

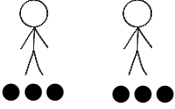
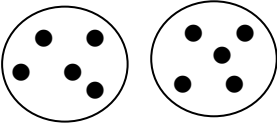
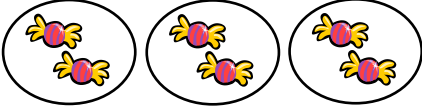






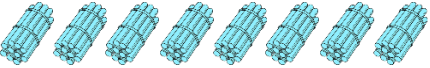




CALCULATION PROGRESSION: DIVISION

Pre-learning 1

Sharing and grouping objects

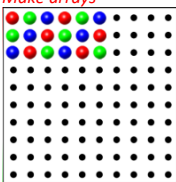
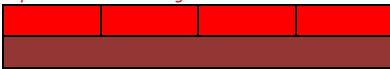
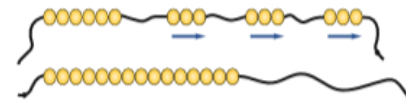
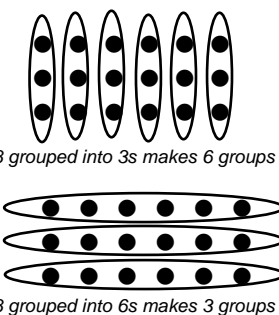
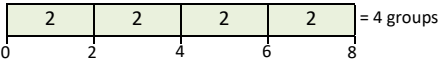
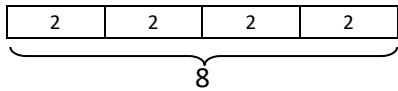




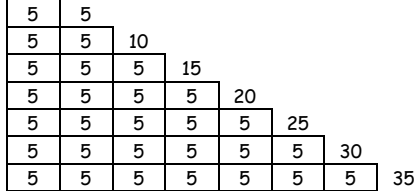

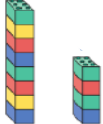

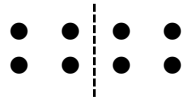

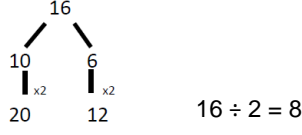
concrete	pictorial	abstract
<p><u>Sharing</u></p> <p>Use real objects to solve problems involving fair sharing:</p> <p><i>6 sweets are shared between 2 people. How many do they have each?</i></p>  <p><i>I have 10 cubes. Can you share them equally into 2 groups?</i></p> 	<p><u>Sharing</u></p> <p>Draw pictures to show practical sharing:</p>  	<p><u>Sharing</u></p> <p>$6 \div 2 = 3$ <i>6 shared between 2 is equal to 3 each</i></p> <p>$10 \div 2 = 5$ <i>10 shared into 2 equal groups is equal to 5</i></p>
<p><u>Grouping</u></p> <p>Split real objects into equal groups to solve problems:</p> <p><i>There are 6 sweets. How many people can have 2 each? (How many 2s make 6?)</i></p>  <p><i>I have 6 cars. How many groups of 2 cars can you make?</i></p>  <p><i>I have a stick of 10 cubes. If I split it into groups of 5, how many groups will I have?</i></p> 	<p><u>Grouping</u></p> <p>Draw pictures to show practical grouping:</p>  	<p><u>Grouping</u></p> <p>$6 \div 2 = 3$ <i>6 split into groups of 2 is equal to 3 groups</i></p> <p>$10 \div 5 = 2$ <i>10 split into groups of 5 is equal to 2 groups</i></p>
<p><u>Multiplication tables</u></p> <p><i>Count in 2s, 5s and 10s using objects. How many groups have you counted?</i></p>   	<p><u>Multiplication tables</u></p>	<p><u>Multiplication tables</u></p> <p><i>Count in 2s, 5s and 10s. How many groups have you counted?</i></p>



CALCULATION PROGRESSION: DIVISION

Pre-learning 2

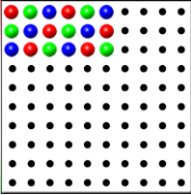
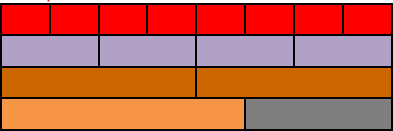
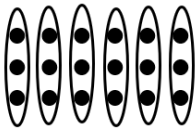
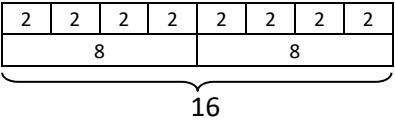


