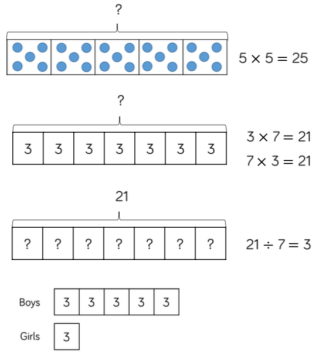
St Martin's Primary Progression in Multiplication and Division

Ths is St Martin's C of E Primary School Calculation Policy for multiplication and division which is supplemented with the Whiterose Calculation Policy. At St Martin's we believe that children should have a secure understanding of multiplication and division, being able to use a number of mental and visual strategies before moving onto formal methods.

Below are a number of images and representations that we use within our teaching to support children with their understanding of maths - taken from the Whiterose Calculation Policy.

Bar Model



Benefits

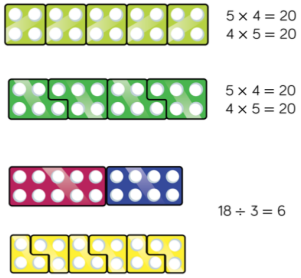
Children can use the single bar model to represent multiplication as repeated addition. They could use counters, cubes or dots within the bar model to support calculation before moving on to placing digits into the bar model to represent the multiplication.

Division can be represented by showing the total of the bar model and then dividing the bar model into equal groups.

It is important when solving word problems that the bar model represents the problem.

Sometimes, children may look at scaling problems. In this case, more than one bar model is useful to represent this type of problem, e.g. There are 3 girls in a group. There are 5 times more boys than girls. How many boys are there?
The multiple bar model provides an opportunity to compare the groups.

Number Shapes



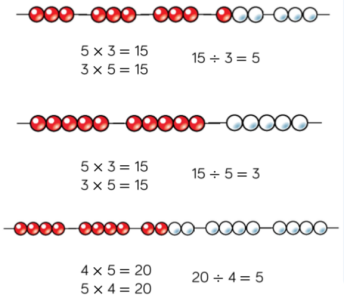
Benefits

Number shapes support children's understanding of multiplication as repeated addition.

Children can build multiplications in a row using the number shapes. When using odd numbers, encourage children to interlock the shapes so there are no gaps in the row. They can then use the tens number shapes along with other necessary shapes over the top of the row to check the total. Using the number shapes in multiplication can support children in discovering patterns of multiplication e.g. odd × odd = even, odd × even = odd, even × even = even.

When dividing, number shapes support children's understanding of division as grouping. Children make the number they are dividing and then place the number shape they are dividing by over the top of the number to find how many groups of the number there are altogether e.g. There are 6 groups of 3 in 18.

Bead Strings



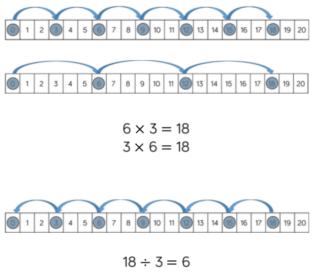
Benefits

Bead strings to 100 can support children in their understanding of multiplication as repeated addition. Children can build the multiplication using the beads. The colour of beads supports children in seeing how many groups of 10 they have, to calculate the total more efficiently.
Encourage children to count in multiples as they build the number e.g. 4, 8, 12, 16, 20.

Children can also use the bead string to count forwards and backwards in multiples, moving the beads as they count.

When dividing, children build the number they are dividing and then group the beads into the number they are dividing by e.g. 20 divided by 4 – Make 20 and then group the beads into groups of four. Count how many groups you have made to find the answer.

Number Tracks



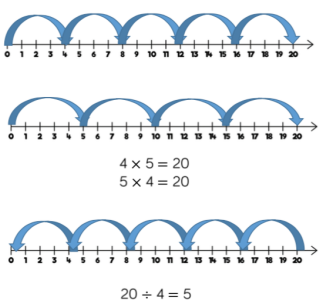
Benefits

Number tracks are useful to support children to count in multiples, forwards and backwards. Moving counters or cubes along the number track can support children to keep track of their counting. Translucent counters help children to see the number they have landed on whilst counting.

