

Structured department Maths

Number- Multiplication, division and fractions

<p>Subject curriculum intent:</p>	<p>We want our pupils to be able to develop functional number skills so that they can be as independent as possible in their adulthood. Depending on the cognitive ability of the pupil, our intention is that pupils are able to use and apply their multiplication, division and fraction skills within every day contexts. For example, cutting their snacks into halves / quarters</p> <p>We will be linking the number topic within their 'Rainforest theme' to support engagement for learning. Pupils will be able to link learning in a cross curricular manner e.g. grouping/dividing/doubling rainforest animals/plants/trees.</p> <ol style="list-style-type: none"> 1. develop fluency in the fundamentals of mathematics so that they are efficient in using and selecting the appropriate strategies to manipulate numbers including mental methods, underpinned by mathematical concepts 2. can solve problems by applying their mathematics to a variety of problems with increasing sophistication, including in unfamiliar contexts and to model real-life scenarios 3. can reason mathematically by following a line of enquiry and develop and present a justification, argument or proof using mathematical language. <p>In all math lessons, teachers plan engaging lessons with the aim that pupils:</p> <ul style="list-style-type: none"> • master skills in maths which they are then able to apply to a range of contexts within the school and home context • embed their new skills and understanding to a range of contexts; thus supporting application and progress in learning • acquire core mathematical skills to support their independence as they progress through the school • are able to apply their understanding; supporting them in other areas of the curriculum 		
<p>End of KS3 intent/outcome</p>	<p>End of KS4 intent/outcome</p>	<p>End of KS5 intent/outcome</p>	
<p>Intent for this topic:</p>	<p>This half term, pupils will develop their understanding of multiplication, division and fractions. Starting from their last learning point, pupils will develop an understanding of how to group items to represent a multiplication sentence. Pupils will be able to explore the meaning of equal and unequal groups and will be able to share familiar items equally into groups. Pupils will access multiplication and division through use of concrete and visual resources. Students will continue to build on their understanding of shape from the previous half term to know how to represent fractions using shapes. Students will access sensory activities throughout lessons to support their learning.</p>		
<p>Key vocabulary taught within this topic:</p>	<p>Times tables, equal, unequal, multiplication, share, divide, multiply, groups, 2 times tables, 3 times table, 4 times tables, 5 times tables, 6 times tables, 7 times tables, 8 times tables, 9 times tables, 10 times tables, 11 times tables, 12 times tables, whole, half, quarters, fraction</p>		

Links to other subjects:	<ul style="list-style-type: none"> - Cook-It - PSHCE
Links to equality and diversity	<ul style="list-style-type: none"> - Sharing equally - Being fair

Multiplication and Division

	<u>B2 progression step 5</u>	<u>B2 progression step 6-8</u>	<u>B2NC step 1c-1b</u>	<u>B2NC Step 1b-2c</u>	<u>B2NC Step 2c-2a</u>	<u>B2NC Step 2a-3a</u>
<p><u>Subject specific knowledge</u></p> <p>What do pupils need to know?</p>	<p><u>To know</u> the word 'share' and respond appropriately.</p>	<p><u>To know</u> words 'share', 'half' and 'equal'</p> <p><u>To know</u> method 'one for you, one for me'</p> <p><u>To know</u> sharing needs to be equal and 'fair'</p> <p><u>To know</u> cutting objects in half need to be in equal pieces</p> <p><u>To know</u> the word 'double' and connect to repeated addition.</p> <p><u>To know</u> doubles to the total of 10 and recall confidently</p>	<p><u>To know</u> the word 'double' and connect to multiplying by 2.</p> <p><u>To know</u> doubles to the total of 20 and recall confidently</p> <p><u>To know</u> key words : multiply and divide</p> <p><u>To know</u> symbols: x and ÷</p> <p><u>To know</u> multiplying is linked to repeated addition</p> <p><u>To know</u> division is linked to sharing</p>	<p><u>To know</u> times tables 2s and 10s</p> <p><u>To know</u> what an 'array' is and how to use it.</p>	<p><u>To know and use</u> multiplication facts for 2,5 and 10</p> <p><u>To know</u> the multiplication of 2 numbers can be done in any order</p> <p><u>To know</u> what a factor and multiple is</p>	<p><u>To know</u> and recall multiplication and division facts for 3, 4 and 8</p> <p><u>To know</u> how to use formal written methods for multiplying 2-digit numbers</p>
<p><u>Subject specific skills</u></p> <p>What do pupils need</p>	<p><u>Is able to</u> pass / share objects amongst peers in response to being asked to 'share'</p>	<p><u>Is able to</u> use vocabulary: share and half in structured and unstructured conversations</p>	<p><u>Is able to</u> double quantities to the sum of 20 (first using concrete resources, then jottings and then recall.</p>	<p><u>Is able to</u> represent the multiplication of 2, 5 and 10 using arrays</p> <p><u>Is able to</u> explore number patterns for</p>	<p><u>Is able to</u> calculate and write multiplication number sentences using x , ÷ and =</p>	<p><u>Is able to</u> use an array to give creative multiplication or division number sentences for a multiple</p>