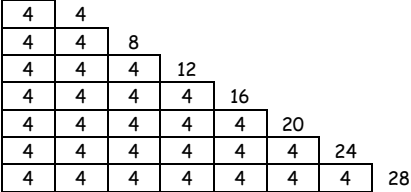




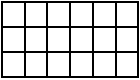
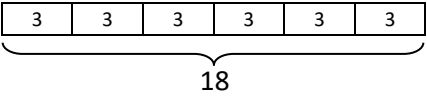


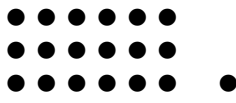
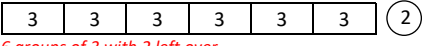
TO ÷ O (no remainder) 2x, 5x & 10x tables

concrete	pictorial	abstract				
<p>Grouping</p> <p>Peg boards: <i>Make arrays</i></p>  <p>Cuisenaire rods: <i>Repeated addition using the same rod</i></p>  <p>Bead string: <i>Repeated addition in equal groups</i></p> 	<p>Grouping</p> <p>Arrays:</p>  <p>18 grouped into 3s makes 6 groups</p> <p>18 grouped into 6s makes 3 groups</p> <p>Bar model: <i>Draw one bar at a time and count up to reach the total.</i> <i>Next to a number line</i></p>  <p>= 4 groups</p> <p><i>Without a number line</i></p> 	<p>Grouping</p> <p>$18 \div 3 = 6$</p> <p>$18 \div 6 = 3$</p> <p>$8 \div 2 = 4$ <i>8 divided into groups of 2 is equal to 4 groups</i></p> <p>$15 \div 3 = 5$ <i>15 divided into groups of 3 is equal to 5 groups</i></p>				
<p>Multiplication tables</p> <p>Relate 2, 5 and 10 multiplication tables to division.</p> <p>Bead string: <i>How many 2s in 14?</i></p>  <p><i>How many 5s in 40?</i></p>  <p><i>How many 10s in 40?</i></p>  <p>Counting stick: <i>Start with multiples labelled, then gradually remove them. How many groups have you counted?</i></p> 	<p>Multiplication tables</p> <p>Relate 2, 5 and 10 multiplication tables to division.</p> <p>Bar Model: <i>Explore relationships through repeated addition.</i> <i>How many 5s in 35?</i></p>  <p>Counting in 2s, 5s and 10s:</p> 	<p>Multiplication tables</p> <p>Relate 2, 5 and 10 multiplication tables to division.</p> <p><i>Make connections between facts:</i> 5x is half of 10x 4x is double 2x 6x is double 3x 9x is 10x subtract 1x etc.</p> <p><i>Make connections between tables:</i> 10x table related to place value; 5x table related to 10x table by halving; 2x table related to doubling.</p> <p><i>Link to division facts.</i> $2 \times 4 = 8$ $8 \div 2 = 4$</p> <p>$5 \times \square = 15$</p>				
<p>Halving</p> <p>Using objects: <i>Scaling down to half the size.</i></p>  <p><i>Halve the number of objects in the group.</i></p>  <p>Base ten blocks:</p> <table border="1" data-bbox="95 1870 518 2004"> <thead> <tr> <th>tens</th> <th>ones</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> </tr> </tbody> </table>	tens	ones			<p>Halving</p> <p>Arrays:</p>  <p>Drawing base ten:</p> 	<p>Halving</p> <p>Half of 8 is 4</p> <p>$8 \div 2 = 4$</p> <p>Partition the number then halve each part before recombining:</p>  <p>$16 \div 2 = 8$</p>
tens	ones					



