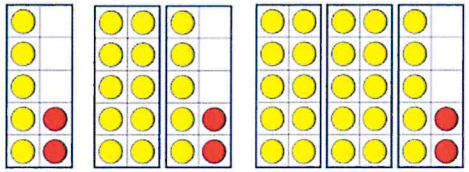
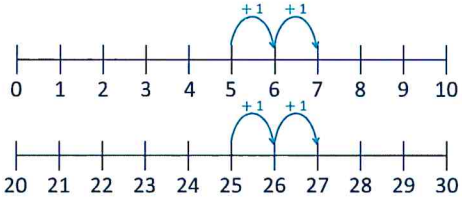
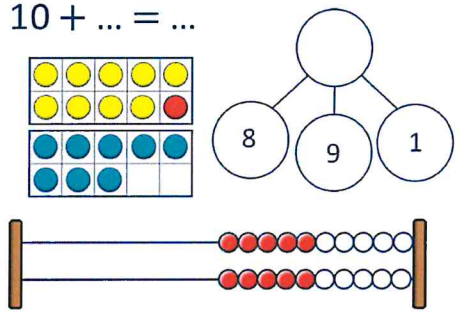
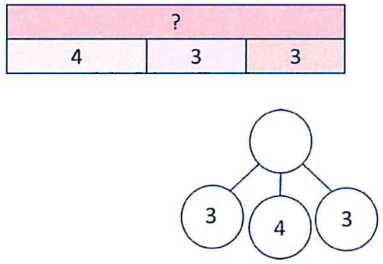
Addition

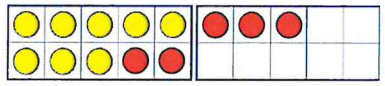
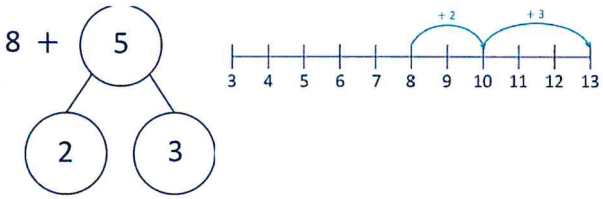
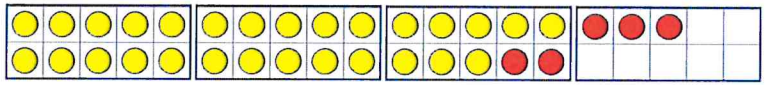
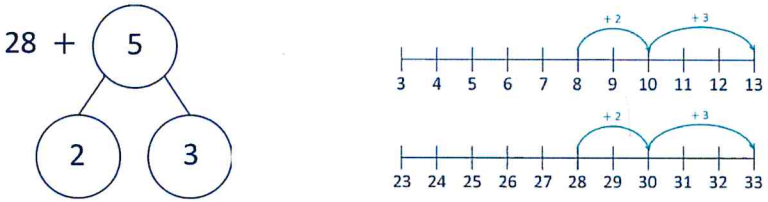
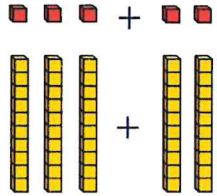
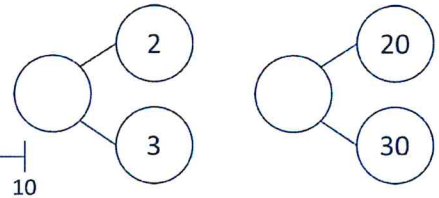
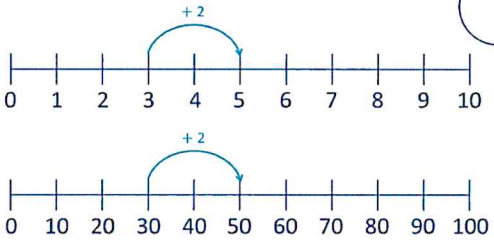
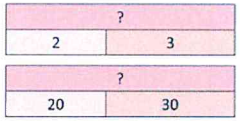
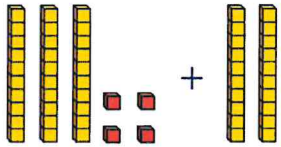
White Rose MATHS

Year 2	• Recall and use addition facts to 20 fluently, and derive and use related facts up to 100
	• Add numbers using concrete objects, pictorial representations, and mentally, including:
	  • a two-digit number and 1s
	  • a two-digit number and 10s
	  • 2 two-digit numbers
	  • adding 3 one-digit numbers
	• Recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems.		

