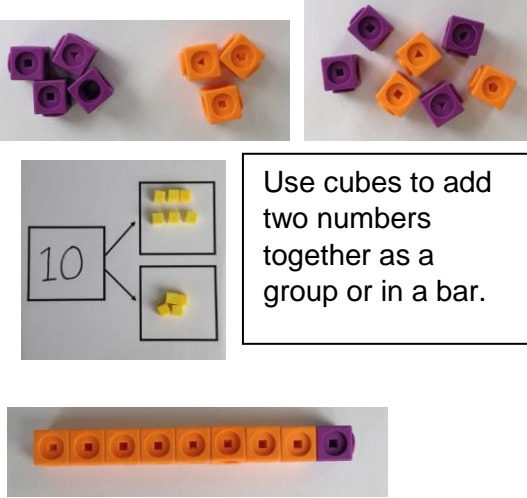
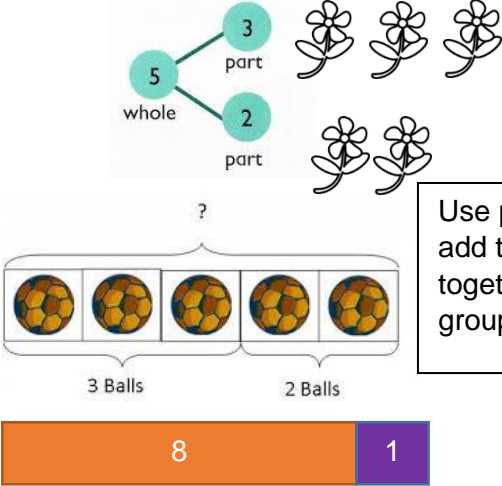
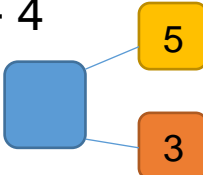




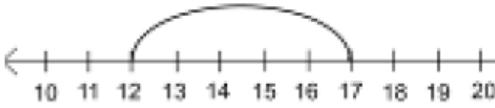
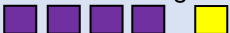
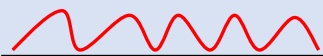

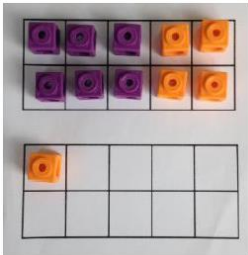
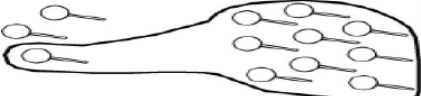
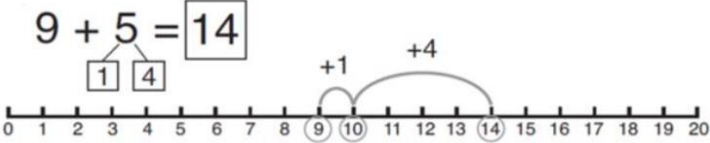

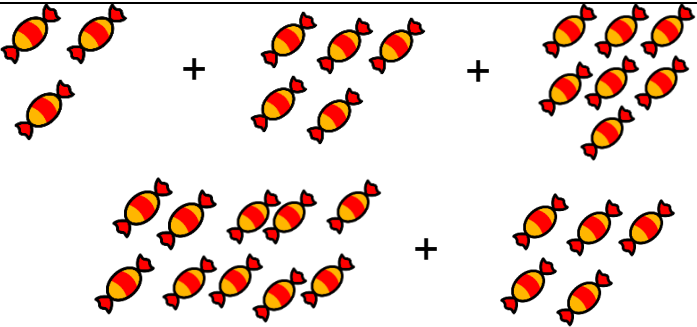
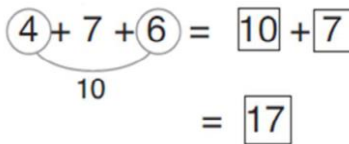
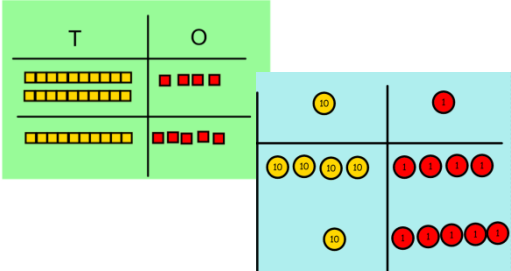
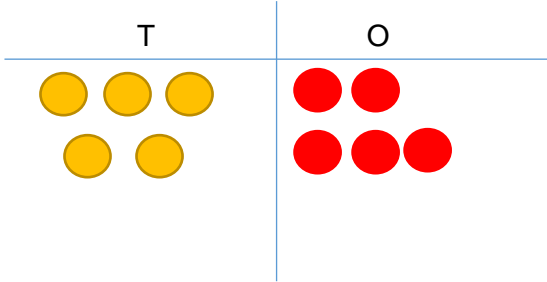
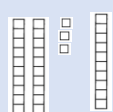
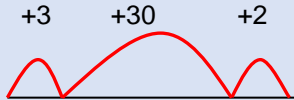
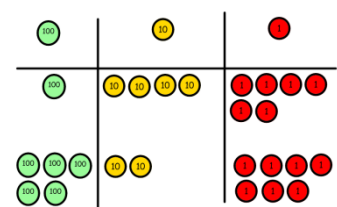
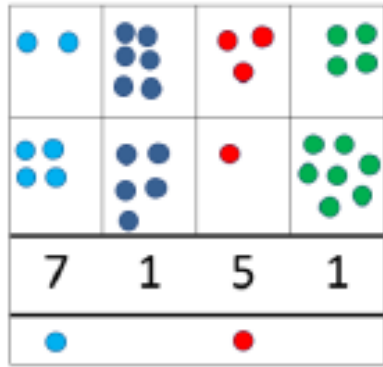


Addition

Objective and Strategies	Concrete	Pictorial	Abstract (Abstract concepts and representations may not be suitable for the suggested year group)
<p>R</p> <p>Combining two parts to make a whole: part-whole model</p>	 <p>Use cubes to add two numbers together as a group or in a bar.</p>	 <p>Use pictures to add two numbers together as a group or in a bar.</p>	<p>$4 + 3 = 7$</p> <p>$10 = 6 + 4$</p>  <p>Use the part-part whole diagram as shown above to move into the abstract.</p>
<p>R</p> <p>Addition as 'combining 2 groups'</p>	<p>Pictures & Objects</p> <p>I buy 3 cakes & my friend buys 2 cakes. How many did we buy altogether?</p>  <p>Might be recorded $3 + 2 = 5$</p>	<p>Symbols</p> <p>8 people are on the bus. 3 more get on at the next stop. How many people are on the bus now?</p>   <p>Might be recorded $8 + 3 = 11$</p>	
<p>1</p> <p>Starting at the bigger number and counting on</p>		<p>$12 + 5 = 17$</p> 	<p>$5 + 12 = 17$</p>

