



Year 6 Autumn 1

Starter suggestions for Number

- Know by heart facts for all multiplication tables up to 12×12 .
- Find pairs of numbers with a sum of 100, decimals with a sum of 0.1, 1 or 10.
- To derive related facts from those already known (e.g. 4×0.8 linked to 4×8 or $3 + 7 = 10$ linked to $0.3 + 0.7 = 1$)
- Mentally multiply and divide two-digit and single-digit numbers.
- Use partitioning to double or halve any number.
- Mentally multiply and divide pairs of multiples of 10 and 100.
- Mentally multiply and divide two-digit decimals by a single digit number, e.g., $(U.t \times U \text{ or } U.t \div U)$.
- Read and write any integer and use decimal notation for tenths, hundredths and thousandths and know what each digit represents.
- Order and compare whole numbers up to 1 000 000, negative numbers and decimals.
- Count forwards and backwards in steps of 0.001, 0.01, 0.1, 1, 10, 100, 1000, 25, 2.5, 0.2, 0.25 from any positive or negative integer / decimal.
- Multiply and divide whole numbers and decimals mentally by 10 or 100, and integers by 1000 and use this to convert between units of measurement, e.g. cm to m, g to kg etc.
- Round whole numbers to the nearest 10, 100, 1000 or a number with up to three decimal places to the nearest integer or number of decimal places.
- Count in fraction steps and convert equivalent fractions (e.g. count in steps of $\frac{1}{12}$ converting to $\frac{1}{12}, \frac{1}{6}, \frac{1}{4}, \frac{1}{3}, \frac{1}{2}, \frac{5}{12}, \frac{1}{2}, \dots$).

Starter suggestions for Measurement, Geometry and Statistics

- Know and use standard metric units of measure.
- Estimate and calculate length (including perimeter), mass, volume/capacity and area.
- Convert between units by multiplying and dividing by powers of 10.
- Know metric and imperial equivalences of feet, inches, pints and pounds.
- Read, write and convert between units of time.
- Identify and describe properties of 2D and 3D shapes, including regular and irregular.
- Find missing angles and lengths using properties of shape.
- Estimate and identify acute, obtuse and reflex angles.
- Describe positions on the first quadrant of a coordinate grid.
- Continue to complete and interpret information in a variety of sorting diagrams (including those used to sort properties of numbers and shapes).

	Main learning	Rationale
Week 1 Place value including decimals	<ul style="list-style-type: none"> Identify, represent and estimate numbers using the number line. Read, write, order and compare numbers up to 10 000 000 and determine the value of each digit. Round any whole number to a required degree of accuracy. Use negative numbers in context, and calculate intervals across zero. Count forwards or backwards in steps of integers, decimals or powers of 10 for any number. Order and compare numbers including integers, decimals and negative numbers. Find 0.001, 0.01, 0.1, 1, 10 and powers of 10 more or less than a given number. Recall and use addition and subtraction facts for 1 (with decimal numbers to two decimal places). Round decimals with three places to the nearest whole number or one or two decimal places. 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. Solve number and practical problems that involve all of the above. 	<p>Children extend their knowledge of the number system to larger numbers and further decimals. The Base 10 notion is centred around grouping in tens i.e. ten 1s are the same as one 10, ten 10s are the same as one 100 and so on and vice versa. Children learn that one is the same as ten $\frac{1}{10}$s, one $\frac{1}{10}$ is the same as $\frac{10}{100}$s and that $\frac{1}{100}$ is the same as $\frac{10}{1000}$s.</p> <p>Children understand how numbers relate to each other by ordering and comparing them on a number line, which supports the skill of rounding. This skill will be applied over the coming weeks when estimating calculations.</p> <p>When multiplying and dividing by 10, 100 and 1000, children recognise that this is scaling up and down by powers of 10 and is related to the Base 10 number system.</p>
Week 2 Mental and written addition	<ul style="list-style-type: none"> Perform mental calculations, including with mixed operations and large numbers and decimals. Identify, represent and estimate numbers using the number line. Choose an appropriate strategy to solve a calculation based upon the numbers involved (recall a known fact, calculate mentally, use a jotting, written method). Select a mental strategy appropriate for the numbers involved in the calculation. Solve addition multi-step problems in contexts, deciding which operations and methods to use and why. Solve problems involving addition. Express missing number problems algebraically. Find pairs of numbers that satisfy an equation with two unknowns. Use estimation and inverse to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy. Add whole numbers and decimals using formal written methods (columnar addition). Solve problems which require answers to be rounded to specified degrees of accuracy. 	<p>Children learn when it is appropriate to use mental and written methods of calculation.</p> <p>Children make links with their knowledge of rounding numbers to estimate the answers to calculations. Calculations should be in contexts including, money, measures, real life problems and number enquiries.</p> <p>Children should also explore missing number problems using algebraic notation, including pairs of numbers to satisfy an equation with two unknowns and generalising the relationship between the two numbers.</p> <p>Written methods should be agreed by the school and shared in the progression in written calculations policy. Efficient written methods are required to be taught by the end of Key Stage 2.</p>