Progression of skills	**Key representations**		
Add ones to any number (related facts) Make links to known facts.	I know that ... and ... = ... so ... and ... = ... 	... more than ... is ... so ... more than ... is ... 	What do you notice? Can you continue the pattern? 5 + 2 = 7 15 + 2 = 17 25 + 2 = 27...
Add three 1-digit numbers Prompt children to understand that addition can be done in any order and to make links to known facts.	... and ... are a bond to 10 10 + ... = ... 	Double ... + ... = ... 	What do you notice? Which addition is the easiest to calculate? 8 + 9 + 1 = 8 + 1 + 9 = 9 + 1 + 8 =

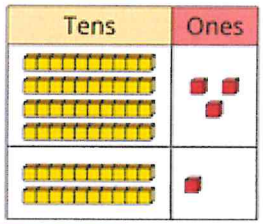
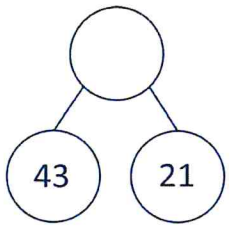
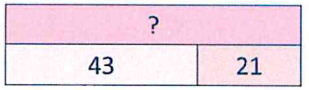
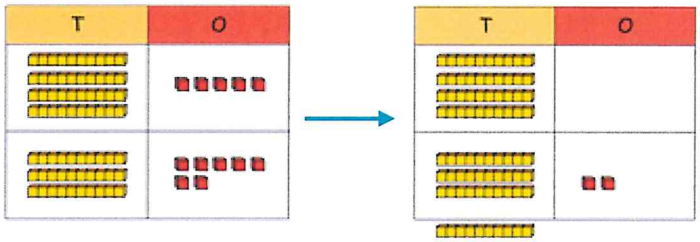
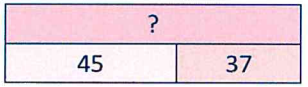
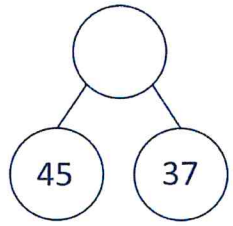
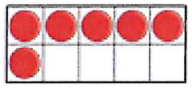
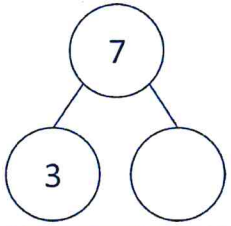
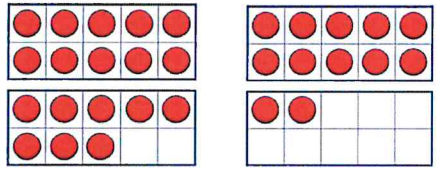
Addition

White Rose MATHS

Progression of skills	Key representations		
Add across a 10 Partition the number being added to make a full ten.	… can be partitioned into … and …   	I add … to get to … then I add … $8 + 5 = 13$ $28 + 5 = 33$   	
Add multiples of 10 Make links to known facts within ten.	… ones + … ones = … ones so … tens + … tens = … tens  $3 + 2 = 5$ $30 + 20 = 50$	What is the same? What is different?    	
Add 10s to any number Make links to known facts.	… tens + … tens = … tens … tens and … ones = … 	To add … I need to add 10 … times.  	I know that … and … = … so … and … = … $30 + 20 = 50$ $34 + 20 = 54$