	Start with the larger number on the bead string and then count on to the smaller number 1 by 1 to find the answer.	Start at the larger number on the number line and count on in ones or in one jump to find the answer.	Place the larger number in your head and count on the smaller number to find your answer.
1 Addition as 'counting on' U+U (bridging 10) TU+U (bridging 20)	Pictorial recording with children using numerals & words up to 20.  Make 5 in different ways Record as a number sentence $4 + 1 = 5$	Addition as 'counting on' Using number lines – jumps of 1 $16 + 5 = 21$ <div style="display: flex; align-items: center;"> <div style="margin-right: 10px;"> $+1$ $+1$ $+1$ $+1$ $+1$ </div>  </div> <div style="display: flex; justify-content: space-between; width: 100%;"> 15 16 17 18 19 20 21 </div>	
1 Regrouping to make 10	 $6 + 5 = 11$  Start with the bigger number and use the smaller number to make 10.	 $3 + 9 =$ $9 + 5 = 14$ 	$7 + 4 = 11$ If I am at seven, how many more do I need to make 10? How many more do I add on now?
2 Adding three single digits	$4 + 7 + 6 = 17$ Put 4 and 6 together to make 10. Add on 7. 		$4 + 7 + 6 = 10 + 7 = 17$  Combine the two numbers that make 10 and then add on the remainder.


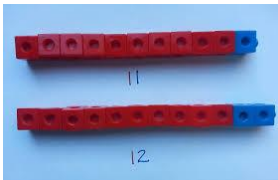
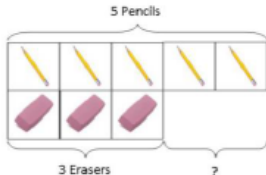
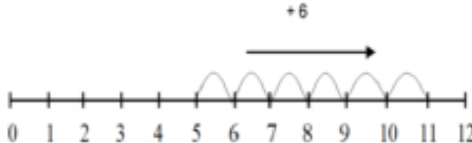
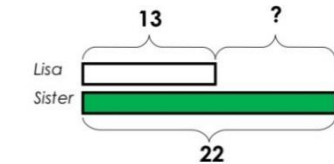
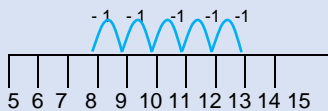
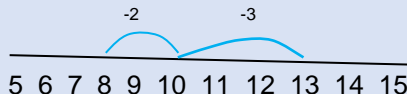
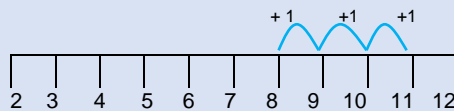
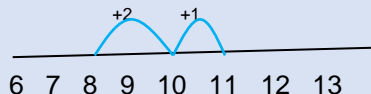
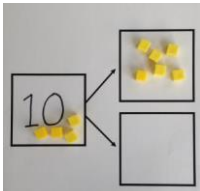
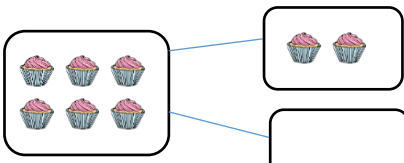
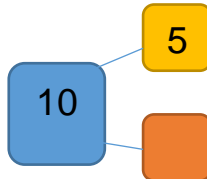
	Following on from making 10, make 10 with 2 of the digits (if possible) then add on the third digit.	Add together three groups of objects. Draw a picture to recombine the groups to make 10.	
<p>2/3</p> <p>Column method- no regrouping</p>	<p>24 + 15 =</p> <p>Add together the ones first then add the tens. Use the Base 10 blocks first before moving onto place value counters.</p> 	<p>After practically using the base 10 blocks and place value counters, children can draw the counters to help them to solve additions.</p> 	<p><u>Calculations</u></p> <p>21 + 42 =</p> <p>21 + 42</p>
<p>2</p> <p>TU+TU</p>	<p>Pictures & Symbols</p> <p>23 + 12 = 25</p>  <p>Use Dienes</p>	<p>Number Lines</p> <p>35 + 47 = 82</p>  <p>47 50 80 82</p> <p>Make efficient jumps (jumps can also be in 10s & 1s)</p>	<p>Partitioning</p> <p>35 + 47 = 82 40 + 30 = 70 7 + 5 = 12 70 + 12 = 82</p> <p>100 Square</p> <p>Use 100 square to:</p> <ul style="list-style-type: none"> • add units • add tens • add tens & units
<p>3</p> <p>Column method- regrouping</p>	<p>Make both numbers on a place value grid.</p>  <p>146 + 527</p> <p>Add up the units and exchange 10 ones for one 10.</p>	<p>Children can draw a pictorial representation of the columns and place value counters to further support their learning and understanding.</p> 	<p>Start by partitioning the numbers before moving on to clearly show the exchange below the addition.</p> <p>20 + 5 40 + 8 60 + 13 = 73</p> <p>536 + 85 621 11</p>

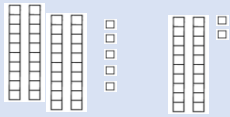
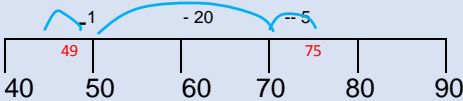
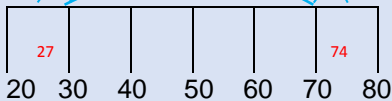

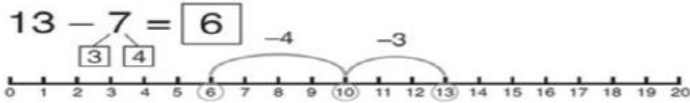
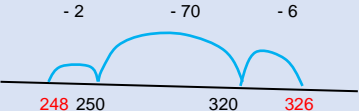
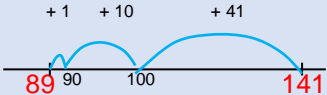
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<p>5/6</p> <p>Consolidate & extend</p> <p>Include: 3 numbers Decimals up to 3dp</p>	<p>Partitioning decimals</p> <p>3.243 km + 18.07 km = 21.313 km</p> $\begin{array}{rclcl} 3 & + & 18 & = & 21 \\ 0.2 & + & 0.0 & = & 0.2 \\ 0.04 & + & 0.07 & = & 0.11 \\ 0.003 & + & 0 & = & 0.003 \end{array}$	<p>Compact Vertical</p> $\begin{array}{r} 3.243 \\ + 18.070 \\ \hline 21.313 \\ \text{\scriptsize 1 1} \end{array}$
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Subtraction