CALCULATION PROGRESSION: DIVISION

Y3 TO ÷ 0 (including remainders) 3x, 4x & 8x tables

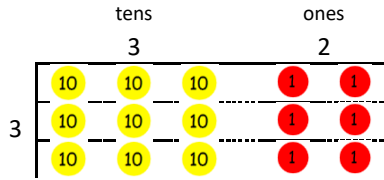
concrete	pictorial	abstract												
<p><u>Understanding Division</u></p> <p>Peg boards: <i>Explore different ways to group pegs to make arrays.</i></p>  <p>Cuisenaire rods: <i>Use repeated addition to make the same total.</i></p> 	<p><u>Understanding Division</u></p> <p>Arrays: <i>Draw arrays to show equal groups.</i></p>  <p>Bar model:</p> 	<p><u>Understanding Division</u></p> <table border="0"> <tr> <td>$18 \div 1 = 18$</td> <td>$1 \times \square = 18$</td> </tr> <tr> <td>$18 \div 2 = 9$</td> <td>$2 \times \square = 18$</td> </tr> <tr> <td>$18 \div 3 = 6$</td> <td>$3 \times \square = 18$</td> </tr> <tr> <td>$18 \div 6 = 3$</td> <td>$6 \times \square = 18$</td> </tr> <tr> <td>$18 \div 9 = 2$</td> <td>$9 \times \square = 18$</td> </tr> <tr> <td>$18 \div 18 = 1$</td> <td>$18 \times \square = 18$</td> </tr> </table> <p><i>Family of four</i></p> <p>$2 \times 8 = 16$ $8 \times 2 = 16$ $16 \div 2 = 8$ $16 \div 8 = 2$</p>	$18 \div 1 = 18$	$1 \times \square = 18$	$18 \div 2 = 9$	$2 \times \square = 18$	$18 \div 3 = 6$	$3 \times \square = 18$	$18 \div 6 = 3$	$6 \times \square = 18$	$18 \div 9 = 2$	$9 \times \square = 18$	$18 \div 18 = 1$	$18 \times \square = 18$
$18 \div 1 = 18$	$1 \times \square = 18$													
$18 \div 2 = 9$	$2 \times \square = 18$													
$18 \div 3 = 6$	$3 \times \square = 18$													
$18 \div 6 = 3$	$6 \times \square = 18$													
$18 \div 9 = 2$	$9 \times \square = 18$													
$18 \div 18 = 1$	$18 \times \square = 18$													
<p><u>Multiplication tables</u></p> <p>Relate 3, 4 and 8 multiplication tables to division.</p> <p>Counting stick: <i>Start with multiples labelled, then gradually remove them.</i></p>  <p>Arrays:</p>  <p>18 is 6 groups of 3 or 3 groups of 6.</p>	<p><u>Multiplication tables</u></p> <p>Relate 3, 4 and 8 multiplication tables to division.</p> <p>Bar model: <i>Explore relationships through repeated addition. How many 4s in 24?</i></p>  <p>Counting in 3s, 4s and 8s:</p>  <p>How many 3s in 15?</p>	<p><u>Multiplication tables</u></p> <p>Relate 3, 4 and 8 multiplication tables to division.</p> <p><i>Make connections between facts:</i></p> <p>$5x$ is half of $10x$ $4x$ is double $2x$ $6x$ is double $3x$ $9x$ is $10x$ subtract $1x$ etc.</p> <p><i>Make connections between tables:</i></p> <p>Commutativity means that key facts ($2x$, $5x$, $10x$) are already known; $4x$ and $8x$ tables related to $2x$ table by doubling; $3x$ table is $2x$ table add $1x$.</p> <p><i>Link to division facts.</i></p> <p>$7 \times 4 = 28$ $28 \div 4 = 7$</p> <p>$4 \times \square = 28$</p>												
<p><u>Two-digit ÷ one-digit (no remainder)</u></p> <p>Base ten blocks (arranged as an array):</p>  <p>Cuisenaire rods:</p>  <p>Cubes: <i>Split into equal-sized 'sticks'.</i></p> 	<p><u>Two-digit ÷ one-digit (no remainder)</u></p> <p>Array:</p>  <p>Bar model:</p> 	<p><u>Two-digit ÷ one-digit (no remainder)</u></p> <p>$18 \div 3 = 6$</p> <p>dividend divisor quotient</p>												
<p><u>Two-digit ÷ one-digit (with remainder)</u></p> <p>Base ten blocks (arranged as an array):</p>  <p>Cubes: <i>Split into equal-sized 'sticks'.</i></p> 	<p><u>Two-digit ÷ one-digit (with remainder)</u></p> <p>Array:</p>  <p><i>6 groups of 3 with 1 left over.</i></p> <p>Bar model:</p>  <p><i>6 groups of 3 with 2 left over.</i></p>	<p><u>Two-digit ÷ one-digit (with remainder)</u></p> <p>$19 \div 3 = 6$ with 1 left over $19 \div 3 = 6 \text{ r.}1$</p> <p>$20 \div 3 = 6$ with 2 left over $20 \div 3 = 6 \text{ r.}2$</p>												