Addition

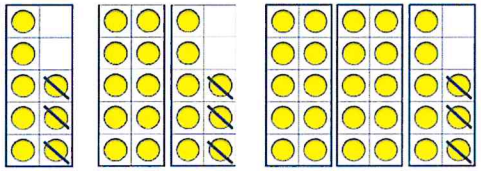
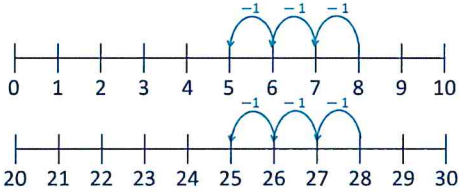
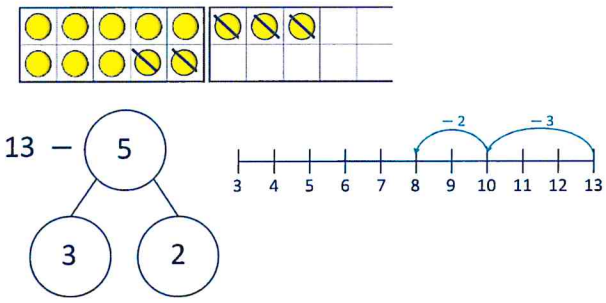
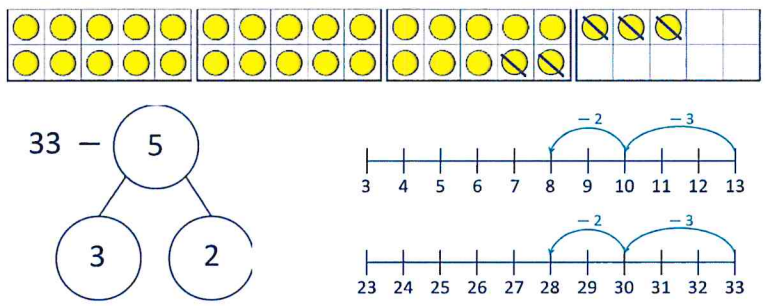
White Rose MATHS

Progression of skills	Key representations
Add 2-digit numbers (not across a ten) Lining up ones and tens in columns will support with later written methods.	... ones + ... ones = ... ones ... tens + ... tens = ... tens   3 ones + 1 one = 4 ones 4 tens + 2 tens = 6 tens 6 tens + 4 ones = 64 
Add 2-digit numbers (across a ten) Begin to exchange 10 ones for 1 ten.	There are .... ones, so I do/do not need to make an exchange. ... ones = ... ten and ... ones    5 ones + 7 ones = 12 ones 12 ones = 1 ten and 2 ones 4 tens + 3 tens + 1 ten = 8 tens 8 tens and 2 ones = 82
Missing numbers Solve missing number problems and use the inverse to check.	How many more do you need to make ...?  6 + □ = 10 10 − □ = 6 If ... is a whole and ... is a part, then ... is the other part. □ + 3 = 7 7 − 3 = □  ... can be partitioned into ... and ... 10 + 8 = 12 + □ 

Subtraction

White Rose MATHS

	• Recall and use subtraction facts to 20 fluently, and derive and use related facts up to 100
	• Subtract numbers using concrete objects, pictorial representations, and mentally, including:
	  • a two-digit number and 1s
	  • a two-digit number and 10s
	  • 2 two-digit numbers
	• Recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems.

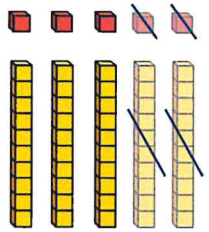
Progression of skills	**Key representations**
Subtract ones from any number (related facts) Make links to known facts.	I know that ... minus ... = ... so ... minus ... = ... 
	... less than ... is ... so ... less than ... is ... 
	What do you notice? Can you continue the pattern? $8 - 3 = 5$ $18 - 3 = 15$ $28 - 3 = 25$...
Subtract across a 10 Partition the number being subtracted to bridge through a ten.	... can be partitioned into ... and ... 
	Make links with related facts. 

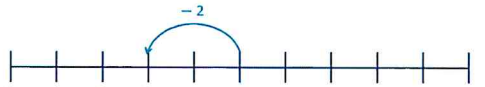
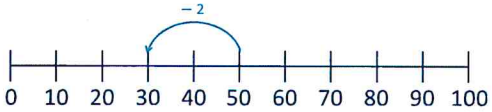
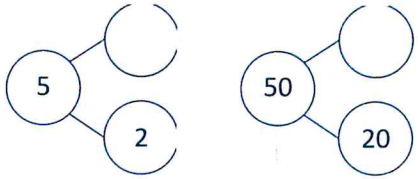
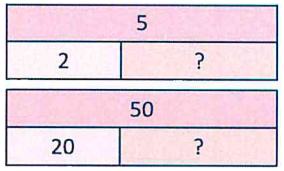
Subtraction

