

Maths medium term plan: autumn term

Year 6

Mental Maths objectives to be covered:

Number/ Algebra objectives should be covered at least 4 times a term.

Measurement/ geometry objectives should be covered at least 2 times a term.

Number - Number and place value:

Order and compare decimals with up to 3 decimal places, and determine the value of each digit, and fractions.

Round any whole and decimal number to a required degree of accuracy.

Use negative numbers in context, and calculate intervals across zero.

Multiply and divide whole and decimal numbers by 10, 100 and 1000.

Number – Addition and Subtraction:

Perform mental calculations, including with mixed operations and large numbers.

Add and subtract any pair of appropriate whole numbers mentally.

Find decimals with a sum of $\frac{1}{10}$.

Number – Multiplication and division:

Identify common factors, common multiples and prime numbers.

Recall multiplication and division tables to 12×12 and derive quickly squares of numbers to 12×12 and the corresponding squares of multiples of 10.

Double and half any whole number.

Number – Fractions

Find fraction and percentages of whole number quantities, shapes and measures.

Recall and use equivalences between simple fractions, decimals and percentages, including in different contexts.

Recognise equivalent fractions.

Algebra:

Use simple formulae.

Measurement:

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.

Geometry – Properties of shape

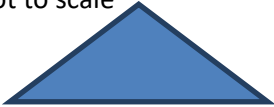
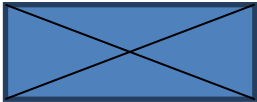
Calculate the area and perimeter of regular shapes and rectangles.

Year Six Medium Term Plan Term One

Week	Domain	National Curriculum Objectives	Reasoning, Conjecturing and Generalising Strategies	Small Step Objectives
Week 1	Place value Written Addition	<p>Read, write, order and compare numbers up to 10 000 000 and determine the value of each digit</p> <p>Round any whole number to a required degree of accuracy</p> <p>Use negative numbers in context, and calculate intervals across zero</p> <p>Solve number and practical problems that involve all of the above.</p>	<p><u>Spot the mistake:</u> -80,-40,10,50 What is wrong with this sequence of numbers?</p> <p><u>True or False?</u> When I count backwards in 50s from 10 I will say -200</p> <p><u>True or False?</u> The temperature is -3. It gets 2 degrees warmer. The new temperature is -5?</p> <p><u>Do, then explain</u> Find out the populations in five countries. Order the populations starting with the largest. Explain how you ordered the countries and their populations.</p> <p><u>Do, then explain</u> Explain how you know. Show the value of the digit 6 in these numbers? 6787555 95467754</p> <p><u>Make up an example</u> Create seven digit numbers where the digit sum is six and the tens of thousands digit is two. Eg 4020000 What is the largest/smallest number?</p> <p><u>Rounding</u> Possible answers Two numbers each with two decimal places round to 23.1 to one decimal place. The total of the numbers is 46.2. What could the numbers be?</p> <p><u>What do you notice?</u> Give an example of a six digit number which rounds to the same number when rounded to the nearest 10000 and 100000</p>	<p>Do I understand place value in 6-digit numbers?</p> <p>Can I place 6-digit numbers on a line?</p> <p>Can I order and compare 6-digit numbers?</p> <p>Can I add and subtract 1s, 10s, 100s, 1000s, 10,000s and 100,000s?</p> <p>Do I understand place value in 6-digit numbers?</p> <p>Can I place 6-digit numbers on a line?</p> <p>Can I order and compare 6-digit numbers?</p> <p>Can I add and subtract 1s, 10s, 100s, 1000s, 10,000s and 100,000s?</p> <p>Can I use written addition to add pairs of 5-digit numbers?</p>

