve problems and puzzles relating to all 4 operations, some in a context and some not set in a context, including the use of brackets, order of operations (BODMAS), missing numbers/digits (Consider the use of the Primary Strategy documents: 'Problems and Puzzles'/ Mathematical Challenges for more able pupils'; Reasoning about numbers with challenges and simplifications)</p>	<p>word problems, puzzles, solution</p> <p>estimate, inverse, bracket, rounding</p>
<p>Geometry (3D shape)</p> <p>&</p> <p>Statistics (data handling and mean average)</p> <p>Week 11</p>	<p>2</p> <p>2</p> <p>1</p>	<p>Consolidate recognising and naming 3D shapes, from 2D representations; describe the properties of 3D shapes using vocabulary from previous years including parallel or perpendicular faces</p> <p>Build 3D shapes, including making nets e.g. cube, cuboid, triangular prism, tetrahedron; investigate the different nets that would make given 2D representations of 3D shapes</p> <p>Interpret and construct line graphs, with a range of scales e.g. make a conversion chart for £s to euros and answer related questions; construct and interpret a line graph showing average temperature each month for a year</p> <p>Interpret pie charts and extend by constructing pie charts e.g. make a simple pie chart to show children's favourite way to eat potatoes (mash, roast, chips, wedges) NB connect work on angles, fractions and percentages to the interpretation of pie charts</p> <p>Calculate and interpret the mean as an average for simple sets of discrete data in different contexts e.g. Tom has been keeping a record of his mental maths test scores each week. His scores are 12, 10, 14, 13, 12 and 11. What is his mean average score?</p> <p>Consider when it is appropriate to find the mean of a set of data</p>	<p>All relevant vocabulary relating to 3D shapes from previous years, including: net</p> <p>Straight line graph, scale, conversion chart, pie chart</p> <p>Mean average, set of data</p>