Two-digit ÷ one-digit ('bus stop' method)

Place value counters:

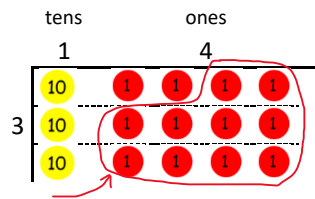
No carrying

*Make the dividend with place value counters.
Divide the tens into equal groups.
Divide the ones into equal groups.*



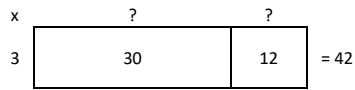
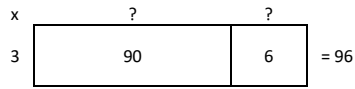
With carrying

*Make the dividend with place value counters.
Divide the tens into equal groups.
Exchange any remainder for ones.
Divide the ones into equal groups.*



Two-digit ÷ one-digit ('bus stop' method)

Array:



Two-digit ÷ one-digit ('bus stop' method)

$96 \div 3 = 32$

$$\begin{array}{r} 32 \\ 3 \overline{)96} \end{array}$$



$42 \div 3 = 14$

$$\begin{array}{r} 14 \\ 3 \overline{)42} \end{array}$$



CALCULATION PROGRESSION: DIVISION

Y4 HTO÷O (including remainders) 6x, 7x, 9x, 11x & 12x tables

concrete	pictorial	abstract																		
<p><u>Multiplication tables</u></p> <p>Relate all multiplication tables to division.</p> <p>Counting stick: Start with multiples labelled, then gradually remove them.</p> 	<p><u>Multiplication tables</u></p> <p>Relate all multiplication tables to division.</p> <p>Bar model: Explore relationships through repeated addition.</p> <p>Counting in multiples:</p>  <p>How many 7s in 28?</p>	<p><u>Multiplication tables</u></p> <p>Relate all multiplication tables to division.</p> <p><i>Make connections between facts:</i> 5x is half of 10x 4x is double 2x 6x is double 3x 9x is 10x subtract 1x etc.</p> <p><i>Make connections between tables:</i> Commutativity means that several facts (2x, 3x, 4x, 5x, 8x, 10x) are already known; Use doubling and halving to find new tables.</p> <p><i>Link to division facts.</i> $7 \times 12 = 84$ $84 \div 12 = 7$</p> <p>$12 \times \square = 84$</p>																		
<p><u>Dividing by 10</u></p> <p>Place value counters & place value chart:</p> <table border="1" data-bbox="97 824 533 943"> <thead> <tr> <th>tens</th> <th>ones</th> <th>tenths</th> </tr> </thead> <tbody> <tr> <td>10</td> <td>1 1 1 1</td> <td>0.1 0.1 0.1 0.1</td> </tr> </tbody> </table>	tens	ones	tenths	10	1 1 1 1	0.1 0.1 0.1 0.1	<p><u>Dividing by 10</u></p> <table border="1" data-bbox="563 824 903 927"> <thead> <tr> <th>H</th> <th>T</th> <th>O</th> <th>t</th> </tr> </thead> <tbody> <tr> <td></td> <td>1</td> <td>4</td> <td></td> </tr> <tr> <td></td> <td></td> <td>1</td> <td>4</td> </tr> </tbody> </table>	H	T	O	t		1	4				1	4	<p><u>Dividing by 10</u></p> <p>$14 \div 10 = 1.4$</p>
tens	ones	tenths																		
10	1 1 1 1	0.1 0.1 0.1 0.1																		
H	T	O	t																	