When multiplying, children place their counter on 0 to start and then count on to find the product of the numbers.
When dividing, children place their counter on the number they are dividing and the count back in jumps of the number they are dividing by until they reach 0.
Children record how many jumps they have made to find the answer to the division.

Number tracks can be useful with smaller multiples but when reaching larger numbers they can become less efficient.

Number Lines (labelled)



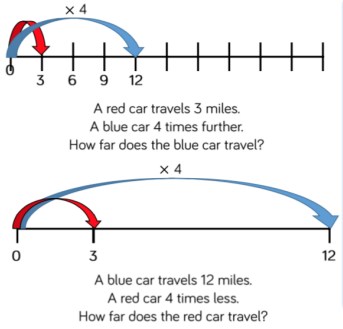
Benefits

Labelled number lines are useful to support children to count in multiples, forwards and backwards as well as calculating single-digit multiplications.

When multiplying, children start at 0 and then count on to find the product of the numbers.
When dividing, start at the number they are dividing and the count back in jumps of the number they are dividing by until they reach 0.
Children record how many jumps they have made to find the answer to the division.

Labelled number lines can be useful with smaller multiples, however they become inefficient as numbers become larger due to the required size of the number line.

Number Lines (blank)



Benefits

Children can use blank number lines to represent scaling as multiplication or division.

Blank number lines with intervals can support children to represent scaling accurately. Children can label intervals with multiples to calculate scaling problems.

Blank number lines without intervals can also be used for children to represent scaling.

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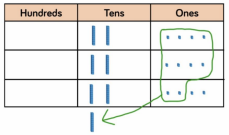
St Martin's Primary Progression in Multiplication and Division

Base 10/Dienes (multiplication)



$$\begin{array}{r} 24 \\ \times\ 3 \\ \hline 72 \\ 1 \end{array}$$

Benefits

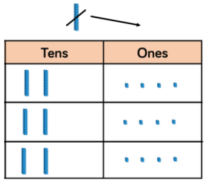
Using Base 10 or Dienes is an effective way to support children's understanding of column multiplication. It is important that children write out their calculation alongside the equipment so they can see how the concrete and written representations match.

As numbers become larger in multiplication or the amounts of groups becomes higher, Base 10 / Dienes becomes less efficient due to the amount of equipment and number of exchanges needed.

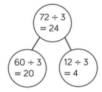
Base 10 also supports the area model of multiplication well. Children use the equipment to build the number in a rectangular shape which they then find the area of by calculating the total value of the pieces This area model can be linked to the grid method or the formal column method of multiplying 2-digits by 2-digits.

Base 10/Dienes (division)

$$68 \div 2 = 34$$



$$72 \div 3 = 24$$



Benefits

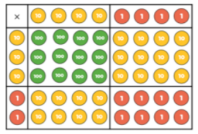
Using Base 10 or Dienes is an effective way to support children's understanding of division.

When numbers become larger, it can be an effective way to move children from representing numbers as ones towards representing them as tens and ones in order to divide. Children can then share the Base 10/ Dienes between different groups e.g. by drawing circles or by rows on a place value grid.

When they are sharing, children start with the larger place value and work from left to right. If there are any left in a column, they exchange e.g. one ten for ten ones. When recording, encourage children to use the part-whole model so they can consider how the number has been partitioned in order to divide. This will support them with mental methods.

Place Value Counters (multiplication)

$$\begin{array}{r} 34 \\ \times\ 5 \\ \hline 170 \\ 1\ 2 \end{array}$$



$$\begin{array}{r} 44 \\ \times\ 32 \\ \hline 8 \\ 80 \\ 120 \\ +\ 1200 \\ \hline 1408 \\ 1 \end{array}$$

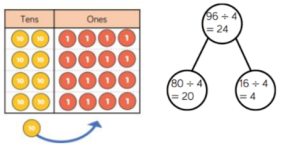
Benefits

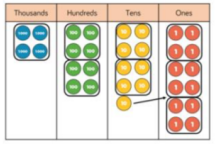
Using place value counters is an effective way to support children's understanding of column multiplication. It is important that children write out their calculation alongside the equipment so they can see how the concrete and written match.