White Rose MATHS

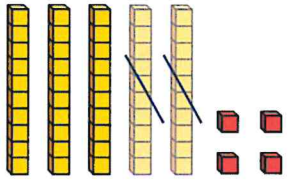
<table>
<tr><th>Progression of skills</th><th colspan="3">Key representations</th></tr>
<tr>
<td>Subtract multiples of 10

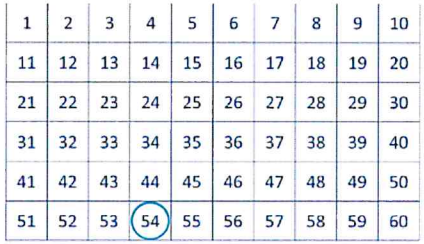
Make links to known facts within ten.</td>
<td>... ones − ... ones = ... ones
so ... tens − ... tens = ... tens

 
5 − 2 = 3
50 − 20 = 30</td>
<td colspan="2">What is the same?
What is different?

 
 
 
  </td>
</tr>
<tr>
<td>Subtract 10s from any number

Make links to known facts.</td>
<td>... tens − ... tens = ... tens
... tens and ... ones = ...

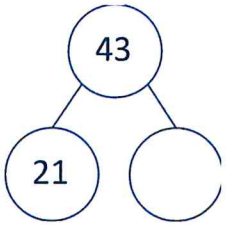
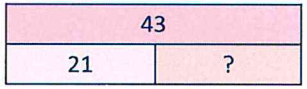
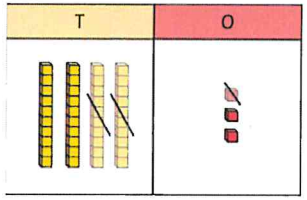
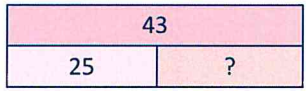
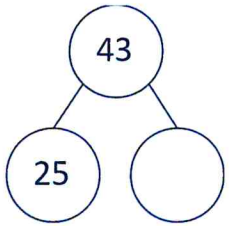
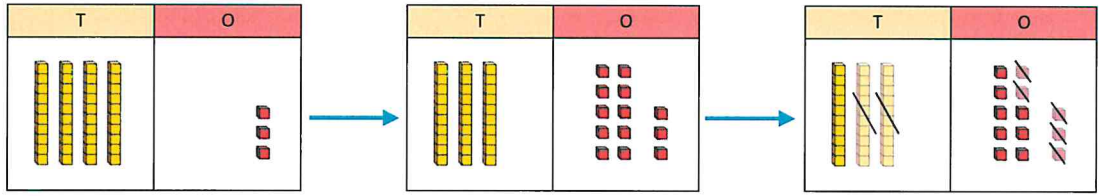
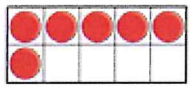
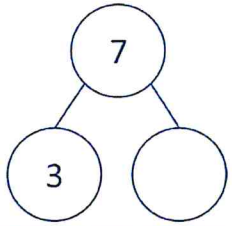
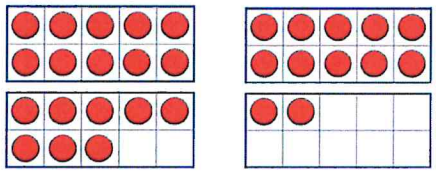
  </td>
<td>To subtract ... I need to subtract 10 ... times.

  </td>
<td>I know that ... minus ... = ...
so ... minus ... = ...

50 − 20 = 30
54 − 20 = 34</td>
</tr>
</table>

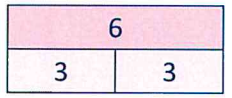
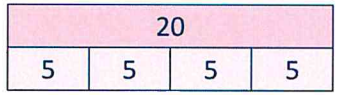
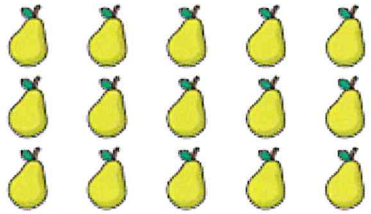
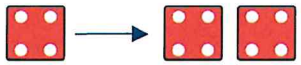
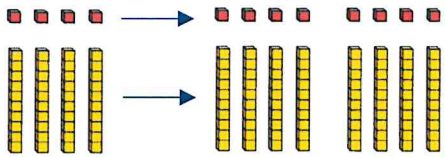
Subtraction