<p>Week 2</p>	<p>Decimals Written Addition</p>	<p>Multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication</p> <p>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>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>Use their knowledge of the order of operations to carry out calculations involving the four operations</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 estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy.</p>	<p><u>True or false?</u> Are these number sentences true or false? $6.32 + \square = 8$ $\square = 1.68$ Give your reasons.</p> <p><u>Hard and easy questions</u> Which questions are easy / hard? 213323 - 70 = 512893 + 37 = 8193.54 - 5.9 = Explain why you think the hard questions are hard?</p> <p><u>Missing symbols</u> Write the missing signs (+ - x ÷) in this number sentence: $6 \bigcirc 12.3 = 61.9 \bigcirc ?$</p> <p><u>What else do you know?</u> If you know this: $86.7 + 13.3 = 100$ what other facts do you know?</p> <p><u>Convince me</u> Three four digit numbers total 12435. What could they be? Convince me</p> <p><u>Making an estimate</u> Circle the number that is the best estimate to $932.6 - 931.05$ 1.3 1.5 1.7 1.9</p> <p><u>Always, sometimes, never</u> Is it always, sometimes or never true that the sum of two consecutive triangular numbers is a square number</p>	<p>Do I understand place value in numbers with 3 decimal places?</p> <p>Can I divide by 10,100 and 1000 to give answers with 3 decimal places?</p> <p>Can I multiply numbers with 3 decimal places by 10, 100 and 1000?</p> <p>Can I position 3-place decimal numbers on a number line and begin to round to the nearest whole, 0.1 or 0.01?</p> <p>Can I compare numbers with 3 decimal places?</p> <p>Can I solve problems involving number?</p> <p>Can I add 2 or 3 amounts of money using column addition?</p> <p>Can I add 2 or 3 numbers with two decimal places in a measures context, e.g. metres?</p> <p>Can I use rounding to check answers?</p>
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<p>Week 3</p>	<p>Addition Subtraction</p>	<p>Perform mental calculations, including with mixed operations and large 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 estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy</p>	<p><u>True or false?</u> Are these number sentences true or false? $6.32 + \square = 8$ $\square = 1.68$ Give your reasons.</p> <p><u>Hard and easy questions</u> Which questions are easy / hard?</p> <p>$213323 - 70 =$ $512893 + 37 =$ $8193.54 - 5.9 =$ Explain why you think the hard questions are hard?</p> <p><u>Missing symbols</u> Write the missing signs (+ - × ÷) in this number sentence:</p> <p>$6 \bigcirc 12.3 = 61.9 \bigcirc 11.9$</p> <p><u>What else do you know?</u> If you know this: $86.7 + 13.3 = 100$ What other facts do you know?</p> <p><u>Convince me</u> Three four digit numbers total 12435. What could they be? Convince me</p> <p><u>Making an estimate</u> Circle the number that is the best estimate to $932.6 - 931.05$</p> <p>1.3 1.5 1.7 1.9</p> <p><u>Always, sometimes, never</u> Is it always, sometimes or never true that the sum of two consecutive triangular numbers is a square number</p>	<p>Can I add several prices, then find change from £50 and £100 using counting up?</p> <p>Can I find a difference between two amounts of money by counting up?</p> <p>Can I use column subtraction (decomposition) to subtract pairs of 5-digit numbers and to subtract 3-digit and 4-digit numbers from 5-digit numbers?</p> <p>Can I choose whether to use counting up or column subtraction (decomposition) to subtract pairs of 5-digit numbers?</p>