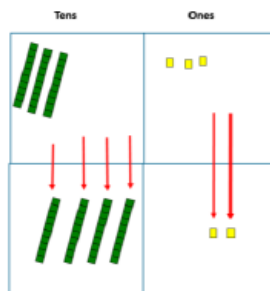
Objective and Strategies	Concrete	Pictorial	Abstract <small>(Abstract concepts and representations may not be suitable for the suggested year group)</small>
<div>R/1</div> <div>Taking away ones</div>	<div>Use physical objects, counters, cubes etc to show how objects can be taken away.</div> <div><div><div><div><div></div></div><div><div></div></div><div><div></div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><d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		This can progress all the way to counting back using two 2 digit numbers.		
1 Find the difference	<p>Compare amounts and objects to find the difference.</p>  <p>Use cubes to build towers or make bars to find the difference</p>  <p>Use basic bar models with items to find the difference</p>	<p>Count on to find the difference.</p>  <p>Comparison Bar Models</p> <p>Lisa is 13 years old. Her sister is 22 years old. Find the difference in age between them.</p>  <p>Draw bars to find the difference between 2 numbers.</p>	Hannah has 23 sandwiches, Helen has 15 sandwiches. Find the difference between the number of sandwiches.	
1 Subtraction as 'taking away' and 'difference' (by counting on) U – U TU – U (bridging 10)	<p>Taking away – jumps of 1 $13 - 5 = 8$</p> 	<p>Taking away – efficient jumps $13 - 5 = 8$</p> 	<p>Counting on – jumps of 1 $11 - 8 = 3$</p> 	<p>Counting on – efficient jumps $11 - 8 = 3$</p> 
1 Part, Part, Whole Model	 <p>Link to addition- use the part whole model to help explain the inverse between addition and subtraction.</p>	<p>Use a pictorial representation of objects to show the part, part, whole model.</p> 		

	<p>If 10 is the whole and 6 is one of the parts. What is the other part?</p> $10 - 6 =$		Move to using numbers within the part whole model.
<p>2</p> <p>Subtraction as inverse of addition</p> <p>TU – TU (Bridging 10s)</p>	<p>Pictures & Symbols</p> $45 - 22 = 23$ 	<p>Number Lines - taking away</p> $75 - 26 = 49$ 	<p>Number lines – counting on</p> $74 - 27 = 47$ <p>+3 +40 +4</p> 
<p>2</p> <p>Make 10</p>	<p>$14 - 9 =$</p>  <p>Make 14 on the ten frame. Take away the four first to make 10 and then takeaway one more so you have taken away 5. You are left with the answer of 9.</p>	<p>$13 - 7 = 6$</p>  <p>Start at 13. Take away 3 to reach 10. Then take away the remaining 4 so you have taken away 7 altogether. You have reached your answer.</p>	<p>$16 - 8 =$</p> <p>How many do we take off to reach the next 10?</p> <p>How many do we have left to take off?</p>
<p>2</p> <p>TU – TU HTU – TU HTU - HTU</p>	<p>Number Line – taking away</p> $326 - 78 = 248$ 	<p>Number Line – counting on</p> $141 - 89 = 52$ 	<p>Using partitioning</p> <div> $45 - 34 = 11$ $\begin{array}{r} 40 + 5 \\ - 30 + 4 \\ \hline 10 + 1 \end{array}$ </div> <div> $74 - 27 = 47$ $\begin{array}{r} 60 \quad 1 \\ 70 + 4 \\ - 20 + 7 \\ \hline 40 + 7 \end{array}$ </div>

2/3

Column method without regrouping



Use Base 10 to make the bigger number then take the smaller number away.



Show how you partition numbers to subtract. Again make the larger number first.



Calculations

$$\begin{array}{r} 54 \\ - 22 \\ \hline 32 \end{array}$$

Draw the Base 10 or place value counters alongside the written calculation to help to show working.

$$47 - 24 = 23$$

$$\begin{array}{r} 40 + 7 \\ - 20 + 4 \\ \hline 20 + 3 \end{array}$$

This will lead to a clear written column subtraction.

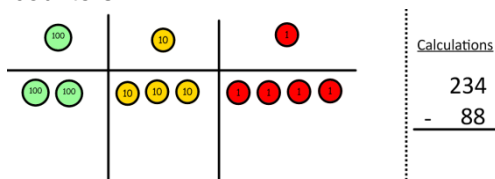
$$\begin{array}{r} 32 \\ - 12 \\ \hline 20 \end{array}$$

3

Column method with regrouping

Use Base 10 to start with before moving on to place value counters. Start with one exchange before moving onto subtractions with 2 exchanges.

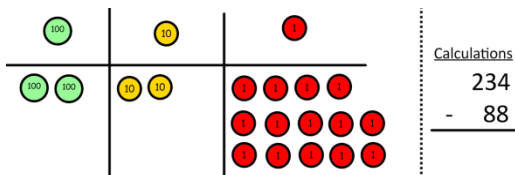
Make the larger number with the place value counters



Calculations

$$\begin{array}{r} 234 \\ - 88 \\ \hline \end{array}$$

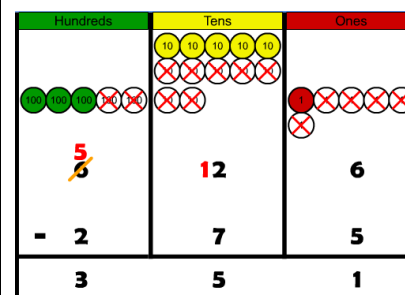
Start with the ones, can I take away 8 from 4 easily? I need to exchange one of my tens for ten ones.



Calculations

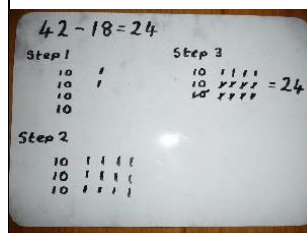
$$\begin{array}{r} 234 \\ - 88 \\ \hline \end{array}$$

Now I can subtract my ones.



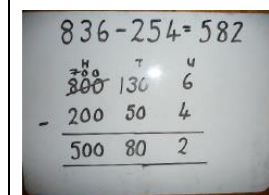
Draw the counters onto a place value grid and show what you have taken away by crossing the counters out as well as clearly showing the exchanges you

make.

