

# Calculation Journey

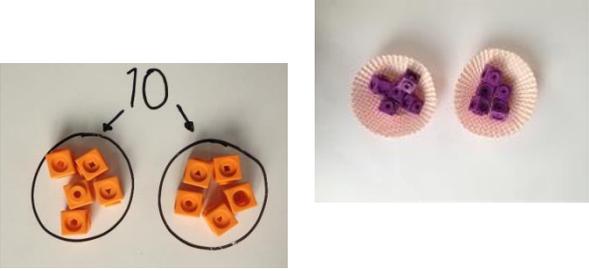
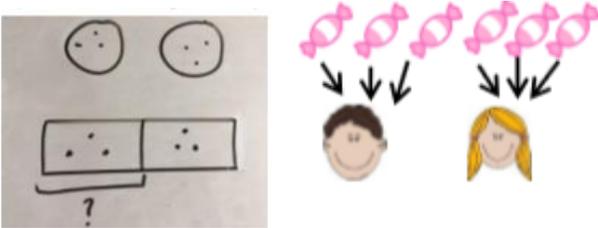
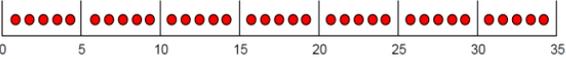
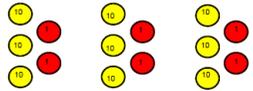
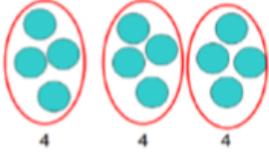
## Division

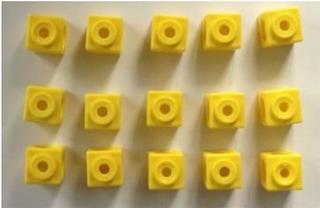
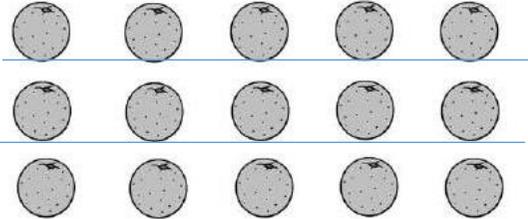
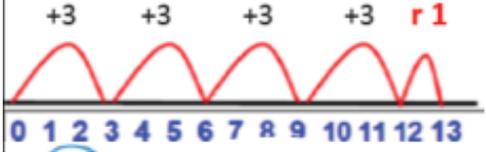
September 2021



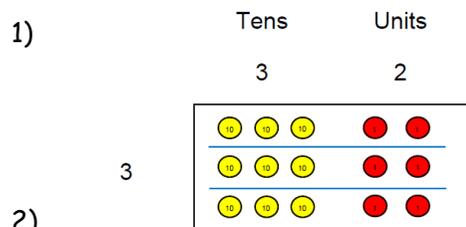
<b>Concrete</b>	<b>Pictorial</b>	<b>Abstract</b>
<p>We begin every new skill with the use of concrete apparatus. This can include counter, cubes, beads, numicon, base 10 etc. This helps children to visualise the numbers and understand the process clearly.</p>	<p>Next, we use drawings and models to show a pictorial version of the concrete apparatus used.</p>	<p>Finally, the children are confident enough to apply their knowledge to an abstract written method including numbers and symbols. They can then apply this to problem solving.</p>
<p><b>Reasoning at every level</b></p>		

Division key language: share, group, divide, divided by, half

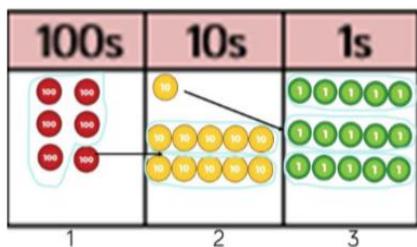
	Concrete	Pictorial	Abstract
Sharing	<p>Use cubes, counters or objects to share equally.</p> 	<p>Use pictures, bar models and drawings to share equally.</p> 	 <p>Children should also be encouraged to use their 2 times tables facts.</p> <p>Share 9 buns between three people.</p> $9 \div 3 = 3$
Grouping	<p>Divide quantities into equal groups. Use cubes, counters, objects or place value counters to aid understanding.</p>   <p><math>96 \div 3 = 32</math></p> 	<p>Use pictorial representations and bar models to make groups.</p>   <p><math>20 \div 5 = ?</math>  <math>5 \times ? = 20</math></p>	<p>Use multiplication facts or jottings to answer questions and problems.</p> <p><math>28 \div 7 = 4</math></p> <p>Divide 28 into 7 groups. How many are in each group?</p>

Arrays for division	<p>Link division to multiplication by creating an array and thinking about the number sentences that can be created.</p>  <p>Eg <math>15 \div 3 = 5</math>    <math>5 \times 3 = 15</math>  <math>15 \div 5 = 3</math>    <math>3 \times 5 = 15</math></p>	<p>Draw an array and use lines to split the array into groups to make multiplication and division sentences.</p> 	<p>Find the inverse of multiplication and division sentences by creating four linking number sentences.</p> <p><math>7 \times 4 = 28</math>  <math>4 \times 7 = 28</math>  <math>28 \div 7 = 4</math>  <math>28 \div 4 = 7</math></p>
Repeated addition	<p>Use cubes, counters or beads to show jumps from 0.</p> <p><math>12 \div 3 =</math></p> 	<p>Draw a number line and jump from 0 in the number that you are dividing by. Link method to knowledge of times tables.</p> <p><b><math>13 \div 3 = 4 \text{ r } 1</math></b></p> 	<p>Mentally use times table knowledge to count up in the number that you are dividing by.</p> <p><math>13 \div 3 =</math></p> <p>3, 6, 9, 12 so 4 remainder 1.</p>

Use place value counters to support the bus stop method.

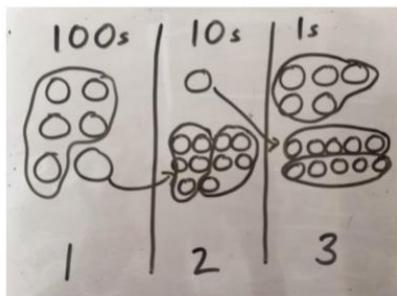


2)  
 $615 \div 5$



1. Make 615 with place value counters.
2. How many groups of 5 hundreds can you make with 6 hundred counters?
3. Exchange 1 hundred for 10 tens.
4. How many groups of 5 tens can you make with 11 ten counters?
5. Exchange 1 ten for 10 ones.
6. How many groups of 5 ones can you make with 15 ones?

Use drawings of place value counters to support the bus stop method.



Begin with calculations with no remainders.

$$\begin{array}{r} 218 \\ 4 \overline{) 872} \end{array}$$

Move onto calculations with remainders.

$$\begin{array}{r} 86 \text{ r } 2 \\ 5 \overline{) 432} \end{array}$$

Finally, introduce decimals.

$$\begin{array}{r} 14.6 \\ 35 \overline{) 511.0} \end{array}$$

Year 6 to move onto long division using the same process.