



## **Maths Progression of Knowledge and Skills-EYFS, Key Stage 1 & Key Stage 2**

### **Purpose of study**

Mathematics is a creative and highly inter-connected discipline that has been developed over centuries, providing the solution to some of history's most intriguing problems. It is essential to everyday life, critical to science, technology and engineering, and necessary for financial literacy and most forms of employment. A high-quality mathematics education therefore provides a foundation for understanding the world, the ability to reason mathematically, an appreciation of the beauty and power of mathematics, and a sense of enjoyment and curiosity about the subject

### **The national curriculum for maths aims to ensure that all pupils:**

- become fluent in the fundamentals of mathematics, including through varied and frequent practice with increasingly complex problems over time, so that pupils develop conceptual understanding and the ability to recall and apply knowledge rapidly and accurately
- reason mathematically by following a line of enquiry, conjecturing relationships and generalisations, and developing an argument, justification or proof using mathematical language
- can solve problems by applying their mathematics to a variety of routine and non-routine problems with increasing sophistication, including breaking down problems into a series of simpler steps and persevering in seeking solutions.

Mathematics is an interconnected subject in which pupils need to be able to move fluently between representations of mathematical ideas. The programmes of study are, by necessity, organised into apparently distinct domains, but pupils should make rich connections across mathematical ideas to develop fluency, mathematical reasoning and competence in solving increasingly sophisticated problems. They should also apply their mathematical knowledge to science and other subjects.

## Maths Progression of Knowledge and Skills-EYFS & Key Stage 1: Number

Sonar ELG NC Teacher Assessment Framework	Reception-	Year 1	Year 2
<b>Number Sense</b>	<p>Count up to three or four objects by saying a number name for each item.</p> <p>Count an irregular arrangement of up to ten objects.</p> <p>Say the number that is one more than a given number.</p> <p>Recognise some numerals of personal significance.</p> <p>Count actions or objects that cannot be moved.</p> <p>Recognise numerals 1 to 5.</p> <p>Count objects to 10 and begin to count beyond 10.</p> <p>Use the language of 'more' and 'fewer' to compare two sets of objects.</p> <p>Count out up to six objects from a larger group.</p> <p>Select the correct numeral to represent 1 to 5 then 1 to 10 objects.</p> <p>Estimate how many objects they can see and check by counting them.</p> <p>Count reliably with numbers from one to 20.</p> <p>With numbers from 1 to 20 say which number is one more or less than a given number.</p> <p>With numbers from one to 20, place them in order.</p>	<p>Read and write numbers from 1 to 20 in numerals and words.</p> <p>Count to and across 100, forwards and backwards, beginning with 0 or 1, or from any given number.</p> <p>Count, read and write numbers to 100 in numerals; count in multiples of 2s, 5s and 10s.</p> <p>Given a number, identify 1 more and 1 less.</p> <p>Identify and represent numbers using objects and pictorial representations including the number line, and use the language of: equal to, more than, less than (fewer), most, least.</p>	<p>Count in steps of 2, 3, and 5 from 0, and in 10s from any number, forward and backward.</p> <p>Read and write numbers to at least 100 in numerals and in words.</p> <p>Recognise the place value of each digit in a two-digit number (10s, 1s).</p> <p>Identify, represent and estimate numbers using different representations, including the number line.</p> <p>Compare and order numbers from 0 up to 100; use &lt;, &gt; and = signs.</p> <p>Read and write numbers to at least 100 in numerals and in words.</p> <p>Use place value and number facts to solve problems.</p>

<p><b>National Curriculum End Points (taken from the National Curriculum and Statutory Framework for the EYFS)</b></p>	<p>Have a deep understanding of number to 10, including the composition of each number.          Subitise (recognise quantities without counting) up to 5.          Verbally count beyond 20, recognising the pattern of the counting system. •          Compare quantities up to 10 in different contexts, recognising when one quantity is greater than, less than or the same as the other quantity. •          Explore and represent patterns within numbers up to 10, including evens and odds, double facts and how quantities can be distributed equally.</p>	<p>Count to and across 100, forwards and backwards, beginning with 0 or 1, or from any given number.          Count, read and write numbers to 100 in numerals; count in multiples of twos, fives and tens.          Given a number, identify one more and one less.          Identify and represent numbers using objects and pictorial representations including the number line, and use the language of: equal to, more than, less than (fewer), most, least. Read and write numbers from 1 to 20 in numerals and words.</p>	<p>Count in steps of 2, 3, and 5 from 0, and in tens from any number, forward and backward.          Recognise the place value of each digit in a two-digit number (tens, ones).          Identify, represent and estimate numbers using different representations, including the number line.          Compare and order numbers from 0 up to 100; use and = signs.          Read and write numbers to at least 100 in numerals and in words.          Use place value and number facts to solve problems.</p>
<p><b>Addition and subtraction</b></p>	<p>Find the total number of items in two groups by counting all of them.          In practical activities and discussion, begin to use the vocabulary involved in adding and subtracting.          Record, using marks that they can interpret and explain.          Begin to identify their own mathematical problems based on own interests and fascinations.          Using quantities and objects, they add and subtract two single-digit numbers and count on or back to find the answer.</p>	<p>Read, write and interpret mathematical statements involving addition (+), subtraction (-) and equals (=) signs.          Represent and use number bonds and related subtraction facts within 20.          Add and subtract one-digit and two-digit numbers to 20, including 0.          Solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as:  <math>7 = ? - 9</math>.</p>	<p>Recall and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100.          Add and subtract numbers using concrete objects, pictorial representations, and mentally, including a two-digit number and 1s.          Add and subtract numbers using concrete objects, pictorial representations, and mentally, including a two-digit number and 10s.          Add and subtract numbers using concrete objects, pictorial representations, and mentally, including 2 two-digit numbers.          Add and subtract numbers using concrete objects, pictorial representations, and mentally, including adding 3 one-digit numbers.</p>