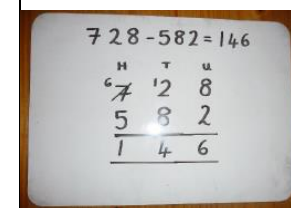


When confident, children can find their own way to record the exchange/regrouping.

Just writing the numbers as shown here shows that the child understands the method and knows when to exchange/regroup.

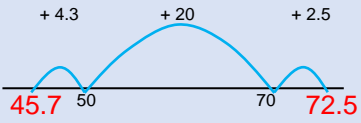


Children can start their formal written method by partitioning the number into clear place value columns.



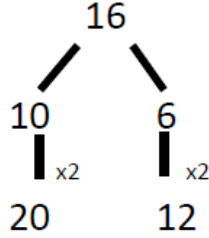


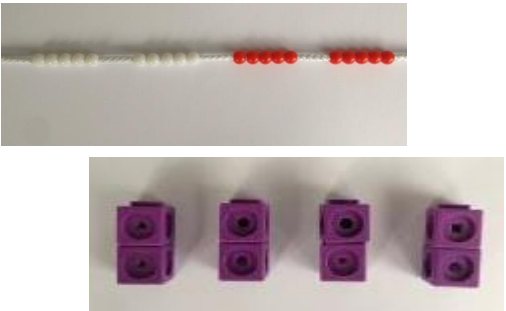
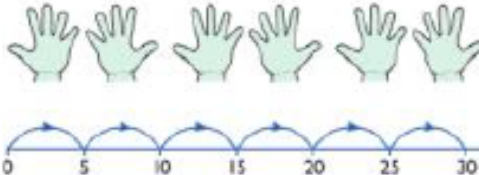



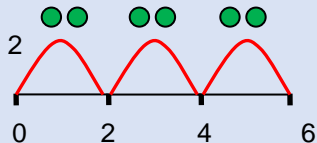
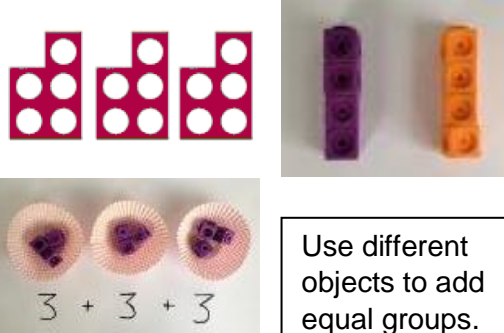

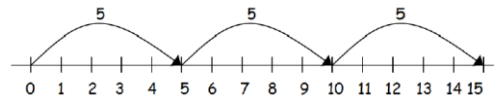


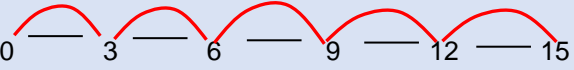
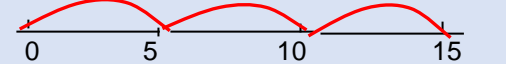
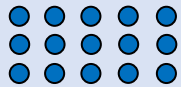
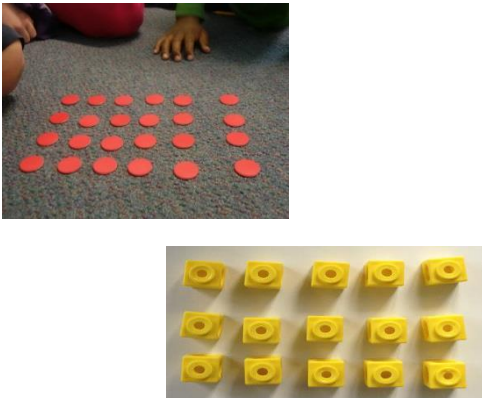
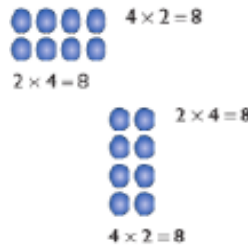
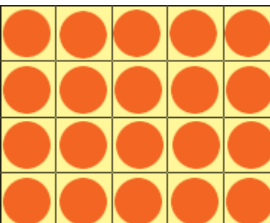

Moving forward the children use a more compact method.

	<div data-bbox="436 135 929 311"> <div data-bbox="828 167 918 231"> Calculations 234 - 88 <hr/> </div> </div> <p>Now look at the tens, can I take away 8 tens easily? I need to exchange one hundred for ten tens.</p> <div data-bbox="436 438 929 614"> <div data-bbox="828 470 918 550"> Calculations 234 - 88 <hr/> </div> </div> <p>Now I can take away eight tens and complete my subtraction</p> <div data-bbox="436 694 929 869"> <div data-bbox="828 726 918 853"> Calculations 234 - 88 <hr/> 146 </div> </div> <p>Show children how the concrete method links to the written method alongside your working. Cross out the numbers when exchanging and show where we write our new amount.</p>		<p>This will lead to an understanding of subtracting any number including decimals.</p> <div data-bbox="1758 279 2094 454"> $\begin{array}{r} 5121 \\ - 263.0 \\ \hline 236.5 \end{array}$ </div>
<p>3</p> <p>HTU – TU HTU – HTU Decimals: money (£7.85 - £3.49)</p>	<p>Number line – counting on</p> <p>754 – 186 = 568</p> <div data-bbox="436 1133 795 1252"> </div>	<p>Compact method</p> <div data-bbox="1220 1109 1321 1220"> $\begin{array}{r} 145 \\ - 32 \\ \hline 113 \end{array}$ </div>	<p>Compact method – decomposition</p> <div data-bbox="1758 1101 1915 1236"> $\begin{array}{r} 6\cancel{7}13\cancel{4}11 \\ - 367 \\ \hline 374 \end{array}$ </div>

<p>4</p> <p>ThHTU – HTU</p> <p>Decimals up to 2dp</p> <p>(72.5 – 45.7)</p>	<p>Number line – counting on</p> <p>72.5 – 45.7 = 26.8</p> 	<p>Decomposition</p> $ \begin{array}{r} \overset{12}{\cancel{72}} \overset{13}{\cancel{5}} \overset{56}{\cancel{7}} \overset{12}{\cancel{5}} \\ - \quad \quad \quad 5 \quad 4 \quad 8 \\ \hline 1 \quad 8 \quad 1 \quad 4 \end{array} $	<p>Decomposition – decimals</p> $ \begin{array}{r} \overset{67}{\cancel{72}} \overset{112}{\cancel{5}} \overset{15}{\cancel{7}} \\ - 4 \quad 5 \quad . \quad 7 \\ \hline 2 \quad 6 \quad . \quad 8 \end{array} $
<p>5</p> <p>Consolidate & extend including:</p> <p>Decimals to 3 dp</p>	<p>Recognise when one written method is more efficient</p> <ul style="list-style-type: none"> There was 2.5 litres in the jug. Sam drank 385 ml. How much was left? 18.07 km – 3.247 m 		