White Rose MATHS

Progression of skills	Key representations
Subtract two 2-digit numbers (not across a ten)	... ones − ... ones = ... ones ... tens − ... tens = ... tens    3 ones − 1 one = 2 ones 4 tens − 2 tens = 2 tens 2 tens and 2 ones = 22
Subtract two 2-digit numbers (across a ten) Begin to exchange 1 ten for 10 ones.	I need to make an exchange because I do not have enough ones to subtract ... ones.    3 ones − 5 ones (I need to exchange 1 ten for 10 ones) 13 ones − 5 ones = 8 ones 3 tens − 2 tens = 1 ten 1 ten and 8 ones = 18
Missing numbers Solve missing number problems and use the inverse to check.	How many do you need to subtract to make ...?  10 − □ = 6 6 + □ = 10 If ... is a whole and ... is a part, then ... is the other part. 7 − 3 = □ □ + 3 = 7  ... can be partitioned into ... and ... 18 − □ = 12 + 2 

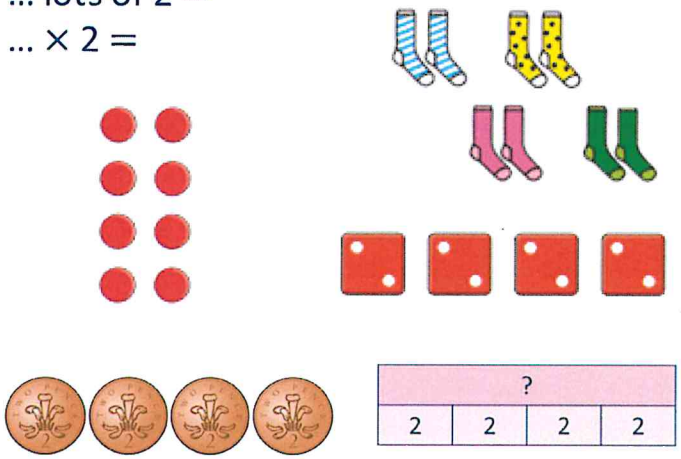
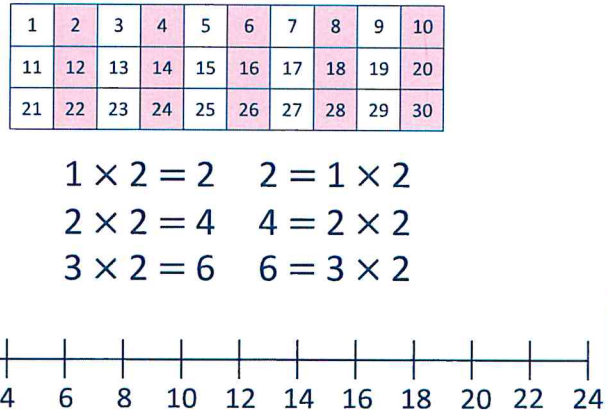
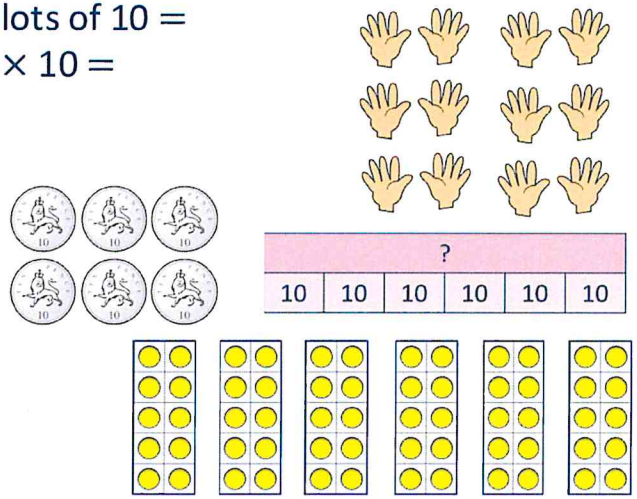
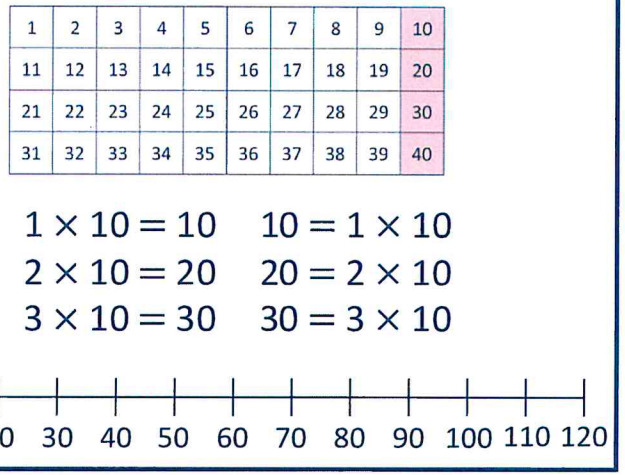
Multiplication