			<p>Show that addition of 2 numbers can be done in any order (commutative) and subtraction of 1 number from another cannot.</p> <p>Recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems.</p> <p>Solve problems with addition and subtraction: using concrete objects and pictorial representations, including those involving numbers, quantities and measures.</p> <p>Solve problems with addition and subtraction: applying their increasing knowledge of mental and written method.</p>
<p><b>National Curriculum End Points (taken from the National Curriculum and Statutory Framework for the EYFS)</b></p>	<p>Automatically recall (without reference to rhymes, counting or other aids) number bonds up to 5 (including subtraction facts) and some number bonds to 10, including double facts.</p>	<p>Read, write and interpret mathematical statements involving addition (+), subtraction (-) and equals (=) signs. Represent and use number bonds and related subtraction facts within 20. Add and subtract one-digit and two-digit numbers to 20, including zero. Solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as <math>7 = - 9</math>.</p>	<p>Solve problems with addition and subtraction: using concrete objects and pictorial representations, including those involving numbers, quantities and measures; applying their increasing knowledge of mental and written methods. Recall and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100. Add and subtract numbers using concrete objects, pictorial representations, and mentally, including: a two-digit number and ones;</p>

			<p>a two-digit number and tens; two two-digit numbers; adding three one-digit numbers. Show that addition of two numbers can be done in any order (commutative) and subtraction of one number from another cannot. Recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems.</p>
<p><b>Multiplication and division</b></p>	<p>Solve problems, including doubling, halving and sharing.</p>	<p>Solve one-step problems involving multiplication and division, by calculating the answer using concrete objects, pictorial representations and arrays with the support of the teacher.</p>	<p>Recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers. Calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication (x), division (/) and equals (=) signs. Show that multiplication of 2 numbers can be done in any order (commutative) and division of 1 number by another cannot. Solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts.</p>
<p><b>National Curriculum End Points (taken from the National Curriculum and Statutory Framework for the EYFS)</b></p>	<p>Explore and represent patterns within numbers up to 10, including evens and odds, double facts and how quantities can be distributed equally.</p>	<p>Solve one-step problems involving multiplication and division, by calculating the answer using concrete objects, pictorial representations and arrays with the support of the teacher.</p>	<p>Recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers. Calculate mathematical statements for</p>

			<p>multiplication and division within the multiplication tables and write them using the multiplication (<math>\times</math>), division (<math>\div</math>) and equals (=) signs.</p> <p>Show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot.</p> <p>Solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts.</p>
<b>Fractions</b>		<p>Recognise, find and name a half as 1 of 2 equal parts of an object, shape or quantity.</p> <p>Recognise, find and name a quarter as 1 of 4 equal parts of an object, shape or quantity.</p>	<p>Recognise, find, name and write fractions <math>\frac{1}{3}</math>, <math>\frac{1}{4}</math>, <math>\frac{2}{4}</math> and <math>\frac{3}{4}</math> of a length, shape, set of objects or quantity.</p> <p>Write simple fractions, for example <math>\frac{1}{2}</math> of 6 = 3 and recognise the equivalence of <math>\frac{2}{4}</math> and <math>\frac{1}{2}</math>.</p>
<b>National Curriculum End Points (taken from the National Curriculum and Statutory Framework for the EYFS)</b>		<p>Recognise, find and name a half as one of two equal parts of an object, shape or quantity.</p> <p>Recognise, find and name a quarter as one of four equal parts of an object, shape or quantity.</p>	<p>Recognise, find, name and write fractions <math>\frac{1}{3}</math>, <math>\frac{1}{4}</math>, <math>\frac{2}{4}</math> and <math>\frac{3}{4}</math> of a length, shape, set of objects or quantity.</p> <p>Write simple fractions for example, 2 1 of 6 = 3 and recognise the equivalence of <math>\frac{2}{4}</math> and <math>\frac{1}{2}</math>.</p>
<b>Ratio and proportion</b>			
<b>End of Key Stage Expectations (KS1) for maths (taken from the Teacher Assessment Framework for KS1)</b>	<p><b>Working at the expected standard:</b>  The pupil can:</p> <ul style="list-style-type: none"> <li>• read scales*1 in divisions of ones, twos, fives and tens • partition any two-digit number into different combinations of tens and ones, explaining their thinking verbally, in pictures or using apparatus</li> <li>• add and subtract any 2 two-digit numbers using an efficient strategy, explaining their method verbally, in pictures or using apparatus (e.g. <math>48 + 35</math>; <math>72 - 17</math>)</li> </ul>		

- recall all number bonds to and within 10 and use these to reason with and calculate bonds to and within 20, recognising other associated additive relationships (e.g. If  $7 + 3 = 10$ , then  $17 + 3 = 20$ ; if  $7 - 3 = 4$ , then  $17 - 3 = 14$ ; leading to if  $14 + 3 = 17$ , then  $3 + 14 = 17$ ,  $17 - 14 = 3$  and  $17 - 3 = 14$ )
- recall multiplication and division facts for 2, 5 and 10 and use them to solve simple problems, demonstrating an understanding of commutativity as necessary

**Working at greater depth within the expected standard:**

The pupil can:

- read scales\* where not all numbers on the scale are given and estimate points in between
- recall and use multiplication and division facts for 2, 5 and 10 and make deductions outside known multiplication facts
- use reasoning about numbers and relationships to solve more complex problems and explain their thinking (e.g.  $29 + 17 = 15 + 4 + \dots$ ; 'together Jack and Sam have £14. Jack has £2 more than Sam. How much money does Sam have?' etc.)
- solve unfamiliar word problems that involve more than one step (e.g. 'which has the most biscuits, 4 packets of biscuits with 5 in each packet or 3 packets of biscuits with 10 in each packet?')