	1	4																		
		1	4																	
<p><u>Short division (no carrying)</u></p> <p>Place value counters:</p> <table border="1" data-bbox="108 1070 443 1218"> <thead> <tr> <th>hundreds</th> <th>tens</th> <th>ones</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>3</td> <td>2</td> </tr> </tbody> </table>	hundreds	tens	ones	1	3	2	<p><u>Short division (no carrying)</u></p> <p>Array:</p> <table border="1" data-bbox="571 1070 963 1155"> <tr> <td>x</td> <td>?</td> <td>?</td> <td>?</td> <td></td> </tr> <tr> <td>3</td> <td>300</td> <td>90</td> <td>6</td> <td>= 396</td> </tr> </table>	x	?	?	?		3	300	90	6	= 396	<p><u>Short division (no carrying)</u></p> <p>$396 \div 3 = 132$</p> $\begin{array}{r} 132 \\ 3 \overline{) 396} \\ \underline{3} \\ 9 \\ \underline{9} \\ 6 \\ \underline{6} \\ 0 \end{array}$		
hundreds	tens	ones																		
1	3	2																		
x	?	?	?																	
3	300	90	6	= 396																
<p><u>Short division (with carrying)</u></p> <p>Place value counters:</p> <table border="1" data-bbox="108 1352 480 1532"> <thead> <tr> <th>hundreds</th> <th>tens</th> <th>ones</th> </tr> </thead> <tbody> <tr> <td>2</td> <td>4</td> <td>1</td> </tr> </tbody> </table>	hundreds	tens	ones	2	4	1	<p><u>Short division (with carrying)</u></p> <p>Array:</p> <table border="1" data-bbox="571 1368 963 1453"> <tr> <td>x</td> <td>?</td> <td>?</td> <td>?</td> <td></td> </tr> <tr> <td>4</td> <td>800</td> <td>160</td> <td>4</td> <td>= 964</td> </tr> </table>	x	?	?	?		4	800	160	4	= 964	<p><u>Short division (with carrying)</u></p> <p>$964 \div 4 = 241$</p> $\begin{array}{r} 241 \\ 4 \overline{) 964} \\ \underline{8} \\ 16 \\ \underline{16} \\ 4 \\ \underline{4} \\ 0 \end{array}$		
hundreds	tens	ones																		
2	4	1																		
x	?	?	?																	
4	800	160	4	= 964																
<p><u>Short division (with remainder)</u></p> <p>Place value counters:</p> <table border="1" data-bbox="108 1666 533 1868"> <thead> <tr> <th>hundreds</th> <th>tens</th> <th>ones</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>1</td> <td>6</td> </tr> </tbody> </table>	hundreds	tens	ones	1	1	6	<p><u>Short division (with remainder)</u></p>	<p><u>Short division (with remainder)</u></p> <p>$465 \div 4 = 116 \text{ r.1}$</p> $\begin{array}{r} 116 \text{ r.1} \\ 4 \overline{) 465} \\ \underline{4} \\ 6 \\ \underline{6} \\ 5 \\ \underline{4} \\ 1 \end{array}$												
hundreds	tens	ones																		
1	1	6																		



CALCULATION PROGRESSION: DIVISION

Y5 HTO÷O, HTO÷TO & decimals (including remainders)