Multiplication

Objective and Strategies	Concrete	Pictorial	Abstract (Abstract concepts and representations may not be suitable for the suggested year group)
R/1 Doubling	Use practical activities to show how to double a number. 	Draw pictures to show how to double a number. Double 4 is 8 	 Partition a number and then double each part before recombining it back together.
R Count repeated groups of the same size (1s/2s/5s/10s)	Pictures / Objects 3 plates, 2 cakes on each plate 		Symbols 6 cakes shared between 3 
R/1 Counting in multiples	 Count in multiples supported by concrete objects in equal groups.	 Use a number line or pictures to continue support in counting in multiples.	Count in multiples of a number aloud. Write sequences with multiples of numbers. 2, 4, 6, 8, 10 5, 10, 15, 20, 25, 30

1	Combining groups of 2,5 or 10	<p>Pictures & Symbols</p> <p>There are 3 sweets in 1 bag. How many sweets are there in 4 bags?</p> 	<p>Number Lines</p> <p>3 x 2, 3 lots of 2</p> 	
1	Repeated addition	 <p>Use different objects to add equal groups.</p>	<p>There are 3 plates. Each plate has 2 star biscuits on. How many biscuits are there?</p>  <p>2 add 2 add 2 equals 6</p>  <p>5 + 5 + 5 = 15</p> <p>Write addition sentences to describe objects and pictures.</p>  <p>2 + 2 + 2 + 2 + 2 = 10</p>	
1/2	Multiplication as repeated addition & arrays	<p>Pictures & Symbols</p> <p>There are 4 apples in each bowl. How many apples in 6 bowls?</p> 	<p>Repeated addition</p> <p>5 x 3 or 3 x 5</p>  	<p>Arrays</p> <p>5 x 3 or 3 x 5</p> <p>Also 14 x 2 as (10 x 2 and 4 x 2)</p> 
1/2	Arrays- showing commutative multiplication	<p>Create arrays using counters/ cubes to show multiplication sentences.</p> 	<p>Draw arrays in different rotations to find commutative multiplication sentences.</p>   <p>Link arrays to area of rectangles.</p>	<p>Use an array to write multiplication sentences and reinforce repeated addition.</p>  <p>5 + 5 + 5 = 15</p> <p>3 + 3 + 3 + 3 + 3 = 15</p> <p>5 x 3 = 15</p> <p>3 x 5 = 15</p>

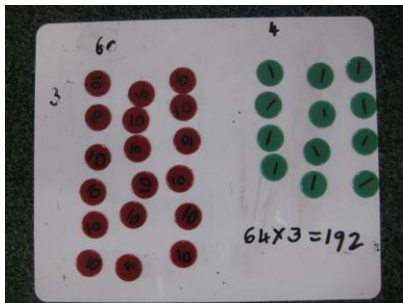
2	<div>TU x U (e.g. 13 x 4)</div>	<div>Arrays</div> <div>13 x 4</div> <div><div><div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div><div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div></div><div>10 x 4</div><div><div><div></div><div></div><div></div><div></div></div><div><div></div><div></div><div></div><div></div></div></div><div>3 x 4</div></div>	<div>Partitioning</div> <div>13 x 4 = 52</div> <div>10 x 4 = 40</div> <div>3 x 4 = 12</div> <div>Possible use of number lines to record steps</div>	
3	<div>Grid Method</div>	<div>Show the link with arrays to first introduce the grid method.</div> <div><div><div><div>x</div><div></div><div>10</div><div></div><div>3</div></div><div><div>4</div><div><div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div><div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div></div></div><div>4 rows of 10</div><div>4 rows of 3</div><div>Move on to using Base 10 to move towards a more compact method.</div><div><div><div><div>x</div><div></div><div>T</div><div></div><div>U</div></div><div><div></div><div><div></div><div></div><div></div><div></div></div><div><div></div><div></div><div></div><div></div></div></div></div><div>4 rows of 13</div><div>Move on to place value counters to show how we are finding groups of a number. We are multiplying by 4 so we need 4 rows.</div><div><div><div><div></div><div></div><div></div></div><div><div></div><div></div><div></div></div><div><div></div><div></div><div></div></div></div><div>Calculations</div><div>4 x 126</div><div>Fill each row with 126.</div><div><div><div><div></div><div></div><div></div></div><div><div></div><div></div><div></div></div><div><div></div><div></div><div></div></div></div><div>Calculations</div><div>4 x 126</div><div>Add up each column, starting with the ones making any exchanges needed.</div><div><div><div><div></div><div></div><div></div></div><div><div></div><div></div><div></div></div><div><div></div><div></div><div></div></div></div><div>Then you have your answer.</div></div></div></div></div></div></div>	<div>Children can represent the work they have done with place value counters in a way that they understand.</div> <div>They can draw the counters, using colours to show different amounts or just use circles in the different columns to show their thinking as shown below.</div> <div><div><div><div>24 x 3 = 72</div><div><div><div>X</div><div></div><div>20</div><div></div><div>4</div></div><div><div>3</div><div><div><div></div><div></div><div></div><div></div></div><div><div></div><div></div><div></div><div></div></div><div><div></div><div></div><div></div><div></div></div></div><div>60</div><div><div><div></div><div></div><div></div><div></div></div><div><div></div><div></div><div></div><div></div></div><div><div></div><div></div><div></div><div></div></div></div><div>12</div><div><div><div></div><div></div><div></div><div></div></div><div><div></div><div></div><div></div><div></div></div><div><div></div><div></div><div></div><div></div></div></div><div>60</div><div><div><div></div><div></div><div></div><div></div></div><div><div></div><div></div><div></div><div></div></div><div><div></div><div></div><div></div><div></div></div></div><div>72</div></div></div></div></div></div>	<div>Start with multiplying by one digit numbers and showing the clear addition alongside the grid.</div> <div><div><div><div>X</div><div></div><div>30</div><div></div><div>5</div></div><div><div>7</div><div><div><div></div><div></div><div></div><div></div></div><div><div></div><div></div><div></div><div></div></div><div><div></div><div></div><div></div><div></div></div></div><div>210</div><div><div><div></div><div></div><div></div><div></div></div><div><div></div><div></div><div></div><div></div></div><div><div></div><div></div><div></div><div></div></div></div><div>35</div></div></div><div>210 + 35 = 245</div><div>Moving forward, multiply by a 2 digit number showing the different rows within the grid method.</div><div><div><div><div></div><div></div><div></div></div><div><div></div><div></div><div></div></div><div><div></div><div></div><div></div></div></div><div>10</div><div><div><div></div><div></div><div></div></div><div><div></div><div></div><div></div></div><div><div></div><div></div><div></div></div></div><div>100</div><div><div><div></div><div></div><div></div></div><div><div></div><div></div><div></div></div><div><div></div><div></div><div></div></div></div><div>80</div><div><div><div></div><div></div><div></div></div><div><div></div><div></div><div></div></div><div><div></div><div></div><div></div></div></div><div>30</div><div><div><div></div><div></div><div></div></div><div><div></div><div></div><div></div></div><div><div></div><div></div><div></div></div></div><div>24</div></div><div><div><div><div>X</div><div></div><div>1000</div><div></div><div>300</div><div></div><div>40</div><div></div><div>2</div></div><div><div>10</div><div><div><div></div><div></div><div></div><div></div></div><div><div></div><div></div><div></div><div></div></div><div><div></div><div></div><div></div><div></div></div></div><div>10000</div><div><div><div></div><div></div><div></div><div></div></div><div><div></div><div></div><div></div><div></div></div><div><div></div><div></div><div></div><div></div></div></div><div>3000</div><div><div><div></div><div></div><div></div><div></div></div><div><div></div><div></div><div></div><div></div></div><div><div></div><div></div><div></div><div></div></div></div><div>400</div><div><div><div></div><div></div><div></div><div></div></div><div><div></div><div></div><div></div><div></div></div><div><div></div><div></div><div></div><div></div></div></div><div>20</div><div><div><div></div><div></div><div></div><div></div></div><div><div></div><div></div><div></div><div></div></div><div><div></div><div></div><div></div><div></div></div></div><div>8000</div><div><div><div></div><div></div><div></div><div></div></div><div><div></div><div></div><div></div><div></div></div><div><div></div><div></div><div></div><div></div></div></div><div>2400</div><div><div><div></div><div></div><div></div><div></div></div><div><div></div><div></div><div></div><div></div></div><div><div></div><div></div><div></div><div></div></div></div><div>320</div><div><div><div></div><div></div><div></div><div></div></div><div><div></div><div></div><div></div><div></div></div><div><div></div><div></div><div></div><div></div></div></div><div>16</div></div></div></div></div>