## Maths Progression of Knowledge and Skills - Key Stage 2: Number

Sonar NC	Year 3	Year 4	Year 5	Year 6
Number Sense	<p>Count from 0 in multiples of 4, 8, 50 and 100; find 10 or 100 more or less than a given number.</p> <p>Recognise the place value of each digit in a 3-digit number (100s, 10s, 1s).</p> <p>Compare and order numbers up to 1,000.</p> <p>Identify, represent and estimate numbers using different representations.</p> <p>Read and write numbers up to 1,000 in numerals and in words.</p> <p>Solve number problems and practical problems involving these ideas.</p>	<p>Count in multiples of 6, 7, 9, 25 and 1,000.</p> <p>Find 1,000 more or less than a given number.</p> <p>Count backwards through 0 to include negative numbers.</p> <p>Recognise the place value of each digit in a four-digit number (1,000s, 100s, 10s, and 1s).</p> <p>Order and compare numbers beyond 1,000.</p> <p>Identify, represent and estimate numbers using different representations.</p> <p>Round any number to the nearest 10, 100 or 1,000.</p> <p>Solve number and practical problems that involve all of the above and with increasingly large positive numbers.</p> <p>Read Roman numerals to 100 (I to C) and know that over time, the numeral system changed to include the concept of 0 and place value.</p>	<p>Read, write, order and compare numbers to at least 1,000,000 and determine the value of each digit.</p> <p>Count forwards or backwards in steps of powers of 10 for any given number up to 1,000,000.</p> <p>Interpret negative numbers in context, count forwards and backwards with positive and negative whole numbers, including through 0.</p> <p>Round any number up to 1,000,000 to the nearest 10, 100, 1,000, 10,000 and 100,000.</p> <p>Solve number problems and practical problems that involve all of the above.</p> <p>Read Roman numerals to 1,000 (M) and recognise years written in Roman numerals.</p>	<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 0.</p> <p>Solve number and practical problems that involve all of the above.</p>
<b>National Curriculum End</b>	Count from 0 in multiples of 4,	Count in multiples of 6, 7, 9,	Read, write, order and	Read, write, order and

<p><b>Points</b> (taken from the National Curriculum)</p>	<p>8, 50 and 100; find 10 or 100 more or less than a given number. Recognise the place value of each digit in a three-digit number (hundreds, tens, ones). Compare and order numbers up to 1000. Identify, represent and estimate numbers using different representations. Read and write numbers up to 1000 in numerals and in words. Solve number problems and practical problems involving these ideas.</p>	<p>25 and 1000. Find 1000 more or less than a given number. Count backwards through zero to include negative numbers. Recognise the place value of each digit in a four-digit number (thousands, hundreds, tens, and ones). Order and compare numbers beyond 1000. Identify, represent and estimate numbers using different representations. Round any number to the nearest 10, 100 or 1000. Solve number and practical problems that involve all of the above and with increasingly large positive numbers. Read Roman numerals to 100 (I to C) and know that over time, the numeral system changed to include the concept of zero and place value.</p>	<p>compare numbers to at least 1 000 000 and determine the value of each digit. Count forwards or backwards in steps of powers of 10 for any given number up to 1 000 000. Interpret negative numbers in context, count forwards and backwards with positive and negative whole numbers, including through zero. Round any number up to 1 000 000 to the nearest 10, 100, 1000, 10 000 and 100 000. Solve number problems and practical problems that involve all of the above. Read Roman numerals to 1000 (M) and recognise years written in Roman numerals.</p>	<p>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. Solve number and practical problems that involve all of the above.</p>
<p><b>Addition and subtraction</b></p>	<p>Add and subtract numbers mentally, including a three-digit number and 1s. Add and subtract numbers mentally, including a three-digit number and 10s. Add and subtract numbers mentally, including a three-digit number and 100s.</p>	<p>Add and subtract numbers with up to 4 digits using the formal written methods of columnar addition and subtraction where appropriate. Estimate and use inverse operations to check answers to a calculation. Solve addition and subtraction</p>	<p>Add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction). Add and subtract numbers mentally with increasingly large numbers. Use rounding to check answers</p>	<p>Use their knowledge of the order of operations to carry out calculations involving the 4 operations. Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why.</p>

	<p>Add and subtract numbers with up to 3 digits, using formal written methods of columnar addition and subtraction.</p> <p>Estimate the answer to a calculation and use inverse operations to check answers.</p> <p>Solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction.</p>	<p>two-step problems in contexts, deciding which operations and methods to use and why.</p>	<p>to calculations and determine, in the context of a problem, levels of accuracy.</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 and subtraction.</p> <p>Use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy.</p> <p>Perform mental calculations, including with mixed operations and large numbers.</p>
<p><b>National Curriculum End Points</b> (taken from the National Curriculum)</p>	<p>Add and subtract numbers mentally, including:</p> <ul style="list-style-type: none"> <li>a three-digit number and ones;</li> <li>a three-digit number and tens;</li> <li>a three-digit number and hundreds.</li> </ul> <p>Add and subtract numbers with up to three digits, using formal written methods of columnar addition and subtraction.</p> <p>Estimate the answer to a calculation and use inverse operations to check answers.</p> <p>Solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction.</p>	<p>Add and subtract numbers with up to 4 digits using the formal written methods of columnar addition and subtraction where appropriate.</p> <p>Estimate and use inverse operations to check answers to a calculation.</p> <p>Solve addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why.</p>	<p>Add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction).</p> <p>Add and subtract numbers mentally with increasingly large numbers.</p> <p>Use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy.</p> <p>Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why.</p>	<p>Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why.</p> <p>Perform mental calculations, including with mixed operations and large numbers</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><b>Multiplication and division</b></p>	<p>Recall and use multiplication and division facts for the 3, 4 and 8x multiplication tables.</p>	<p>Recall multiplication and division facts for multiplication tables up to</p>	<p>Identify multiples and factors, including finding all factor pairs of a number, and common</p>	<p>Multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal</p>