	Main learning	Rationale
Week 3 Mental and written multiplication in the context of time	<ul style="list-style-type: none"> ▪ Multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication. ▪ Multiply one-digit numbers with up to two decimal places by whole numbers. ▪ Perform mental calculations, including with mixed operations and large numbers and decimals. ▪ <i>Choose an appropriate strategy to solve a calculation based upon the numbers involved (recall a known fact, calculate mentally, use a jotting, written method).</i> ▪ <i>Select a mental strategy appropriate for the numbers involved in the calculation.</i> ▪ Solve problems involving addition, subtraction, multiplication and division. ▪ Express missing number problems algebraically. ▪ Find pairs of numbers that satisfy an equation with two unknowns. ▪ Use, read, write and convert between standard units, converting measurements of time from a smaller unit to a larger unit, and vice versa. ▪ Use estimation and inverse to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy. ▪ Solve problems which require answers to be rounded to specified degrees of accuracy. 	<p>Children learn when it is appropriate to use mental and written methods of calculation.</p> <p>Children make links with their knowledge of rounding numbers to estimate the answers to calculations. Calculations should be in contexts including, money, measures, real life problems and number enquiries.</p> <p>Children should also explore missing number problems using algebraic notation, including pairs of numbers to satisfy and equation with two unknowns and generalising the relationship between the two numbers.</p> <p>If schools are using grid method of multiplication, the written methods for addition in the previous week will be further applied this week.</p> <p>Written methods should be agreed by the school and shared in the progression in written calculations policy. Efficient written methods are required to be taught by the end of Key Stage 2.</p>
Week 4 Geometry (2-D and 3-D shape)	<ul style="list-style-type: none"> ▪ Draw 2-D shapes using given dimensions and angles. ▪ Recognise, describe and build simple 3-D shapes, including making nets. ▪ Compare and classify geometric shapes based on their properties and sizes and find unknown angles in any triangles, quadrilaterals, and regular polygons. ▪ <i>Continue to complete and interpret information in a variety of sorting diagrams (including those used to sort properties of numbers and shapes).</i> 	<p>Children gain practical experience of drawing and making shapes, in order to support their work on recognising, describing, comparing and classifying shapes.</p> <p>It is important that children see and use regular and irregular polygons and polyhedra and experience them in different orientations.</p> <p>Children should discover the angle sum of triangles and quadrilaterals and use this knowledge, and knowledge of the term 'regular' to find missing angles.</p>
Week 5 Mental and written subtraction	<ul style="list-style-type: none"> ▪ Perform mental calculations, including with mixed operations and large numbers and decimals. ▪ <i>Identify, represent and estimate numbers using the number line.</i> ▪ <i>Choose an appropriate strategy to solve a calculation based upon the numbers involved (recall a known fact, calculate mentally, use a jotting, written method).</i> ▪ <i>Select a mental strategy appropriate for the numbers involved in the calculation.</i> ▪ Solve subtraction multi-step problems in contexts, deciding which operations and methods to use and why. ▪ Solve problems involving subtraction. ▪ Express missing number problems algebraically. ▪ Find pairs of numbers that satisfy an equation with two unknowns. ▪ Use estimation and inverse to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy. ▪ <i>Subtract whole numbers and decimals using formal written methods (columnar subtraction).</i> ▪ Solve problems which require answers to be rounded to specified degrees of accuracy. 	<p>Children learn when it is appropriate to use mental and written methods of calculation.</p> <p>Children make links with their knowledge of rounding numbers to estimate the answers to calculations. Calculations should be in contexts including, money, measures, real life problems and number enquiries.</p> <p>Children should also explore missing number problems using algebraic notation, including pairs of numbers to satisfy and equation with two unknowns and generalising the relationship between the two numbers.</p> <p>Written methods should be agreed by the school and shared in the progression in written calculations policy. Efficient written methods are required to be taught by the end of Key Stage 2.</p>



	Main learning	Rationale
Week 6 Mental and written division	<ul style="list-style-type: none">▪ Perform mental calculations, including with mixed operations and large numbers and decimals.▪ 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.▪ 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.▪ Use written division methods in cases where the answer has up to two decimal places.▪ <i>Choose an appropriate strategy to solve a calculation based upon the numbers involved (recall a known fact, calculate mentally, use a jotting, written method).</i>▪ Solve problems involving division.▪ Solve problems which require answers to be rounded to specified degrees of accuracy.▪ Use estimation and inverse to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy.	<p>Children learn when it is appropriate to use mental and written methods of calculation.</p> <p>Children make links with their knowledge of rounding numbers to estimate the answers to calculations. Calculations should be in contexts including, money, measures, real life problems and number enquiries.</p> <p>Children should also explore missing number problems using algebraic notation, including pairs of numbers to satisfy and equation with two unknowns and generalising the relationship between the two numbers.</p> <p>If schools are using chunking method of division, the written methods for subtraction in the previous week will be further applied this week.</p> <p>Written methods should be agreed by the school and shared in the progression in written calculations policy. Efficient written methods are required to be taught by the end of Key Stage 2.</p>