

Suggested oral mental starters (ongoing, throughout the term)

- Identify multiples and count from (and back to) 0 in multiples of 3, 4, 6, 7, 8, 9, 11,12, 25, 50, 100 and 1000
- Count from (and back to) 0 in multiples of 0.3, 0.4, 0.5, 0.6, 0.7, 0.8, 0.9 (using known multiples and knowledge of place value)
- Recall and use multiplication and division facts for the 2, 3, 4, 5, 6, 7, 8, 9, 10, 11 and 12 times tables (up to the 12th multiple)
- Find all factor pairs of a given number; find all common factors for a pair of numbers; identify common multiples
- Add, subtract, multiply and divide numbers mentally using known facts and a range of strategies, including the use of jottings
- Read, write, compare and order numbers within 5,000,000
- Read, write, compare and order numbers with up to three decimal places
- Multiply numbers by 10, 100 and 1000 and divide corresponding numbers by 10, 100 and 1000 (with up to three decimal places)
- Count forwards and backwards with positive and negative whole numbers, including through zero; calculate intervals across zero (in context)
- Recognise, describe and extend linear number sequences, including those involving decimals, e.g. 0.9, 1.8, 2.7; find the term to term rule
- Compare and order fractions, including those greater than one (consider the use of diagrams and fraction walls)
- Find unit and non-unit fractions of numbers and quantities e.g. 1/7 of £56; 3/7 of £56
- Know and use the vocabulary of prime numbers and establish whether a number up to 100 is a prime number
- Recognise and use square numbers (up to 12 x 12) and the notation e.g. $9^2 = 81$
- Convert between different units of measurement (including time), using decimal notation up to three decimal places if appropriate
- Consolidate telling the time to the nearest minute on an analogue clock and relate to 12/24 hour digital clocks; interpret timetables

Areas of Study	No. of days	Statutory requirements and non-statutory guidance	Suggested Key Vocabulary
<p>Number</p> <p>Number and place value</p> <p>Week 1</p>	<p>3-5</p>	<p>Consolidate recognising and writing 1,000,000 as one million</p> <p>Read and write numbers to 5,000,000; order and compare numbers within 5,000,000</p> <p>Identify the place value of each digit in numbers with up to seven-digits</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>Round numbers up to 5,000,000 to the nearest 10, 100, 1000, 10,000, 100,000 and 1,000,000</p> <p>Use knowledge of place value to solve number problems by adding and subtracting 10, 100, 1000, 10,000 or 100,000 to any number up to 5,000,000 e.g. A house in my road is for sale for £365,000. The house next door is £10,000 cheaper. How much does the house next door cost?</p> <p>Reason about numbers and place value e.g. If you wrote these numbers in order starting with the smallest, which number would be third? Explain how you ordered the numbers</p> <p>1,250,000 1,000,250 125,000 251,000 52,100 1,000,520</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>Compare</p> <p>More than, Less than, <, ></p> <p>Round</p>

Medium Term Plans for Mathematics (revised 2016) - Year Six (Autumn Term)

<p>Number</p> <p>Decimals/ place value & Addition/ Subtraction</p> <p>Week 2</p>	<p>2</p> <p>3</p>	<p>Read and write numbers with up to three decimal places Order and compare numbers with up to three decimal places (including in the context of money and measures) Round decimal numbers with one or two decimal places to the nearest whole number Round decimal numbers with two decimal places to one decimal place Identify the place value of each digit in a decimal number with up to three decimal places (hundreds, tens, units/ones, tenths, hundredths, thousandths)</p> <p>Consolidate using the formal written method of addition to add two or more large numbers (with four or more digits), including decimal numbers (up to three decimal places), including in the context of money and measures (See Calculation Policy - Y5 Guidance)</p> <p>Consolidate the formal written method of subtraction to subtract two or more large numbers (with four or more digits), including decimal numbers (with up to three decimal places), including in the context of money and measures (See Calculation Policy - Y5 guidance)</p> <p>Solve addition and subtraction one-step, two-step and multi-step word problems (including money and measures problems, with up to three decimal places), deciding which operation to use; use rounding and inverse operations to estimate and check answers to calculations</p>	<p>Partition, Place value Digit, number, decimal, decimal place tenth, hundredth, thousandths</p> <p>Order, compare More than, greater than, less than, <, ></p> <p>Round Inverse operations</p> <p>Addition, plus, altogether, add, sum of, total, more than, increase Subtraction, subtract, minus, less than, decrease Estimate, check</p>
<p>Number</p> <p>Multiplication</p>	<p>2</p>	<p>Consolidate all mathematical vocabulary related to multiplication; use the term product e.g. What is the product of 9 and 7? (consider as mental/oral activities)</p> <p>Write and calculate mathematical statements for all multiplication tables (up to 12 x 12); include multiplying by 0; solve missing number problems (consider as mental/oral activities)</p> <p>Use understanding of place value to multiply whole numbers and decimals by 10, 100 and 1,000</p> <p>Consolidate recognising and using square numbers up to 12 x 12 and the notation (²) for squared number e.g. $7^2 = 7 \times 7 = 49$ Recognise and use simple cube numbers and the notation e.g. $10^3 = 10 \times 10 \times 10 = 1000$; relate to volume and cm^3</p> <p>Solve problems using knowledge of square and cube numbers e.g. Last year my age was a square number. Next year it will be a cube number. How old am I? How long must I wait until my age is both a square number and a cube number?</p>	<p>Square numbers (²) Cube numbers (³)</p> <p>Multiply, multiplication, times, product</p> <p>Thousands, hundreds, tens, ones/units, tenths, thousandths, digit</p>