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<p>Week 4</p>	<p>Geometry Angles</p>	<p>Draw 2-D shapes using given dimensions and angles</p> <p>Recognise, describe and build simple 3-D shapes, including making nets</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>Illustrate and name parts of circles, including radius, diameter and circumference and know that the diameter is twice the radius</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>Draw and translate simple shapes on the coordinate plane, and reflect them in the axes.</p>	<p><u>What's the same, what's different?</u> What is the same and what is different about the nets of a triangular prism and a square based pyramid?</p> <p><u>Visualising</u> Jess has 24 cubes which she builds to make a cuboid. Write the dimensions of cuboids that she could make. List all the possibilities.</p> <p><u>Other possibilities</u> If one angle of an isosceles triangle is 36 degrees. What could the triangle look like - draw it. Are there other possibilities. Draw a net for a cuboid that has a volume of 24 cm^3.</p> <p><u>Always, sometimes, never</u> Is it always, sometimes or never true that, in a polyhedron, the number of vertices plus the number of faces equals the number of edges.</p> <p><u>Other possibilities</u> Not to scale</p>  <p>The angle at the top of this isosceles triangle is 110 degrees. What are the other angles in the triangle?</p> <p><u>Convince me</u></p>  <p>One angle at the point where the diagonals of a rectangle meet is 36 degrees. What could the other angles be? Convince me</p>	<p>Can I name parts of circles (radius, diameter, circumference) and know that the diameter is twice the radius?</p> <p>Can I classify and sort quadrilaterals?</p> <p>Can I draw polygons to given lengths and angles?</p> <p>Can I find unknown angles in any triangle, quadrilaterals, and regular polygons?</p> <p>Can I find unknown angles around a point, on a straight line or vertically opposite?</p>
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<p>Week 5</p>	<p>Multiplication Division Fractions</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 > 1</p> <p>Add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions</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><u>Spot the mistake</u> Identify and explain mistakes when counting in more complex fractional steps</p> <p><u>True or false?</u> 25% of 23km is longer than 0.2 of 20km. Convince me.</p> <p><u>Odd one out.</u> Why? Which is the odd one out in these collections of 4 fractions $\frac{3}{4}$ 9/12 26/36 18/24 4/20 1/5 6/25 6/30</p> <p><u>What do you notice?</u> Can you write similar statements? 8/5 of 25 = 40 5/4 of 16 = 20 7/6 of 36 = 42</p> <p><u>Complete the pattern</u></p> <table border="1" data-bbox="1055 624 1361 778"> <tr> <td>$\frac{1}{8}$</td> <td>$\frac{2}{8}$</td> <td>$\frac{3}{8}$</td> <td>$\frac{4}{8}$</td> </tr> <tr> <td>0.375</td> <td>???</td> <td>???</td> <td>???</td> </tr> </table> <p><u>Another and another</u> Write a unit fraction which has a value of less than 0.5? ... and another, ... and another, ...</p> <p><u>Ordering</u> Explain how you know. Which is larger, $\frac{1}{3}$ or $\frac{2}{5}$?</p> <p>Put the following amounts in order, starting with the largest. 23%, $\frac{5}{8}$, $\frac{3}{5}$, 0.8</p> <p><u>Another and another</u> Write down 2 fractions with a total of $3\frac{4}{5}$. ... and another, ... and another, ...</p> <p><u>Continue the pattern</u> $\frac{1}{3} \div 2 = \frac{1}{6}$ $\frac{1}{6} \div 2 = \frac{1}{12}$ $\frac{1}{12} \div 2 = \frac{1}{24}$</p> <p><u>What do you notice?</u> $\frac{1}{2} \times \frac{1}{4} =$</p> <p>The answer is $\frac{1}{8}$, what is the question (involving fractions / operations)</p>	$\frac{1}{8}$	$\frac{2}{8}$	$\frac{3}{8}$	$\frac{4}{8}$	0.375	???	???	???	<p>Can I find common multiples and factors; Identify prime numbers?</p> <p>Can I find numbers that have a pair of prime factors?</p> <p>Can I find equivalent fractions?</p> <p>Can I simplify fractions using multiples and factors?</p> <p>Can I compare and order fractions with unrelated denominators?</p> <p>Can I find unit and non-unit fractions of amounts?</p>
$\frac{1}{8}$	$\frac{2}{8}$	$\frac{3}{8}$	$\frac{4}{8}$									
0.375	???	???	???									