3 Record, support & explain: TU x U (e.g. 16 x 8; 43 x 6) HTU x U	Partitioning 43 x 6 = 258 40 x 6 = 240 3 x 6 = 18 (Use x facts already known e.g. 4 x 6 = 24)	Compact grid method 43 x 6 <table><tr><td>X</td><td>40</td><td>3</td></tr><tr><td>6</td><td>240</td><td>18</td></tr></table>		X	40	3	6	240	18	Expanded vertical $\begin{array}{r} 43 \\ \times 6 \\ \hline 18 \\ 240 \\ \hline 258 \end{array}$	Compact vertical $\begin{array}{r} 43 \\ \times 6 \\ \hline 258 \\ 1 \end{array}$																			
X	40	3																												
6	240	18																												
4 Refine & use efficient methods HTU x U TU x TU U.t x U	Grid methods 47 x 36 = 1692 <table><tr><td>x</td><td>40</td><td>7</td><td></td></tr><tr><td>30</td><td>1200</td><td>210</td><td>1410</td></tr><tr><td>6</td><td>240</td><td>42</td><td>282</td></tr><tr><td></td><td></td><td></td><td>1692</td></tr></table>	x	40	7		30	1200	210	1410	6	240	42	282				1692	Grid method – decimals 5.65 x 9 = 50.85 <table><tr><td>x</td><td>5</td><td>0.6</td><td>0.05</td><td></td></tr><tr><td>9</td><td>45</td><td>5.4</td><td>0.45</td><td>50.85</td></tr></table>	x	5	0.6	0.05		9	45	5.4	0.45	50.85	Expanded vertical $\begin{array}{r} 237 \\ \times 4 \\ \hline 28 \\ 120 \\ 800 \\ \hline 948 \end{array}$	Compact vertical $\begin{array}{r} 4.7 \\ \times 8 \\ \hline 37.6 \\ 5 \end{array}$
x	40	7																												
30	1200	210	1410																											
6	240	42	282																											
			1692																											
x	5	0.6	0.05																											
9	45	5.4	0.45	50.85																										
5 Use efficient methods: Integer x U (e.g.2307 X 8) Decimal x U (e.g.31.6 X 7) TU x TU HTU x TU	Expanded vertical $\begin{array}{r} 2327 \\ \times 8 \\ \hline 56 \\ 160 \\ 2400 \\ 16000 \\ \hline 18616 \end{array}$	Expanded vertical – decimals $\begin{array}{r} 131.6 \\ \times 7 \\ \hline 4.2 \\ 7 \\ 21 \\ 700 \\ \hline 732.2 \\ 1 \end{array}$	Compact vertical $\begin{array}{r} 256 \\ \times 18 \\ \hline 2048 \\ 2560 \\ \hline 4608 \end{array}$	Compact vertical – decimals $\begin{array}{r} 25.6 \\ \times 18 \\ \hline 204.8 \\ 256.0 \\ \hline 460.8 \\ 1 \end{array}$																										

4/5/6

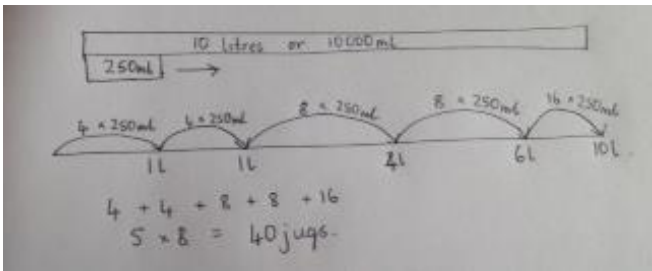
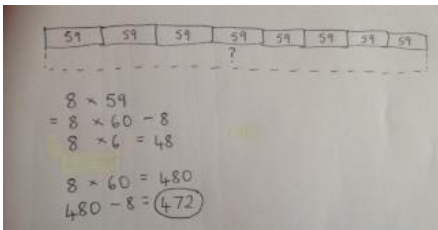
Column multiplication

Children can continue to be supported by place value counters at the stage of multiplication.