Medium Term Plans for Mathematics (revised 2016) - Year Six (Autumn Term)

<p>Week 3</p>	<p>3</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 (with up to 2 decimal places) by a single digit number, initially in the context of money or measures (See Calculation Policy for guidance on progression in methods)</p> <p>Consolidate the formal written method of long multiplication to multiply a two-digit number and then a three-digit number by a two-digit number; multiply decimal numbers (with up to two decimal places) by a two-digit number, initially in the context of money or measures; extend with multiplication of a four-digit number by a two-digit number (See Calculation Policy for guidance on progression in methods)</p> <p>Solve word problems, which involve short and long multiplication e.g. Bags of apples cost £2.45. I buy seven bags. How much do I spend? There are 48 cars in each row of the car park and there are 37 rows. How many cars are in the car park? A bottle of orange squash contains 1.75 litres. I have bought 12 bottles for the school party, how much orange squash do I have?</p>	<p>Formal method of short multiplication</p> <p>Formal method of long multiplication</p>
<p>Algebra</p> <p>Week 4</p>	<p>5</p>	<p>Introduce the use of symbols and letters to represent variables and unknown numbers or quantities</p> <p>Express missing number problems algebraically e.g. $a + 58 = 100$, $a = 42$; $6n = 42$, $n = 7$</p> <p>Find pairs of numbers that satisfy an equation with two unknowns e.g. $a \times 12 = 30 + b$, $a = 3$ and $b = 6$</p> <p>Solve problems and number puzzles using algebra e.g. $n \times m = 36$. What are the possible values of m and n? If $a = 7$ and $b = 9$ what is the answer to: $3a + 9b$; $4b + 1$; $8a - 3$; $a^2 + b^2$? Pens cost 25p each. I buy n pens and it costs me £1.50. What is the value of n? The number of bean sticks needed for a row which is n metres long is $2n + 1$. How many bean sticks do you need for a row which is 60 metres long?</p> <p>NB continue to use algebra throughout the year by substituting values into a simple formula, as appropriate e.g. when expressing formula for perimeter; finding missing angles; finding missing numbers; when interpreting sequences, patterns and relationships (Possible links to Science curriculum)</p>	<p>Algebra, symbol, represent, equation</p> <p>Problem, puzzle, solution</p>

Medium Term Plans for Mathematics (revised 2016) - Year Six (Autumn Term)

<p>Week 7</p>	<p>2</p>	<p>Introduce ratio and understand that it is a comparison of part to part e.g. I want to mix some orange paint. For every spoonful of red paint I need two spoonful's of yellow paint; introduce the notation 1:2 (a:b)</p> <p>Describe ratio using words and notation e.g. what is the ratio of red cubes to blue cubes in this tower of cubes</p> <p>Solve ratio problems involving the relative size of two quantities using integer multiplication and division e.g. Zara uses 8 tomatoes to make a litre of sauce. How many tomatoes does she need to make 3 litres of sauce? Half a litre of sauce?</p> <p>For every three boys at the gym club there are four girls. What is the ratio of boys to girls? Altogether there are 28 children at the club. How many are boys and how many are girls?</p>	<p>Ratio (:)</p>
<p>Week 8</p>	<p>1</p>	<p>Solve problems involving similar shapes where the scale factor is known e.g. using a given rectangle with sides of 8cm and 5.5cm, enlarge using a scale factor of two (double the length of the sides)</p>	<p>Scale factor</p>
<p>Geometry Properties of shapes & Statistics (data handling)</p>	<p>3</p>	<p>Consolidate understanding of acute, obtuse, reflex and right angles; know that angles are measured in degrees °</p> <p>Consolidate the use of the protractor to measure angles (including use of interactive resources); draw and measure given angles in degrees (to the nearest degree)</p> <p>Reason about angles e.g. what is the angle between the hands of a clock at 4 o'clock? How did you work it out? At what other times is the angle the same?</p> <p>Know that angles in a straight line total 180° and are equivalent to half a turn; know that angles at a point total 360° and are equivalent to one whole turn; know that three quarters of a turn is 270°; know that the angles in a triangle total 180°</p> <p>Calculate a missing angles on a straight line and at a point; calculate a missing angle in a triangle; express missing numbers algebraically</p> <p>Extend with more challenging examples that involve more than one missing angle</p> <p>Draw 2-D shapes (polygons) using given dimensions and angles</p>	<p>Angle, acute, obtuse, reflex, right angle, turns</p> <p>Degrees °</p>
<p>Week 8</p>	<p>2</p>	<p>Introduce pie charts as a way to represent data; interpret simple pie charts and answer questions (using knowledge of fractions, percentages and angles)</p>	<p>Pie chart</p>