			Give your top tips for dividing fractions.	
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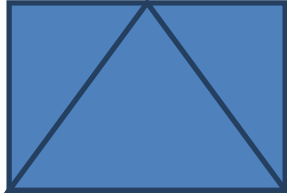
Week 6	Number Multiplication	<p>Read, write, order and compare numbers up to 10 000 000 and determine the value of each digit</p> <p>Round any whole number to a required degree of accuracy</p> <p>Use negative numbers in context, and calculate intervals across zero</p> <p>Solve number and practical problems that involve all of the above.</p>	<p>Missing numbers Which number could be written in the box? $2.4 \div 0.3 = \square \times 1.25$</p>	Can I place 5-digit numbers on a line and round to the nearest 10, 100 or 1000?
			<p>Use a fact $12 \times 1.1 = 13.2$ Use this fact to work out $15.4 \div 1.1 =$ $27.5 \div 1.1 =$</p>	Can I place 6-digit numbers on a line and round to the nearest 10, 100, 1000, 10,000 or 100,000?
			<p>Making links $0.7 \times 8 = 5.6$ How can you use this fact to solve these calculations? $0.7 \times 0.08 =$ $0.56 \div 8 =$</p>	Can I use short multiplication to multiply 4-digit numbers by single-digit numbers?
			<p>Prove It What goes in the missing box? Prove it</p> <p>$18 \square 4 \div 12 = 157$</p> <p>$38 \square 5 \div 18 = 212.5$</p> <p>$33 \square 2 \div 8 = 421.5$</p> <p>$38 \times \square .7 = 178.6$</p>	Can I use rounding to approximate?
			<p>Always, sometimes, never? Is it always, sometimes or never true that dividing a whole number by a half makes the answer twice as big. Is it always, sometimes or never true that when you square an even number, the result is divisible by 4 Is it always, sometimes or never true that multiples of 7 are 1 more or 1 less than prime numbers.</p> <p>Which is correct? Which of these number sentences is correct? $3 + 6 \times 2 = 15$ $6 \times 5 - 7 \times 4 = 92$ $8 \times 20 \div 4 \times 3 = 37$</p> <p>Use the inverse Use the inverse to check if the following calculations are correct:</p>	Can I use short multiplication to multiply 4-digit amounts of money by single-digit numbers?