	<p>Write and calculate mathematical statements for multiplication and division using the multiplication tables that they know, including for two-digit numbers times one-digit numbers, using mental and progressing to formal written methods.</p> <p>Solve problems, including missing number problems, involving multiplication and division, including positive integer scaling problems and correspondence problems in which <math>n</math> objects are connected to <math>m</math> objects.</p>	<p><math>12 \times 12</math>.</p> <p>Use place value, known and derived facts to multiply and divide mentally, including: multiplying by 0 and 1; dividing by 1; multiplying together 3 numbers.</p> <p>Recognise and use factor pairs and commutativity in mental calculations</p> <p>Multiply two-digit and three-digit numbers by a one-digit number using formal written layout.</p> <p>Solve problems involving multiplying and adding, including using the distributive law to multiply two-digit numbers by 1 digit, integer scaling problems and harder correspondence problems such as <math>n</math> objects are connected to <math>m</math> objects.</p>	<p>factors of 2 numbers.</p> <p>Know and use the vocabulary of prime numbers, prime factors and composite (non-prime) numbers</p> <p>Establish whether a number up to 100 is prime and recall prime numbers up to 19.</p> <p>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>Multiply and divide numbers mentally, drawing upon known facts.</p> <p>Divide 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>Multiply and divide whole numbers and those involving decimals by 10, 100 and 1,000.</p> <p>Recognise and use square numbers and cube numbers, and the notation for squared (<math>^2</math>) and cubed (<math>^3</math>).</p> <p>Solve problems involving multiplication and division, including using their knowledge of factors and multiples, squares and cubes.</p> <p>Solve problems involving</p>	<p>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>Identify common factors, common multiples and prime numbers.</p> <p>Use their knowledge of the order of operations to carry out calculations involving the 4 operations.</p> <p>Solve problems involving 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>
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			addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign. Solve problems involving multiplication and division, including scaling by simple fractions and problems involving simple rates.	
<b>National Curriculum End Points (taken from the National Curriculum)</b>	<p>Recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables. Write and calculate mathematical statements for multiplication and division using the multiplication tables that they know, including for two-digit numbers times one-digit numbers, using mental and progressing to formal written methods.</p> <p>Solve problems, including missing number problems, involving multiplication and division, including positive integer scaling problems and correspondence problems in which <math>n</math> objects are connected to <math>m</math> objects.</p>	<p>Recall multiplication and division facts for multiplication tables up to <math>12 \times 12</math>.</p> <p>Use place value, known and derived facts to multiply and divide mentally, including: multiplying by 0 and 1; dividing by 1; multiplying together three numbers.</p> <p>Recognise and use factor pairs and commutativity in mental calculations.</p> <p>Multiply two-digit and three-digit numbers by a one-digit number using formal written layout.</p> <p>Solve problems involving multiplying and adding, including using the distributive law to multiply two digit numbers by one digit, integer scaling problems and harder correspondence problems such</p>	<p>Identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers.</p> <p>Know and use the vocabulary of prime numbers, prime factors and composite (nonprime) numbers.</p> <p>Establish whether a number up to 100 is prime and recall prime numbers up to 19.</p> <p>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>Multiply and divide numbers mentally drawing upon known facts.</p> <p>Divide numbers up to 4 digits by a one-digit number using the formal written method of short division and interpret remainders appropriately for</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>Identify common factors,</p>

		as $n$ objects are connected to $m$ objects.	the context. Multiply and divide whole numbers and those involving decimals by 10, 100 and 1000.	common multiples and prime numbers. Use their knowledge of the order of operations to carry out calculations involving the four operations. Solve problems involving multiplication and division. Use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy.
<b>Fractions</b>	Count up and down in tenths; recognise that tenths arise from dividing an object into 10 equal parts and in dividing one-digit numbers or quantities by 10. Recognise, find and write fractions of a discrete set of objects: unit fractions and non-unit fractions with small denominators. Recognise and use fractions as numbers: unit fractions and non-unit fractions with small denominators. Recognise and show, using diagrams, equivalent fractions with small denominators. Add and subtract fractions with the same denominator within one whole [for example, $5/7 + 1/7 = 6/7$ ].	Recognise and show, using diagrams, families of common equivalent fractions. Count up and down in hundredths; recognise that hundredths arise when dividing an object by 100 and dividing tenths by 10. Solve problems involving increasingly harder fractions to calculate quantities, and fractions to divide quantities, including non-unit fractions where the answer is a whole number. Add and subtract fractions with the same denominator. Recognise and write decimal equivalents of any number of tenths or hundredths. Recognise and write decimal equivalents to $1/4$ , $1/2$ , $\frac{3}{4}$ .	Compare and order fractions whose denominators are all multiples of the same number. Identify, name and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths. 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, $2/5 + 4/5 = 6/5 = 1\ 1/5$ ]. Add and subtract fractions with the same denominator, and denominators that are multiples of the same number. Multiply proper fractions and mixed numbers by whole numbers, supported by	Use common factors to simplify fractions; use common multiples to express fractions in the same denomination. Compare and order fractions, including fractions $> 1$ . Add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions. Multiply simple pairs of proper fractions, writing the answer in its simplest form (for example, $1/4 \times 1/2 = 1/8$ ). Divide proper fractions by whole numbers (for example, $1/3 \div 2 = 1/6$ ). Associate a fraction with division and calculate decimal fraction equivalents [for example, 0.375] for a simple

	<p>Compare and order unit fractions, and fractions with the same denominators. Solve fraction problems.</p>	<p>Find the effect of dividing a one- or two-digit number by 10 and 100, identifying the value of the digits in the answer as ones, tenths and hundredths. Compare numbers with the same number of decimal places up to 2 decimal places. Solve simple measure and money problems involving fractions and decimals to 2 decimal places.</p>	<p>materials and diagrams Read and write decimal numbers as fractions [for example, <math>0.71 = \frac{71}{100}</math>] Recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents Round decimals with 2 decimal places to the nearest whole number and to 1 decimal place. Read, write, order and compare numbers with up to 3 decimal places. Solve problems involving number up to 3 decimal places. Recognise the percent symbol (%) and understand that per cent relates to 'number of parts per 100', and write percentages as a fraction with denominator 100, and as a decimal fraction. Solve problems which require knowing percentage and decimal equivalents of <math>\frac{1}{2}</math>, <math>\frac{1}{2}</math>, <math>\frac{1}{5}</math>, <math>\frac{2}{5}</math>, <math>\frac{4}{5}</math> and those fractions with a denominator of a multiple of 10 or 25.</p>	<p>fraction [for example, <math>\frac{3}{8}</math>.] Identify the value of each digit in numbers given to 3 decimal places and multiply and divide numbers by 10, 100 and 1,000 giving answers up to 3 decimal places. Multiply one-digit numbers with up to 2 decimal places by whole numbers. Use written division methods in cases where the answer has up to 2 decimal places. Solve problems which require answers to be rounded to specified degrees of accuracy. Recall and use equivalences between simple fractions, decimals and percentages, including in different contexts.</p>
<p><b>National Curriculum End Points</b> (taken from the National Curriculum)</p>	<p>Count up and down in tenths; recognise that tenths arise from dividing an object into 10 equal parts and in dividing one-digit numbers or quantities by</p>	<p>Recognise and show, using diagrams, families of common equivalent fractions. Count up and down in hundredths; recognise that</p>	<p>Compare and order fractions whose denominators are all multiples of the same number Identify, name and write equivalent fractions of a given</p>	<p>Use common factors to simplify fractions; use common multiples to express fractions in the same denomination. Compare and order fractions,</p>