It is important at this stage that they always multiply the ones first and note down their answer followed by the tens which they note below.

Bar modelling and number lines can support learners when solving problems with multiplication alongside the formal written methods.



Start with long multiplication, reminding the children about lining up their numbers clearly in columns.

If it helps, children can write out what they are solving next to their answer.


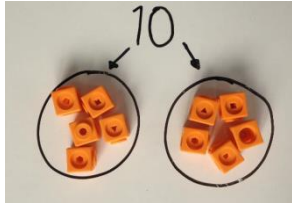
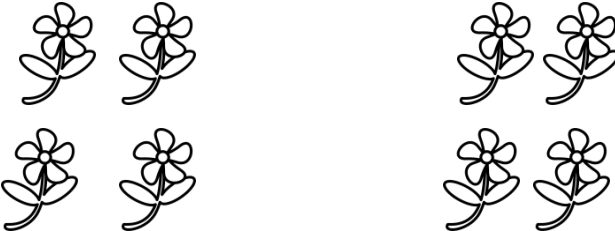
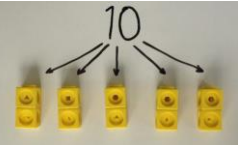
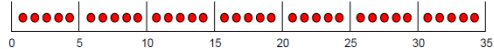
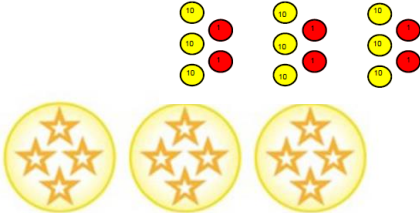
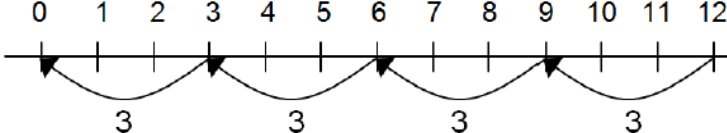
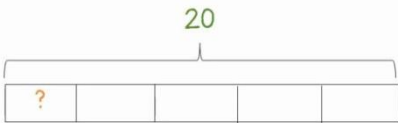
$$\begin{array}{r} 32 \\ \times 24 \\ \hline 8 \quad (4 \times 2) \\ 120 \quad (4 \times 30) \\ 40 \quad (20 \times 2) \\ 600 \quad (20 \times 30) \\ \hline 768 \end{array}$$

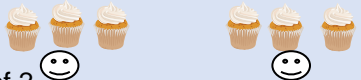



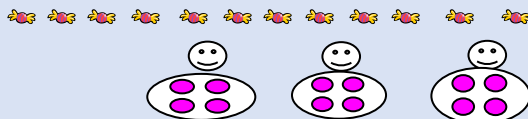
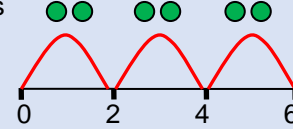
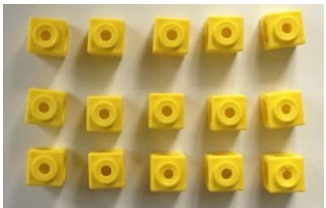
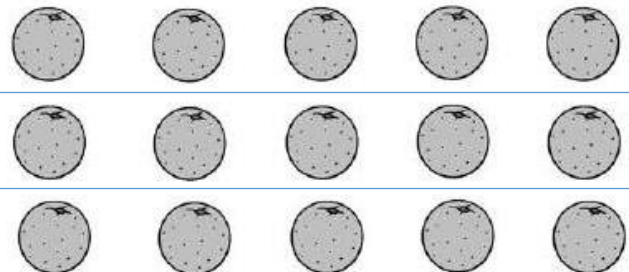
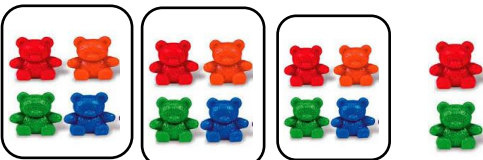


This moves to the more compact method.

$$\begin{array}{r} 7 4 \\ \times 6 3 \\ \hline 1 2 \\ 2 1 0 \\ 2 4 0 \\ + 4 2 0 0 \\ \hline 4 6 6 2 \end{array}$$

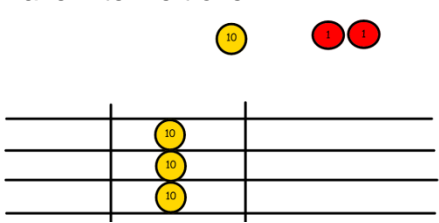
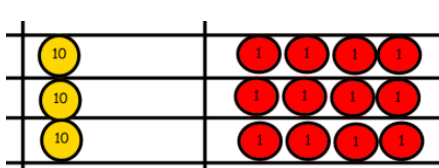
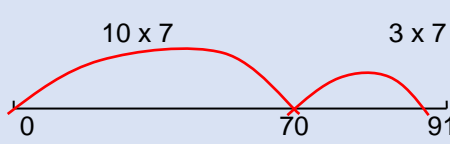
$$\begin{array}{r} 1342 \\ \times 18 \\ \hline 736 \\ 231 \\ \hline 13420 \\ 24156 \\ \hline \end{array}$$

Division

Objective and Strategies	Concrete	Pictorial	Abstract (Abstract concepts and representations may not be suitable for the suggested year group)
<p>R/1</p> <p>Sharing objects into groups</p>	 <p>I have 10 cubes, can you share them equally in 2 groups?</p> 	<p>Children use pictures or shapes to share quantities.</p>  <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 10px auto;"> $8 \div 2 = 4$ </div>	<p>Share 9 buns between three people.</p> $9 \div 3 = 3$
<p>R/1</p> <p>Division as grouping</p>	<p>Divide quantities into equal groups. Use cubes, counters, objects or place value counters to aid understanding.</p>   $96 \div 3 = 32$ 	<p>Use a number line to show jumps in groups. The number of jumps equals the number of groups.</p>  <p>Think of the bar as a whole. Split it into the number of groups you are dividing by and work out how many would be within each group.</p>  $20 \div 5 = ?$ $5 \times ? = 20$	$28 \div 7 = 4$ <p>Divide 28 into 7 groups. How many are in each group?</p>