White Rose MATHS

Year 2	• Recall and use multiplication facts for the 2, 5 and 10 multiplication tables. • Calculate mathematical statements for multiplication within the multiplication tables and write them using the multiplication (×) and equals (=) signs. • Show that multiplication of two numbers can be done in any order (commutative).
Progression of skills	**Key representations**
Link repeated addition and multiplication Encourage children to make the link between repeated addition and multiplication.	There are ... equal groups with ... in each group. There are ... altogether.   $3 + 3 = 6$ $2 \times 3 = 6$   $5 + 5 + 5 + 5 = 20$ $4 \times 5 = 20$
Use arrays Encourage children to see that multiplication is commutative.	There are ... rows with ... in each row. There are ... columns with ... in each column.  3 lots of 5 = 15 $5 + 5 + 5 = 15$ 5 lots of 3 = 15 $3 + 3 + 3 + 3 + 3 = 15$
	I can see ... × ... and ... ×... $3 \times 5 = 15$ $5 \times 3 = 15$ $3 \times 5 = 5 \times 3$
Double Encourage children to make links with related facts.	Double ... is ...  Double 4 = 4 + 4 Double 4 is 8
	Double ... is ... so double ... is ...  Double 4 is 8 Double 40 is 80

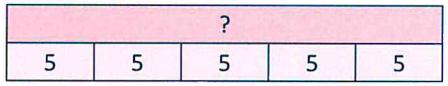
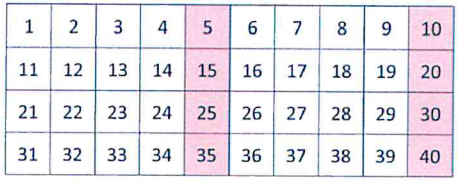
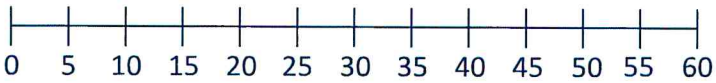
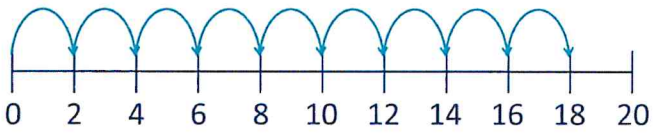
Multiplication

White Rose MATHS

Progression of skills	Key representations	
The 2 times-table Encourage daily counting in multiples both forwards and back. Notice that all multiples of 2 are even numbers.	… lots of 2 = … × 2 = 	… times 2 is equal to … 
The 10 times-table Encourage daily counting in multiples both forwards and back. Notice the pattern in the numbers.	… lots of 10 = … × 10 = 	… times 10 is equal to … 