	<p>10. Recognise, find and write fractions of a discrete set of objects: unit fractions and non-unit fractions with small denominators.</p> <p>Recognise and use fractions as numbers: unit fractions and non-unit fractions with small denominators.</p> <p>Recognise and show, using diagrams, equivalent fractions with small denominators.</p> <p>Add and subtract fractions with the same denominator within one whole [for example, <math>7\frac{5}{6} + 7\frac{1}{6} = 7\frac{6}{6}</math>].</p> <p>Compare and order unit fractions, and fractions with the same denominators.</p> <p>Solve problems that involve all of the above.</p>	<p>hundredths arise when dividing an object by one hundred and dividing tenths by ten.</p> <p>Solve problems involving increasingly harder fractions to calculate quantities, and fractions to divide quantities, including non-unit fractions where the answer is a whole number.</p> <p>Add and subtract fractions with the same denominator.</p> <p>Recognise and write decimal equivalents of any number of tenths or hundredths.</p> <p>Recognise and write decimal equivalents to <math>\frac{1}{4}</math>, <math>\frac{1}{2}</math>, <math>\frac{3}{4}</math>. Find the effect of dividing a one- or two-digit number by 10 and 100, identifying the value of the digits in the answer as ones, tenths and hundredths.</p> <p>Round decimals with one decimal place to the nearest whole number.</p> <p>Compare numbers with the same number of decimal places up to two decimal places.</p> <p>Solve simple measure and money problems involving fractions and decimals to two decimal places.</p>	<p>fraction, represented visually, including tenths and hundredths.</p> <p>Recognise mixed numbers and improper fractions and convert from one form to the other and write mathematical statements <math>&gt; 1</math> as a mixed number [for example, <math>5\frac{2}{4} + 5\frac{4}{4} = 5\frac{6}{4} = 1\frac{5}{1}</math>].</p> <p>Add and subtract fractions with the same denominator and denominators that are multiples of the same number.</p> <p>Multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams.</p> <p>Read and write decimal numbers as fractions [for example, <math>0.71 = \frac{71}{100}</math>].</p> <p>Recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents.</p> <p>Round decimals with two decimal places to the nearest whole number and to one decimal place.</p> <p>Read, write, order and compare numbers with up to three decimal places.</p> <p>Solve problems involving number up to three decimal places.</p>	<p>including fractions <math>&gt; 1</math>.</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 [for example, <math>4\frac{1}{2} \times 2\frac{1}{6} = 8\frac{1}{3}</math>].</p> <p>Divide proper fractions by whole numbers [for example, <math>3\frac{1}{2} \div 2 = 6\frac{1}{4}</math>].</p> <p>Associate a fraction with division and calculate decimal fraction equivalents [for example, <math>0.375</math>] for a simple fraction [for example, <math>8\frac{3}{8}</math>].</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>Mathematics - key stages 1 and 2 41 Statutory requirements.</p> <p>Multiply one-digit numbers with up to two decimal places by whole numbers.</p> <p>Use written division methods in cases where the answer has up to two decimal places.</p> <p>Solve problems which require answers to be rounded to</p>
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			<p>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>Solve problems which require knowing percentage and decimal equivalents of <math>\frac{1}{2}</math>, <math>\frac{1}{4}</math>, <math>\frac{1}{5}</math>, <math>\frac{2}{5}</math>, <math>\frac{4}{5}</math> and those fractions with a denominator of a multiple of 10 or 25.</p>	<p>specified degrees of accuracy. Recall and use equivalences between simple fractions, decimals and percentages, including in different contexts.</p>
<b>Ratio and proportion</b>				<p>Solve problems involving the relative sizes of 2 quantities where missing values can be found by using integer multiplication and division facts.</p> <p>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>
<b>National Curriculum End Points (taken from the National Curriculum)</b>				<p>Solve problems involving the relative sizes of two quantities where missing values can be found by using integer multiplication and division facts.</p> <p>Solve problems involving the calculation of percentages [for example, of measures, and such as 15% of 360] and the</p>

				<p>use of percentages for comparison.</p> <p>Solve problems involving similar shapes where the scale factor is known or can be found.</p> <p>Solve problems involving unequal sharing and grouping using knowledge of fractions and multiples.</p>
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## Maths Progression of Knowledge and Skills - EYFS & KS1: Algebra, Statistics, Measurement & Geometry

Sonar ELG NC	Reception-	Year 1	Year 2
<b>Algebra</b>		Solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as $7 = ? - 9$ .	Solve addition and subtraction problems involving missing numbers.
<b>National Curriculum End Points (taken from the National Curriculum and Statutory Framework for the EYFS)</b>			
<b>Statistics</b>			Interpret and construct simple pictograms, tally charts, block diagrams and tables. Ask and answer simple questions by counting the number of objects in each category and sorting the categories by quantity. Ask and answer questions about totalling and comparing categorical data.
<b>National Curriculum End Points (taken from the National Curriculum and Statutory Framework for the EYFS)</b>			Interpret and construct simple pictograms, tally charts, block diagrams and simple tables. Ask and answer simple questions by counting the number of objects in each