<div>R</div> <div>Share objects into equal groups & count how many in each group</div>	<div><div>Pictures / Objects</div><div>6 cakes shared between 2 people</div><div></div><div>6 cakes put into groups of 2</div><div></div></div>	<div><div>Symbols</div><div>6 cakes shared between 2</div><div></div><div>6 cakes put into groups of 2</div><div></div></div>	
<div>1</div> <div>Solve practical problems that involve sharing into equal groups</div>	<div><div>Pictures & Symbols</div><div>How many sweets will each child have if I share 12 sweets between 3 children?</div><div></div></div>	<div><div>Number Lines</div><div>$6 \div 3 = 2$</div><div></div></div>	
<div>1</div> <div>Division within arrays</div>	<div><div></div><div>Link division to multiplication by creating an array and thinking about the number sentences that can be created.</div><div>Eg $15 \div 3 = 5$ $5 \times 3 = 15$ $15 \div 5 = 3$ $3 \times 5 = 15$</div></div>	<div><div></div><div>Draw an array and use lines to split the array into groups to make multiplication and division sentences.</div></div>	<div><div>Find the inverse of multiplication and division sentences by creating four linking number sentences.</div><div>$7 \times 4 = 28$ $4 \times 7 = 28$ $28 \div 7 = 4$ $28 \div 4 = 7$</div></div>
<div>1/2</div> <div>Division with a remainder</div>	<div><div>$14 \div 3 =$</div><div>Divide objects between groups and see how much is left over</div><div></div></div>	<div><div>Jump forward in equal jumps on a number line then see how many more you need to jump to find a remainder.</div><div></div><div>Draw dots and group them to divide an amount and clearly show a remainder.</div><div></div></div>	<div><div>Complete written divisions and show the remainder using r.</div><div><div>$29 \div 8 = 3 \text{ REMAINDER } 5$</div><div><div>↑ ↑ ↑ ↑</div><div>dividend divisor quotient remainder</div></div></div></div>

<div>1/2</div> <div>Division as sharing & grouping (including remainders)</div> <div>TU ÷ U (where divisor is 2,5 or 10)</div>	<div>Pictures/Symbols</div> <div>4 eggs fit in a box. How many boxes would you need to pack 20 eggs?</div> <div></div>	<div>Number lines/Arrays</div> <div>15 ÷ 5 =</div> <div></div>	<div>Partitioning</div> <div>28 ÷ 2 = 14</div> <div>20 ÷ 2 = 10 8 ÷ 2 = 4</div>
<div>1/2</div> <div>TU ÷ U (where divisor is 2,3,4, 5,6 or 10)</div> <div>Round remainders up or down depending on the context</div>	<div>Number lines (start from 0)</div> <div>33 ÷ 5 = 6 r 3</div> <div></div>	<div>Number lines – using the inverse to solve calculations</div> <div>30 ÷ 5 = 6 x 5 = 30</div> <div></div> <div>So 30 ÷ 5 = 6</div>	<div>Grouping (vertical method) – multiples of 2,3,4,5,6 & 10</div> <div>80 ÷ 5 = 16</div> <div><div><div>80</div><div>- 50</div><div>30</div><div>- 30</div><div>0</div></div><div>(10 x 5) (6 x 5)</div></div>
<div>3 - 6</div> <div>Short division</div>	<div><div>Tens Units</div><div>3 2</div><div>3</div><div></div></div> <div>Use place value counters to divide using the bus stop method alongside</div> <div><div></div><div><div>Calculations</div><div>42 ÷ 3 =</div></div></div> <div><div><div></div><div></div><div></div><div></div></div><div>42 ÷ 3 =</div><div>Start with the biggest place value, we are sharing 40 into</div></div>	<div>Pupils can continue to use drawn diagrams with dots or circles to help them divide numbers into equal groups.</div> <div></div> <div>Encourage them to move towards counting in multiples to divide more efficiently.</div>	<div>Begin with divisions that divide equally with no remainder.</div> <div><div><div>218</div><div>3</div><div>4</div><div>872</div></div></div> <div>Move onto divisions with a remainder.</div> <div><div><div>86 r 2</div><div>3</div><div>5</div><div>432</div></div></div>

	<p>three groups. We can put 1 ten in each group and we have 1 ten left over.</p>  <p>We exchange this ten for ten ones and then share the ones equally among the groups.</p>  <p>We look how much in 1 group so the answer is 14.</p>		<p>Finally move into decimal places to divide the total accurately.</p> $\begin{array}{r} 14.6 \\ 35 \overline{) 511.0} \\ \underline{35} \\ 16 \\ \underline{14} \\ 21 \\ \underline{21} \\ 0 \end{array}$
<p>3</p> <p>Record, support & explain</p> <p>TU ÷ U (e.g. 98 ÷ 6)</p>	<p>Number lines (start from zero) 91 ÷ 7 = 13</p> 		<p>Grouping (vertical layout) 99 ÷ 8 = 12 r 3</p> $\begin{array}{r} 99 \\ - 80 \quad (10 \times 8) \\ \hline 19 \\ - 16 \quad (2 \times 8) \\ \hline 3 \end{array}$
<p>4</p> <p>Refine and use efficient methods:</p> <p>HTU ÷ U</p>	<p>Grouping (expanded)</p> $\begin{array}{r} 6 \overline{) 196} \\ - 60 \\ \hline 136 \\ - 60 \\ \hline 76 \\ - 60 \\ \hline 16 \\ - 12 \\ \hline 4 \end{array} \quad \begin{array}{l} (10 \times 6) \\ (10 \times 6) \\ (10 \times 6) \\ (2 \times 6) \end{array}$ <p>Answer 32 r 4</p>	<p>Grouping (efficient) 344 ÷ 8 = 43</p> $\begin{array}{r} 8 \overline{) 344} \\ - 320 \\ \hline 24 \\ - 24 \\ \hline 0 \end{array} \quad \begin{array}{l} (40 \times 8) \\ (3 \times 8) \end{array}$	<p>'Short' division 291 ÷ 3 = 97</p> $\begin{array}{r} 97 \\ 3 \overline{) 291} \end{array}$
<p>5/6</p> <p>Use efficient methods: Integer ÷ U (e.g. 123 ÷ 7) Decimal ÷ U (e.g. 27.6 ÷ 8) HTU ÷ TU</p>	<p>'Short' division – decimals 43.4 ÷ 7 = 6.2</p> $\begin{array}{r} 6.2 \\ 7 \overline{) 43.4} \end{array}$		<p>'Long' division 560 ÷ 24 = 23 r 8</p> $\begin{array}{r} 23 \\ 24 \overline{) 560} \\ - 480 \\ \hline 80 \\ - 72 \\ \hline 8 \end{array}$