Multiplication

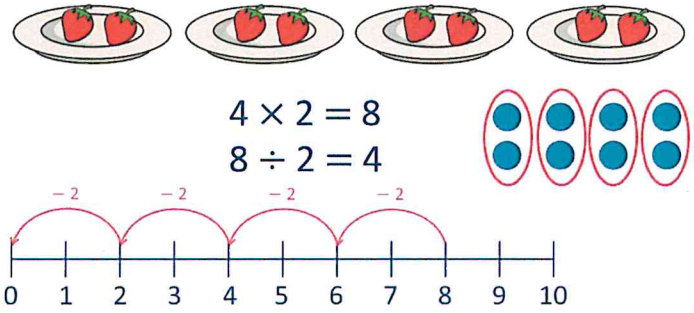
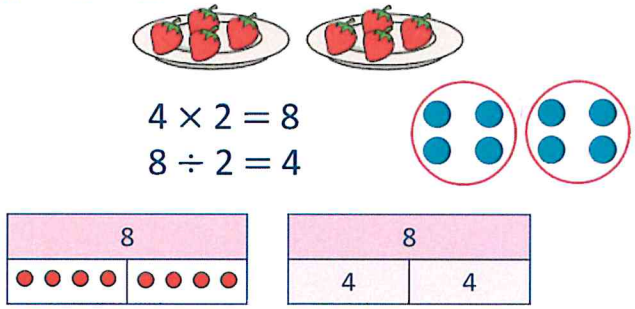
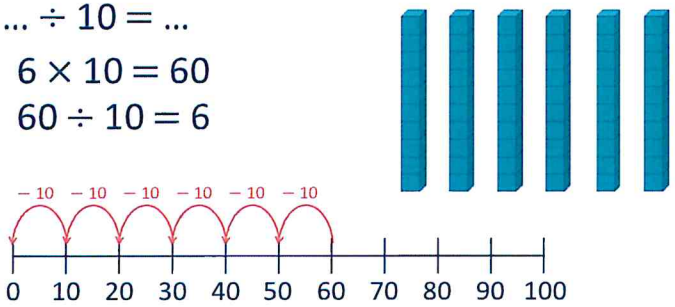
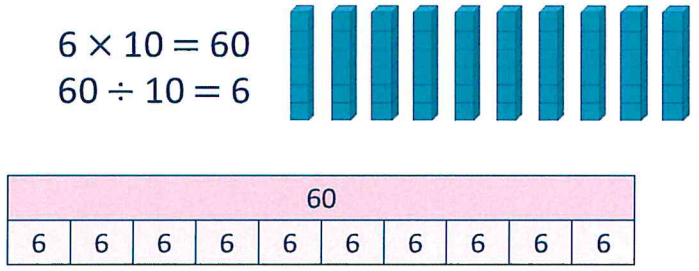
White Rose MATHS

Progression of skills	Key representations	
The 5 times-table Encourage daily counting in multiples both forwards and back. Notice the pattern in the numbers.	... lots of 5 = ... × 5 =     ? | 5 | 5 | 5 | 5 | 5	... times 5 is equal to ...  1 × 5 = 5 5 = 1 × 5 2 × 5 = 10 10 = 2 × 5 3 × 5 = 15 15 = 3 × 5  0 5 10 15 20 25 30 35 40 45 50 55 60
Missing numbers Make links to known facts.	... is equal to ... groups of ... 18 socks, how many pairs?   0 2 4 6 8 10 12 14 16 18 20	... times ... is equal to ... □ × 2 = 18 18 = 2 × □

Division

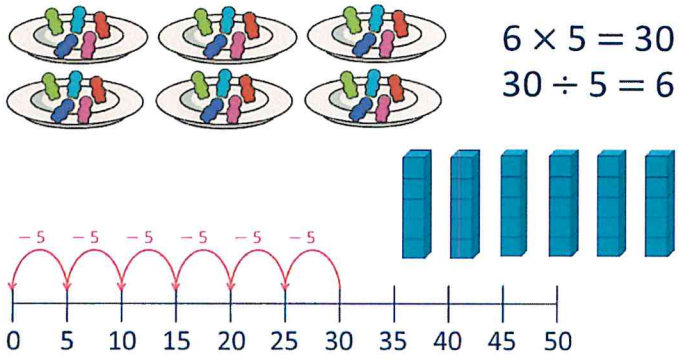
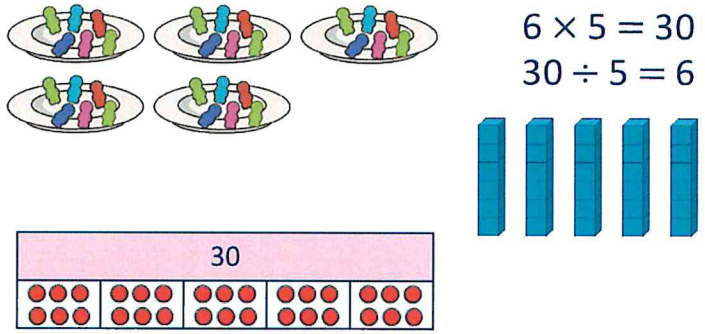
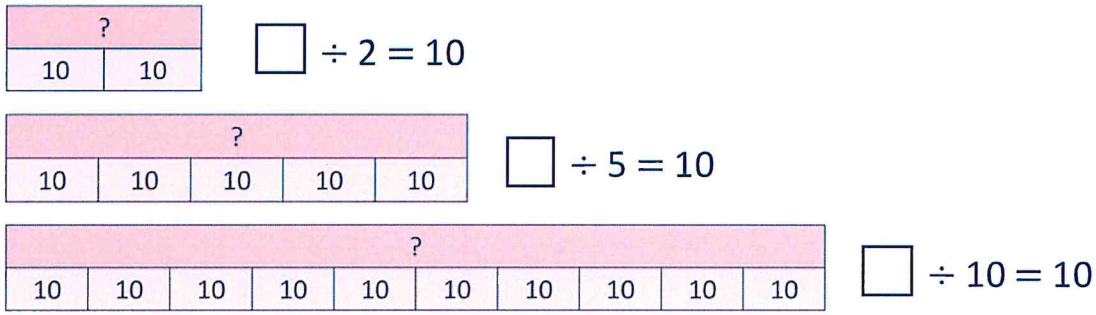
White Rose MATHS