			$2346 \times 46 = 332796$ $27.74 \div 19 = 1.46$	
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Week 7	Fractions Division	<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 > 1</p> <p>Add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions</p> <p>Multiply simple pairs of proper fractions, writing the answer in its simplest form eg $\frac{1}{4} \times \frac{1}{2}$</p> <p>Associate a fraction with division and calculate decimal fraction equivalents eg, 0.375 for a simple fraction</p> <p>Recall and use equivalences between simple fractions, decimals and percentages, including in different contexts.</p>	<p><u>Size of an answer</u> What could the numbers be?</p> <p>The product of a single digit number and a number with two decimal places is 21.34</p>	Can I recognise fraction and decimal equivalents?
				Can I use short division to divide 3-digit numbers by 1-digit numbers and by 11 and 12?
				Can I round up or down?
				Can I use short division to divide 4-digit numbers by 1-digit numbers and by 11 and 12, with fraction parts of answers, e.g. $23\frac{3}{4}$?
				Can I simplify fractions or write as decimals, e.g. 23.75?

Week 8	Decimals Subtraction		<p><u>True or false?</u> In all of the numbers below, the digit 6 is worth <u>more than 6</u> hundredths.</p> <p>3.6 3.063 3.006 6.23 7.761 3.076</p> <p>Is this true or false? Change some numbers so that it is true.</p> <p>What needs to be added to 6.543 to give 7? What needs to be added to 3.582 to give 5?</p> <p>Circle the two decimals which are closest in value to each other. 0.9 0.09 0.99 0.1 0.01</p> <p><u>Can you find?</u> Can you find the smallest number that can be added to or subtracted from 87.6 to make it exactly divisible by 8/7/18?</p>	<p>Can I add/subtract multiples of 0.01 to/from numbers with two decimal places, crossing multiples of 0.1 and 1?</p> <p>Can I subtract numbers with one or two decimal places by counting up from the smaller to the larger number, e.g. 3.76 - 1.8 or 13.4 - 2.76?</p> <p>Do I understand place value in numbers with three decimal places?</p> <p>Can I count on and back in steps of 0.001 and 0.01?</p> <p>Can I add and subtract multiples of 0.1, 0.01 or 0.001?</p>
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Week 9	Measures Time	<p>Solve problems involving the calculation and conversion of units of measure, using decimal notation up to three decimal places where appropriate</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>Convert between miles and kilometres</p>	<p>Top Tips Put these amounts in order starting with the largest. Explain your thinking 100 cm³ 1000000 mm³ 1 m³</p> <p>Undoing A film lasting 200 minutes finished at 17:45. At what time did it start?</p> <p>Other possibilities A cuboid has a volume between 200 and 250 cm cubed. Each edge is at least 4cm long. List four possibilities for the dimensions of the cuboid.</p> <p>Write more statements Chen, Megan and Sam have parcels. Megan's parcel weighs 1.2kg and Chen's parcel is 1500g and Sam's parcel is half the weight of Megan's parcel. Write down some other statements about the parcels. How much heavier is Megan's parcel than Chen's parcel?</p> <p>The answer is 24 metres cubed. What is the question?</p> <p>What do you notice? 8 km = 5 miles 16km = <input type="text"/> miles 4 km = <input type="text"/> miles Fill in the missing number of miles. Write down some more facts connecting kilometres and miles.</p>	<p>Can I convert between grams and kilograms, millilitres and litres (up to 3 decimal places)?</p> <p>Can I convert between metres and kilometres?</p> <p>Do I know approximate conversions between common imperial units used in daily life and metric units?</p> <p>Can I draw line graphs and read intermediate points?</p> <p>Can I read timetables using the 24-hour clock?</p> <p>Can I calculate time intervals and add lengths of time?</p>
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Week 10	Shape Fractions	<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 > 1</p> <p>Add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions</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>Testing conditions</p> <p>A square has the perimeter of 12 cm. When 4 squares are put together, the perimeter of the new shape can be calculated.</p> <p>For example:</p> 	<p>Can I identify, describe and build 3D shapes using nets;</p> <p>Can I turn improper fractions into mixed numbers and vice versa?</p>
			<p>What arrangements will give the maximum perimeter?</p>	<p>Can I compare and order fractions with unrelated denominators?</p>
			<p>Always, sometimes, never</p> <p>The area of a triangle is half the area of the rectangle that encloses it:</p> 	<p>Can I use common multiples to express fractions in the same denomination?</p> <p>Can I add and subtract fractions and mixed numbers with unrelated denominators?</p>
Week 11	Mental Written Calculations	<p>Perform mental calculations, including with mixed operations and large numbers</p> <p>Use their knowledge of the order of operations to carry out calculations involving the four operations</p> <p>Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why</p> <p>Use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy.</p>	<p>Undoing</p> <p>I multiply a number with three decimal places by a multiple of 10. The answer is approximately 3.21</p> <p>What was my number and what did I multiply by?</p> <p>When I divide a number by 1000 the resulting number has the digit 6 in the units and tenths and the other digits are 3 and 2 in the tens and hundreds columns. What could my number have been?</p>	<p>Can I use grid multiplication to multiply 3-digit numbers by 2-digit numbers?</p> <p>Can I use long multiplication to multiply 3-digit numbers by numbers between 10 and 20, then between 20 and 30?</p> <p>Can I solve a mix of +, -, \times and \div mental and written calculations?</p> <p>Can I choose which operations are necessary to solve single-step and multi-step word problems?</p>
Week 12	Assessment			
Week 13 -	Revision of topics based on results of assessment			

Week	Domain	National Curriculum Objectives	Reasoning, Conjecturing and Generalising Strategies	Small Step Objectives
Week 1	Number Place value Money			
Week 2	Number Written Addition and Subtraction			
Week 3	Number - Written Addition and Subtraction			

Week 7	Mental Addition Mental Subtraction			

Week 8	Written Addition Written Subtraction			
Week 9	Measures Time Position Direction			

Week 10	Mental Multiplication Division			
Week 11	Multiplication and division			
Week 12	Assessment Geometry			
Week 14				

Year Four: Medium Term Plan -Term Three

Week	Domain	National Curriculum Objectives	Reasoning, Conjecturing and Generalising Strategies	Small Step Objectives
Week 1	Number Place value			
Week 2	Number - Mental Subtraction Written Subtraction			

Week 3	Number - Addition Subtraction			
Week 4	Area Perimeter Coordinates			

Week 5	Fractions Decimals			
Week 6	Fractions Decimals			

Week 7	Multiplication Division										
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Week 8	Geometry			
Week 9	Time Time Graphs			

Week 10	Fractions Division			
Week 11	Calculations			
Week 12	Assessment	Assessment week is moveable		
Week 13	Revision of topics based on results of assessment			