			<p>category and sorting the categories by quantity.</p> <p>Ask and answer questions about totalling and comparing categorical data.</p>
<p><b>Measurement</b></p>	<p>Order two or three items by length or height.</p> <p>Order two items by weight or capacity.</p> <p>Order and sequence familiar events.</p> <p>Measure short periods of time in simple ways.</p> <p>Use everyday language to talk about time.</p>	<p>Compare, describe and solve practical problems for lengths and heights [for example, long/short, longer/shorter, tall/short, double/half].</p> <p>Compare, describe and solve practical problems for mass/weight [for example, heavy/light, heavier than, lighter than].</p> <p>Compare, describe and solve practical problems for capacity and volume [for example, full/empty, more than, less than, half, half full, quarter].</p> <p>Compare, describe and solve practical problems for time [for example, quicker, slower, earlier, later].</p> <p>Measure and begin to record lengths and heights.</p> <p>Measure and begin to record mass/weight.</p> <p>Measure and begin to record capacity and volume.</p> <p>Measure and begin to record time (hours, minutes, seconds).</p> <p>Recognise and know the value of different denominations of coins and notes.</p> <p>Sequence events in chronological order using language [for example, before and after, next, first, today, yesterday, tomorrow, morning,</p>	<p>Choose and use appropriate standard units to estimate and measure length/height in any direction (m/cm); mass (kg/g); temperature (°C); capacity (litres/ml) to the nearest appropriate unit, using rulers, scales, thermometers and measuring vessels.</p> <p>Compare and order lengths, mass, volume/capacity and record the results using &gt;, &lt; and =.</p> <p>Recognise and use symbols for pounds (£) and pence (p); combine amounts to make a particular value.</p> <p>Find different combinations of coins that equal the same amounts of money.</p> <p>Solve simple problems in a practical context involving addition and subtraction of money of the same unit, including giving change.</p> <p>Compare and sequence intervals of time.</p> <p>Tell and write the time to five minutes, including quarter past/to the hour and draw the hands on a clock face to show these times.</p> <p>Know the number of minutes in an hour and the number of hours in a day.</p>

		<p>afternoon and evening].          Recognise and use language relating to dates, including days of the week, weeks, months and years.          Tell the time to the hour and half past the hour and draw the hands on a clock face to show these times.</p>	
<p><b>National Curriculum End Points (taken from the National Curriculum and Statutory Framework for the EYFS)</b></p>		<p>Compare, describe and solve practical problems for:          lengths and heights [for example, long/short, longer/shorter, tall/short, double/half];          mass/weight [for example, heavy/light, heavier than, lighter than];          capacity and volume [for example, full/empty, more than, less than, half, half full, quarter];          time [for example, quicker, slower, earlier, later];          measure and begin to record the following:          lengths and heights;          mass/weight;          capacity and volume;          time (hours, minutes, seconds).          Recognise and know the value of different denominations of coins and notes.          Sequence events in chronological order using language [for example, before and after, next, first, today, yesterday, tomorrow, morning, afternoon and evening].          Recognise and use language relating to</p>	<p>Choose and use appropriate standard units to estimate and measure length/height in any direction (m/cm); mass (kg/g); temperature (°C); capacity (litres/ml) to the nearest appropriate unit, using rulers, scales, thermometers and measuring vessels.          Compare and order lengths, mass, volume/capacity and record the results using &gt;, &lt; and =.          Recognise and use symbols for pounds (£) and pence (p); combine amounts to make a particular value.          Find different combinations of coins that equal the same amounts of money.          Solve simple problems in a practical context involving addition and subtraction of money of the same unit, including giving change.          Compare and sequence intervals of time.          Tell and write the time to five minutes, including quarter past/to the hour and draw the hands on a clock face to show these times.          Know the number of minutes in an hour and the number of hours in a day.</p>

		<p>dates, including days of the week, weeks, months and years.</p> <p>Tell the time to the hour and half past the hour and draw the hands on a clock face to show these times.</p>	
<p><b>Geometry</b></p>	<p>Describe their relative position such as 'behind' or 'next to'.</p> <p>Begin to use mathematical names for 'solid' 3D shapes and 'flat' 2D shapes, and mathematical terms to describe shapes.</p> <p>Use familiar objects and common shapes to create and recreate patterns and build models.</p> <p>Begin to use mathematical names for 'solid' 3D shapes and 'flat' 2D shapes, and mathematical terms to describe shapes.</p> <p>Use familiar objects and common shapes to create and recreate patterns.</p> <p>Explore characteristics of everyday objects and shapes and use mathematical language to describe them.</p> <p>Recognise, create and describe patterns.</p>	<p>Recognise and name common 2-D and 3-D shapes, including 2-D shapes [for example, rectangles (including squares), circles and triangles].</p> <p>Recognise and name common 2-D and 3-D shapes, including 3-D shapes [for example, cuboids (including cubes), pyramids and spheres].</p> <p>Describe position, direction and movement, including whole, half, quarter and three-quarter turns.</p>	<p>Identify and describe the properties of 2-D shapes, including the number of sides, and line symmetry in a vertical line.</p> <p>Identify and describe the properties of 3-D shapes, including the number of edges, vertices and faces.</p> <p>Identify 2-D shapes on the surface of 3-D shapes, [for example, a circle on a cylinder and a triangle on a pyramid].</p> <p>Compare and sort common 2-D and 3-D shapes and everyday objects.</p> <p>Order and arrange combinations of mathematical objects in patterns and sequences.</p> <p>Use mathematical vocabulary to describe position, direction and movement, including movement in a straight line and distinguishing between rotation as a turn and in terms of right angles for quarter, half and three-quarter turns (clockwise and anti-clockwise).</p>
<p><b>National Curriculum End Points (taken from the National Curriculum and Statutory Framework for the EYFS)</b></p>		<p>Recognise and name common 2-D and 3-D shapes, including:</p> <p>2-D shapes [for example, rectangles (including squares), circles and triangles];</p> <p>3-D shapes [for example, cuboids</p>	<p>Identify and describe the properties of 2-D shapes, including the number of sides and line symmetry in a vertical line.</p> <p>Identify and describe the properties of 3-D shapes, including the number of</p>