Year 2	• Recall and use division facts for the 2, 5 and 10 multiplication tables. • Calculate mathematical statements for division within the multiplication tables and write them using the division (÷) and equals (=) signs. • Recognise, find, name and write fractions $\frac{1}{3}, \frac{1}{4}, \frac{2}{4}$ and $\frac{3}{4}$ of a quantity.

Progression of skills	Key representations	
Divide by 2 Encourage children to compare the grouping and sharing structures of division and to make links with times-table facts and halving.	There are ... equal groups of 2 ... ÷ 2 = ...  	... shared equally between 2 is ... Half of ... is ... ... ÷ 2 = ... 
Divide by 10 Encourage children to compare the grouping and sharing structures of division and to make links with times-table facts.	There are ... equal groups of 10 ... ÷ 10 = ...  	... shared equally between 10 is ... ... ÷ 10 = ... 

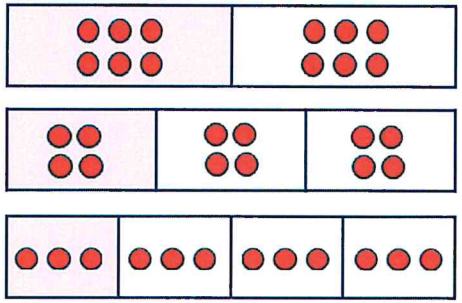
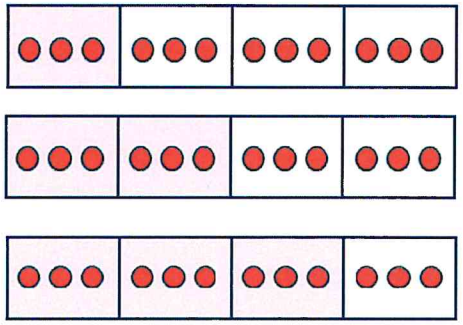
Division

White Rose MATHS

Progression of skills	Key representations	
Divide by 5 Encourage children to compare the grouping and sharing structures of division and to make links with times-table facts.	There are ... equal groups of 5 ... ÷ 5 = ...  	... shared equally between 5 is ... ... ÷ 5 = ... 
Missing numbers Bar models are useful to show the link between multiplication and division.	... divided by 2/5/10 is equal to ...  	

Division

White Rose MATHS

Progression of skills	Key representations	
Unit fractions In Y2 the focus is on finding $\frac{1}{2}$, $\frac{1}{4}$ and $\frac{1}{3}$ Bar models are useful to show the link between division and finding a fraction.	The objects have been shared fairly into ... groups. $\frac{1}{\square}$ of ... is ... 	There are ... equal parts. There is ... part circled. $\frac{1}{\square}$ is circled. 
Non-unit fractions In Y2 the focus is on finding $\frac{2}{4}$ and $\frac{3}{4}$ Prompt children to notice that $\frac{2}{4}$ is equivalent to $\frac{1}{2}$	The objects have been shared fairly into ... groups. $\frac{\square}{\square}$ of ... is ... 	There are ... equal parts. There are ... parts circled. $\frac{\square}{\square}$ is circled.