concrete	pictorial	abstract								
<p><u>Multiplication tables</u></p> <p>Continue to practise all multiplication and division facts up to 12 x 12 using counting, rhythm, songs, patterns and games (including Times Tables Rock Stars).</p>	<p><u>Multiplication tables</u></p> <p>Continue to practise all multiplication and division facts up to 12 x 12 using counting, rhythm, songs, patterns and games (including Times Tables Rock Stars).</p>	<p><u>Multiplication tables</u></p> <p>Continue to practise all multiplication and division facts up to 12 x 12 using counting, rhythm, songs, patterns and games (including Times Tables Rock Stars).</p>								
<p><u>Short division (HTO÷O)</u></p> <p>Place value counters: <i>Continue to use place value counters to support thinking (as Year 4).</i></p>	<p><u>Short division (HTO÷O)</u></p>	<p><u>Short division (HTO÷O)</u></p> <p>Answer written with a remainder:</p> $\begin{array}{r} 0 \ 8 \ 6 \ r.2 \\ 5 \overline{) 4 \ 43 \ 32} \end{array}$ <p>Remainder written as a fraction:</p> $\begin{array}{r} 8 \ 6 \ ^2/5 \\ 5 \overline{) 4 \ 43 \ 32} \end{array}$								
<p><u>Short division (HTO÷TO)</u></p>	<p><u>Short division (HTO÷TO)</u></p>	<p><u>Short division (HTO÷TO, no remainder)</u></p> $\begin{array}{r} 1 \ 5 \\ 35 \overline{) 5 \ ^5 2 \ 175} \end{array}$ <div style="border: 1px solid black; padding: 5px; width: fit-content; margin-left: auto; margin-right: auto;"> <p>Encourage pupils to note key facts: 35x2 = 70 35x10 = 350 35x5 = 175</p> </div>								
<p><u>Short division (decimals)</u></p> <p>Place value counters:</p> <table style="margin-left: 20px;"> <tr> <td style="text-align: center;">H</td> <td style="text-align: center;">T</td> <td style="text-align: center;">O</td> <td style="text-align: center;">.t</td> </tr> <tr> <td style="text-align: center;">0</td> <td style="text-align: center;">4</td> <td style="text-align: center;">7</td> <td style="text-align: center;">• 3</td> </tr> </table>	H	T	O	.t	0	4	7	• 3	<p><u>Short division (decimals)</u></p>	<p><u>Short division (decimals)</u></p> $\begin{array}{r} 4 \ 7 \ .3 \\ 6 \overline{) 2 \ ^2 8 \ 43 \ .18} \end{array}$ <p>Remainder written as a decimal:</p> $\begin{array}{r} 8 \ 6 \ .4 \\ 5 \overline{) 4 \ 43 \ 32 \ .20} \end{array}$
H	T	O	.t							
0	4	7	• 3							



CALCULATION PROGRESSION: DIVISION

Y6 ThHTO÷O, HTO÷TO & decimals (including remainders)

concrete	pictorial	abstract
<p><u>Multiplication tables</u></p> <p>Continue to practise all multiplication and division facts up to 12 x 12 using counting, rhythm, songs, patterns and games (including Times Tables Rock Stars).</p>	<p><u>Multiplication tables</u></p> <p>Continue to practise all multiplication and division facts up to 12 x 12 using counting, rhythm, songs, patterns and games (including Times Tables Rock Stars).</p>	<p><u>Multiplication tables</u></p> <p>Continue to practise all multiplication and division facts up to 12 x 12 using counting, rhythm, songs, patterns and games (including Times Tables Rock Stars).</p>
<p><u>Short division (ThHTO÷O)</u></p>	<p><u>Short division (ThHTO÷O)</u></p>	<p><u>Short division (ThHTO÷O)</u></p> <p>Answer written with a remainder:</p> $\begin{array}{r} 607 \text{ r.}3 \\ 6 \overline{) 33645} \end{array}$ <p>Answer written as a fraction:</p> $\begin{array}{r} 607 \frac{3}{6} \\ 6 \overline{) 33645} \end{array}$ <p>Answer written as a decimal:</p> $\begin{array}{r} 607.5 \\ 6 \overline{) 33645.0} \end{array}$
		<p><u>Short division (HTO÷TO, with remainder)</u></p> $\begin{array}{r} 28.8 \\ 15 \overline{) 44312.0} \end{array}$ <div style="border: 1px solid black; padding: 5px; width: fit-content; margin-left: auto; margin-right: auto;"> <p>Encourage pupils to note key facts: 15x2 = 30 15x10 = 150 15x5 = 75</p> </div>
<p><u>Long division (ThHTO÷TO)</u></p>	<p><u>Long division (ThHTO÷TO)</u></p>	<p><u>Long division (ThHTO÷TO)</u></p> $\begin{array}{r} 113 \text{ r.}11 \\ 17 \overline{) 1932} \\ \underline{1700} \quad (100) \\ 232 \\ \underline{170} \quad (10) \\ 62 \\ \underline{51} \quad (3) \\ 11 \end{array}$ <div style="border: 1px solid black; padding: 5px; width: fit-content; margin-left: auto; margin-right: auto;"> <p>Encourage pupils to note key facts: 17x2 = 34 17x10 = 170 17x5 = 85</p> </div> <p>Write answer as 113 r.11 or $113 \frac{11}{17}$</p>