		<p>(including cubes), pyramids and spheres]. Describe position, direction and movement, including whole, half, quarter and three-quarter turns.</p>	<p>edges, vertices and faces. Identify 2-D shapes on the surface of 3-D shapes, [for example, a circle on a cylinder and a triangle on a pyramid]. Compare and sort common 2-D and 3-D shapes and everyday objects. order and arrange combinations of mathematical objects in patterns and sequences. Use mathematical vocabulary to describe position, direction and movement, including movement in a straight line and distinguishing between rotation as a turn and in terms of right angles for quarter, half and three-quarter turns (clockwise and anticlockwise).</p>
<p><b>End of Key Stage Expectations (KS1) for maths (taken from the Teacher Assessment Framework for KS1)</b></p>	<p><b>Working at the expected standard:</b> The pupil can:</p> <ul style="list-style-type: none"> <li>• identify 1/4, 1/3, 1/2, 2/4, 3/4 of a number or shape, and know that all parts must be equal parts of the whole</li> <li>• use different coins to make the same amount</li> <li>• read the time on a clock to the nearest 15 minutes</li> <li>• name and describe properties of 2-D and 3-D</li> </ul> <p><b>Working at greater depth within the expected standard:</b> The pupil can:</p> <ul style="list-style-type: none"> <li>• read the time on a clock to the nearest 5 minutes</li> <li>• describe similarities and differences of 2-D and 3-D shapes, using their properties (e.g. that two different 2-D shapes both have only one line of symmetry; that a cube and a cuboid have the same number of edges, faces and vertices, but different dimensions).</li> </ul>		



## Maths Progression of Knowledge and Skills - KS2: Algebra, Statistics, Measurement & Geometry

Sonar NC	Year 3	Year 4	Year 5	Year 6
<b>Algebra</b>	Solve addition and subtraction, multiplication and division problems that involve missing numbers.	Solve addition and subtraction, multiplication and division problems that involve missing numbers.	Solve addition and subtraction, multiplication and division problems that involve missing numbers.	Use simple formulae Generate and describe linear number sequences. Express missing number problems algebraically. Find pairs of numbers that satisfy an equation with two unknowns. Enumerate possibilities of combinations of two variables.
<b>National Curriculum End Points (taken from the National Curriculum)</b>				Use simple formulae. Generate and describe linear number sequences. Express missing number problems algebraically. Find pairs of numbers that satisfy an equation with two unknowns. Enumerate possibilities of combinations of two variables.
<b>Statistics</b>	Interpret and present data using bar charts, pictograms and tables. Solve one-step and two-step questions [for example 'How	Interpret and present discrete and continuous data using appropriate graphical methods, including bar charts and time graphs.	Solve comparison, sum and difference problems using information presented in a line graph. Complete, read and interpret	Interpret and construct pie charts and line graphs and use these to solve problems. Calculate and interpret the mean as an average.

	many more?' and 'How many fewer?'] using information presented in scaled bar charts and pictograms and tables.	Solve comparison, sum and difference problems using information presented in bar charts, pictograms, tables and other graphs.	information in tables, including timetables.	
<b>National Curriculum End Points (taken from the National Curriculum)</b>	Interpret and present data using bar charts, pictograms and tables. Solve one-step and two-step questions [for example, 'How many more?' and 'How many fewer?'] using information presented in scaled bar charts and pictograms and tables.	Interpret and present discrete and continuous data using appropriate graphical methods, including bar charts and time graphs. Solve comparison, sum and difference problems using information presented in bar charts, pictograms, tables and other graphs.	Solve comparison, sum and difference problems using information presented in a line graph. Complete, read and interpret information in tables, including timetables.	Interpret and construct pie charts and line graphs and use these to solve problems. Calculate and interpret the mean as an average.
<b>Measurement</b>	Measure, compare, add and subtract: lengths (m/cm/mm); mass (kg/g); volume/capacity (l/ml). Measure the perimeter of simple 2-D shapes. Add and subtract amounts of money to give change, using both £ and p in practical contexts. Tell and write the time from an analogue clock, including using Roman numerals from I to XII, and 12-hour and 24-hour clocks. Estimate and read time with increasing accuracy to the nearest minute; record and compare time in terms of	Convert between different units of measure [for example, kilometre to metre; hour to minute]. Measure and calculate the perimeter of a rectilinear figure (including squares) in centimetres and metres. Find the area of rectilinear shapes by counting squares. Estimate, compare and calculate different measures, including money in pounds and pence. Read, write and convert time between analogue and digital 12- and 24-hour clocks. Solve problems involving converting from hours to	Convert between different units of metric measure [for example, kilometre and metre; centimetre and metre; centimetre and millimetre; gram and kilogram; litre and millilitre]. Understand and use approximate equivalences between metric units and common imperial units such as inches, pounds and pints. Measure and calculate the perimeter of composite rectilinear shapes in centimetres and metres. Calculate and compare the area of rectangles (including squares), including using	Solve problems involving the calculation and conversion of units of measure, using decimal notation up to 3 decimal places where appropriate. 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 3 decimal places. Convert between miles and kilometres. Recognise that shapes with the same areas can have different perimeters and vice versa.

	<p>seconds, minutes and hours; use vocabulary such as o'clock, am/pm, morning, afternoon, noon and midnight.</p> <p>Know the number of seconds in a minute and the number of days in each month, year and leap year.</p> <p>Compare durations of events [for example, to calculate the time taken by particular events or tasks].</p>	<p>minutes, minutes to seconds, years to months, weeks to days.</p>	<p>standard units, square centimetres (<math>\text{cm}^2</math>) and square metres (<math>\text{m}^2</math>), and estimate the area of irregular shapes.</p> <p>Estimate volume [for example, using <math>1 \text{ cm}^3</math> blocks to build cuboids (including cubes)] and capacity [for example, using water].</p> <p>Solve problems involving converting between units of time.</p> <p>Use all four operations to solve problems involving measure [for example, length, mass, volume, money] using decimal notation, including scaling.</p>	<p>Recognise when it is possible to use formulae for area and volume of shapes.</p> <p>Calculate the area of parallelograms and triangles.</p> <p>Calculate, estimate and compare volume of cubes and cuboids using standard units, including cubic centimetres (<math>\text{cm}^3</math>) and cubic metres (<math>\text{m}^3</math>), and extending to other units [for example, <math>\text{mm}^3</math> and <math>\text{km}^3</math>].</p>
<p><b>National Curriculum End Points</b> (taken from the National Curriculum)</p>	<p>Measure, compare, add and subtract: lengths (m/cm/mm); mass (kg/g); volume/capacity (l/ml).</p> <p>Measure the perimeter of simple 2-D shapes.</p> <p>Add and subtract amounts of money to give change, using both £ and p in practical contexts.</p> <p>Tell and write the time from an analogue clock, including using Roman numerals from I to XII, and 12-hour and 24-hour clocks.</p> <p>Estimate and read time with</p>	<p>Convert between different units of measure [for example, kilometre to metre; hour to minute].</p> <p>Measure and calculate the perimeter of a rectilinear figure (including squares) in centimetres and metres.</p> <p>Find the area of rectilinear shapes by counting squares.</p> <p>Estimate, compare and Calculate different measures, including money in pounds and pence</p> <p>Mathematics - key stages 1 and 2</p> <p>28 Statutory requirements.</p>	<p>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>Understand and use approximate equivalences between metric units and common imperial units such as inches, pounds and pints.</p> <p>Measure and calculate the perimeter of composite rectilinear shapes in centimetres and metres.</p>	<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>Recognise that shapes with</p>