Medium Term Plans for Mathematics (revised 2016) - Year Six (Autumn Term)

<p>Measurement</p> <p>(perimeter, area and volume)</p> <p>Week 9</p>	<p>5</p>	<p>Consolidate understanding of perimeter and express the formula for finding the perimeter of a rectangle in words and then using letters/symbols (algebraically); calculate the perimeter of rectilinear shapes; calculate the perimeter of composite rectilinear shapes; solve perimeter problems with missing measurements (taken from Y5 programmes of study)</p> <p>Consolidate understanding of area and express the formula for finding the area of rectangles in words and then using letters/symbols (algebraically); use standard units for square centimetres (cm²) and square metres (m²); calculate the area of rectangles and of composite rectilinear shapes (taken from Y5 programmes of study)</p> <p>Estimate the area of irregular shapes by counting squares, including half squares and fractions of squares</p> <p>Recognise that shapes with the same area can have different perimeters and vice versa</p> <p>Investigate using area and perimeter e.g. Always, sometimes, never true? When you double the area of a rectangle, you double the perimeter; draw some rectangles with an area of 36cm². How many different rectangles with this area can you draw? Which one has the longest/shortest perimeter?</p> <p>Consolidate understanding of volume and express the formula for finding the volume of a cube/ cuboid in words and then using letters/symbols; use the terms and standard units cubic centimetres (cm³) and cubic metres (m³); estimate, calculate and compare volume of cubes and cuboids</p>	<p>Perimeter Area</p> <p>Square centimetres, cm², square metres, m²</p> <p>Volume, cube, cuboid Cubic centimetres, cm³</p>
<p>Number</p> <p>Calculation (Mental methods)</p> <p>&</p> <p>Statistics (mean average)</p> <p>Week 10</p>	<p>4</p> <p>1</p>	<p>Consolidate mental methods of calculation from previous years, choosing the most efficient/ appropriate strategies for the numbers involved e.g.</p> <p>Solve the following using a mental method of your choice (with jottings as appropriate): 1258 + 999; 7 x 900; 2009 – 1985; 38 x 5; 88 + 75 + 12; 98 ÷ 7; 3.5 x 200; 4 x 16; 6004 – 19; 1/5 of 3000; 25% of £120; 8897 + n = 9000, what is the value of n?</p> <p>Explore the order of operations using brackets (BODMAS) e.g. (3 + 2) x 7 = 5 x 7 = 35; 3 + (2 x 7) = 3 + 14 = 17</p> <p>Solve one step, two-step and multi-step word problems in context (including money and measures) deciding which operations and methods to use and why</p> <p>Solve number problems- consider the problem 'A bit fishy'</p> <p>Introduce the mean as an average. Calculate the mean average of a simple set of numbers e.g. 10, 8, 12, 7, 8, 9 (find the total of the set of numbers and divide by the number of numbers in the set)</p>	<p>All relevant vocabulary relating to mental calculation from previous years</p> <p>Problem, solution</p> <p>Mean average</p>

Medium Term Plans for Mathematics (revised 2016) - Year Six (Autumn Term)

<p>Measurement & Statistics</p>	<p>2</p>	<p>Consolidate converting between 12-hour digital clocks and 24-hour digital clocks e.g. What time on the 12-hour clock is 21:35? What time on the 24-hour clock is 3:25 pm? Solve problems involving duration of events, including reading timetables</p> <p>Convert between units of time e.g. How many seconds in twenty minutes? How many days altogether in the months beginning with J? How many hours in two weeks? How many months in a century?</p>	<p>All relevant vocabulary from previous years relating to measures (including time)</p>
<p>Week 11</p>	<p>1</p>	<p>Consolidate reading, writing and converting between standard metric units, converting measurements of length, mass and capacity/volume from a smaller unit to a larger unit and vice versa, using decimal notation up to three decimal places e.g. How many ml in a 3 ¼ litre jug of juice? My brother is 185cm tall - how tall is he in metres? My parcel weighs 1,365g- how many kg does it weigh? A piece of ribbon measures 1650mm. How long is this in cm? How long is it in metres? The capacity of my mug is 300ml - what is the capacity in litres?</p> <p>Consolidate understanding of approximate equivalences between metric units and common imperial units, such as feet and inches, pounds and pints. Establish where we still see/use imperial units e.g. I bought 2 pints of milk, I am 5 feet and 2 inches tall, my cat weighs 8 pounds (taken from Y5 programme of study)</p> <p>Know that miles are an imperial measurement of length; extend by converting between miles and kilometres (one km = 5/8 mile)</p>	<p>Metric measures, imperial measures</p>
	<p>1</p>	<p>Interpret a straight line graph showing conversion from km to miles; know that intermediate values have meaning; answer related questions converting between miles and kilometres (and vice versa) e.g. I am going to Paris for the weekend. It is four miles from the Gare du Nord railway station to the Eiffel Tower - how far is this in kilometres? It is 37 kilometres from Paris to the Palace of Versailles - how far is this in miles?</p>	<p>Straight line graph, conversion</p>