to be able to do?	<u>Is beginning to</u> group objects in 2s and 3s	<u>Is able to share</u> objects between two people using correct method. <u>Is able to double</u> quantities to the sum of 10 (first using concrete resources, then jottings and then recall.	<u>Is able to represent</u> the multiplication of 2s and 5s using concrete objects <u>Is able to represent</u> simple multiplication as a number sentence <u>Is able to represent</u> simple division as a number sentence <u>Is able to represent</u> division by sharing objects in 2s	multiplication (number square etc) <u>Is able to share</u> any given amount equally using concrete objects <u>Is beginning to solve</u> one step division and multiplication problems using arrays with support from an adult	<u>Is able to solve</u> contextual multiplication and division problems using a range of resources	<u>Is able to multiply</u> 2-digit numbers by 1-digit numbers using facts they already know <u>Is able to solve</u> problems involving multiplication and division; including scaling
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Fractions

	<u>B2 progression step 5</u>	<u>B2 progression step 6-8</u>	<u>B2NC step 1c-1b</u>	<u>B2NC Step 1b-2c</u>	<u>B2NC Step 2c-2a</u>	<u>B2NC Step 2a-3a</u>
<u>Subject specific knowledge</u> What do pupils need to know?	<u>To know</u> cutting an object creates more smaller pieces	<u>To know</u> when two pieces haven't been cut fairly - equally <u>To know</u> where to cut / draw a line to represent 2 equal parts - halves <u>To know</u> key words: half, equal, same and fair.	<u>To know</u> key word: fraction <u>To know</u> representations of $\frac{1}{2}$ via images, resources and words (half)	<u>To know</u> representations of $\frac{1}{4}$ via images, resources and words (quarter) <u>To know</u> half of even numbers to 10 <u>To know</u> to use 'sharing model' to find $\frac{1}{4}$ of numbers/objects e.g. 4 plates, share 16 apples.	<u>To know</u> half of numbers to 20 <u>To know</u> representations of $\frac{1}{3}$ and $\frac{1}{8}$ via images, resources and words (third/eighths) <u>To know</u> the equivalence of $\frac{2}{8}$ and $\frac{1}{4}$	<u>To know</u> and read all fractions represented as numbers <u>To know</u> key word: denominator <u>To know</u> the denominator represents the number of equal pieces the whole has been split into
<u>Subject specific skills</u>	<u>Is able to experience</u> cutting food into pieces	<u>Is able to</u> roughly cut a piece of food in half	<u>Is able to</u> recognise and name $\frac{1}{2}$ as two EQUAL parts	<u>Is able to</u> recognise and name $\frac{1}{4}$ and 1 of 4 equal parts	<u>Is able to</u> recognise, find, name and write fractions : $\frac{1}{3}$, $\frac{1}{4}$	<u>Is able to</u> count up and down in tenths by dividing an

<p>What do pupils need to be able to do?</p>		<p><u>Is able to</u> say why something hasn't been cut into equal pieces</p> <p><u>Is able to</u> independently use key words 'equal' and 'fair' in structured and unstructured setting e.g. play</p>	<p><u>Is able to</u> correctly use the terminology 'Equal pieces'</p> <p><u>Is able to</u> find $\frac{1}{2}$ of a shape or quantity</p>	<p><u>Is able to</u> find $\frac{1}{4}$ of an object, shape or quantity</p>	<p>$\frac{2}{4}$ and $\frac{3}{4}$ of a shape/set of objects</p> <p><u>Is able to</u> calculate simple fractions of number e.g. $\frac{1}{2}$ of 6 = 3</p>	<p>objects into 10 equal parts</p> <p><u>Is able to</u> recognise and use fractions as numbers</p> <p><u>Is able to</u> show, using diagrams, equivalent fractions with small denominators</p> <p>To be able to add and subtractions with the same denominator</p> <p>To be able to compare and order fractions with the same denominator</p>
<p><u>Suggested teaching activities</u></p> <p>How should I teach this?</p>	<ul style="list-style-type: none"> • Cut up food • Cut up playdough 	<ul style="list-style-type: none"> • Cut up food/playdough • Talk about fair - fair story 	<ul style="list-style-type: none"> • Fair/equal story • Cut shapes into half - could weigh pieces to see if they are roughly equal • Have shapes made out of playdough and cut using knife 	<ul style="list-style-type: none"> • Cut bread into $\frac{1}{4}$ (can be things grown) • Cut playdough into $\frac{1}{4}$ - could weigh pieces to see if they are roughly equal • Connect to position and direction - quarter turns to move around the 	<ul style="list-style-type: none"> • Place number of pieces into a fraction of a shape e.g fit two $\frac{1}{4}$ pieces into a half block to represent equivalent fractions • Fraction wall • Lego pieces to represent fractions and equivalent fractions • Connect to position and direction - quarter, half, three-quarter turns when moving around soft play area 	

				soft play	
				room	