	<p>increasing accuracy to the nearest minute; record and compare time in terms of seconds, minutes and hours; use vocabulary such as o'clock, a.m./p.m., morning, afternoon, noon and midnight.</p> <p>Know the number of seconds in a minute and the number of days in each month, year and leap year.</p> <p>Compare durations of events [for example to calculate the time taken by particular events or tasks].</p>	<p>Read, write and convert time between analogue and digital 12- and 24-hour clocks.</p> <p>Solve problems involving converting from hours to minutes; minutes to seconds; years to months; weeks to days.</p>	<p>Calculate and compare the area of rectangles (including squares), and including using standard units, square centimetres (cm<sup>2</sup>) and square metres (m<sup>2</sup>) and estimate the area of irregular shapes.</p> <p>Estimate volume [for example, using 1 cm<sup>3</sup> blocks to build cuboids (including cubes)] and capacity [for example, using water].</p> <p>Solve problems involving converting between units of time.</p> <p>Use all four operations to solve problems involving measure [for example, length, mass, volume, money] using decimal notation, including scaling.</p>	<p>the same areas can have different perimeters and vice versa.</p> <p>Recognise when it is possible to use formulae for area and volume of shapes.</p> <p>Calculate the area of parallelograms and triangles.</p> <p>Calculate, estimate and compare volume of cubes and cuboids using standard units, including cubic centimetres (cm<sup>3</sup>) and cubic metres (m<sup>3</sup>), and extending to other units [for example, mm<sup>3</sup> and km<sup>3</sup>].</p>
<p><b>Geometry</b></p>	<p>Draw 2-D shapes and make 3-D shapes using modelling materials.</p> <p>Recognise 3-D shapes in different orientations and describe them</p> <p>Recognise angles as a property of shape or a description of a turn.</p> <p>Identify right angles, recognise that 2 right angles make a half-turn, 3 make three-quarters of a turn and 4 a complete turn; identify</p>	<p>Compare and classify geometric shapes, including quadrilaterals and triangles, based on their properties and sizes.</p> <p>Identify acute and obtuse angles and compare and order angles up to 2 right angles by size</p> <p>Identify lines of symmetry in 2-D shapes presented in different orientations.</p> <p>Complete a simple symmetric figure with respect to a</p>	<p>Identify 3-D shapes, including cubes and other cuboids, from 2-D representations.</p> <p>Know angles are measured in degrees: estimate and compare acute, obtuse and reflex angles.</p> <p>Draw given angles, and measure them in degrees (°).</p> <p>Identify angles at a point and 1 whole turn (total 360°).</p> <p>Identify angles at a point on a straight line and half a turn (total 180°).</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</p>

	<p>whether angles are greater than or less than a right angle</p> <p>Identify horizontal and vertical lines and pairs of perpendicular and parallel lines.</p>	<p>specific line of symmetry.</p> <p>Describe positions on a 2-D grid as coordinates in the first quadrant.</p> <p>Describe movements between positions as translations of a given unit to the left/right and up/down.</p> <p>Plot specified points and draw sides to complete a given polygon.</p>	<p>Identify other multiples of <math>90^\circ</math></p> <p>Use the properties of rectangles to deduce related facts and find missing lengths and angles.</p> <p>Distinguish between regular and irregular polygons based on reasoning about equal sides and angles.</p> <p>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>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 4 quadrants).</p> <p>Draw and translate simple shapes on the coordinate plane, and reflect them in the axes.</p>
<p><b>National Curriculum End Points</b> (taken from the National Curriculum)</p>	<p>Draw 2-D shapes and make 3-D shapes using modelling materials; recognise 3-D shapes in different orientations and describe them.</p> <p>Recognise angles as a property of shape or a description of a turn.</p> <p>Identify right angles, recognise that two right angles make a half-turn, three make three quarters of a turn and four a complete turn; identify whether angles are greater than or less than a right angle.</p>	<p>Compare and classify geometric shapes, including quadrilaterals and triangles, based on their properties and sizes.</p> <p>Identify acute and obtuse angles and compare and order angles up to two right angles by size.</p> <p>Identify lines of symmetry in 2-D shapes presented in different orientations.</p> <p>Complete a simple symmetric figure with respect to a specific line of symmetry.</p>	<p>Identify 3-D shapes, including cubes and other cuboids, from 2-D representations.</p> <p>Know angles are measured in degrees: estimate and compare acute, obtuse and reflex angles.</p> <p>Draw given angles, and measure them in degrees (<math>^\circ</math>)</p> <p>Identify:</p> <ul style="list-style-type: none"> <li>angles at a point and one whole turn (total <math>360^\circ</math>);</li> <li>angles at a point on a straight line and <math>2 \times 1</math> a turn (total <math>180^\circ</math>);</li> <li>other multiples of <math>90^\circ</math>.</li> </ul> <p>Use the properties of rectangles to deduce related</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</p>

	<p>Identify horizontal and vertical lines and pairs of perpendicular and parallel lines.</p>		<p>facts and find missing lengths and angles.  Distinguish between regular and irregular polygons based on reasoning about equal sides and angles.  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.  Recognise and use reflection and translation in a variety of diagrams, including continuing to use a 2-D grid and coordinates in the first quadrant. Reflection should be in lines that are parallel to the axes.</p>	<p>meet at a point, are on a straight line, or are vertically opposite, and find missing angles.  Describe positions on the full coordinate grid (all four quadrants).  Draw and translate simple shapes on the coordinate plane, and reflect them in the axes.</p>
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