As numbers become larger in multiplication or the amounts of groups becomes higher, Base 10 / Dienes becomes less efficient due to the amount of equipment and number of exchanges needed The counters should be used to support the understanding of the written method rather than support the arithmetic.

Place value counters also support the area model of multiplication well. Children can see how to multiply 2-digit numbers by 2-digit numbers.

Place Value Counters (division)





$$\begin{array}{r} 1223 \\ 4\overline{)\,4892} \end{array}$$

Benefits

Using place value counters is an effective way to support children's understanding of division.

When working with smaller numbers, children can use place value counters to share between groups. They start by sharing the larger place value column and work from left to right. If there are any counters left over once they have been shared, they exchange the counter e.g. exchange one ten for ten ones. This method can be linked to the part-whole model to support children to show their thinking.

Place value counters also support children's understanding of short division by grouping the counters rather than sharing them. Children work from left to right through the place value columns and group the counters in the number they are dividing by. If there are any counters left over after they have been grouped, they exchange the counter e.g. exchange one hundred for ten tens.

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St Martin's Primary Progression in Multiplication and Division

Multiplication

Skill	Year	Representations and models	
Solve one-step problems with multiplication	1/2	Bar model Number shapes Counters	Ten frames Bead strings Number lines
Multiply 2-digit by 1-digit numbers	3/4	Place value counters Base 10 Grid Method	Short written method Expanded written method Empty Numberlines
Multiply 3-digit by 1-digit numbers	4	Place value counters Base 10 Grid Method	Short written method Empty Numberlines
Multiply 4-digit by 1-digit numbers	5	Place value counters	Short written method

Skill	Year	Representations and models	
Multiply 2-digit by 2-digit numbers	5	Place value counters Base 10	Short written method Grid method
Multiply 2-digit by 3-digit numbers	5	Place value counters	Short written method Grid method
Multiply 2-digit by 4-digit numbers	5/6	Formal written method	

Year 3/4 focus needs to be made on looking at the grid method, before looking at any formal methods. Year 4, once children are secure with the grid method they can move onto expanded and short written method, making links between them.

Division

Skill	Year	Representations and models	
Solve one-step problems with division (sharing)	1/2	Bar model Real life objects	Arrays Counters
Solve one-step problems with division (grouping)	1/2	Real life objects Number shapes Bead strings Ten frames	Number lines Arrays Counters
Divide 2-digits by 1-digit (no exchange sharing)	3	Straws Base 10 Bar model	Place value counters Part-whole model
Divide 2-digits by 1-digit (sharing with exchange)	3	Straws Base 10 Bar model	Place value counters Part-whole model

Skill	Year	Representations and models	
Divide 2-digits by 1-digit (sharing with remainders)	3/4	Straws Base 10 Bar model	Place value counters Part-whole model
Divide 2-digits by 1-digit (grouping)	4/5	Place value counters Counters	Place value grid Written short division
Divide 3-digits by 1-digit (sharing with exchange)	4	Base 10 Bar model	Place value counters Part-whole model
Divide 3-digits by 1-digit (grouping)	4/5	Place value counters Counters	Place value grid Written short division

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Skill	Year	Representations and models	
Divide 4-digits by 1-digit (grouping)	5	Place value counters Counters	Place value grid Written short division
Divide multi-digits by 2-digits (short division)	6	Written short division	List of multiples
Divide multi-digits by 2-digits (long division)	6	Written long division	List of multiples

It is important to check the year group on either side of your year group as some include mixed expectations. For example, in Year 3 there is year 2/3 expectations. As a teacher you need to decide if your children are ready to cover these areas.

Multiplication	Division

Through **Number Talk** children should be consolidating and securing their mental methods of calculating allowing them to manipulate numbers to solve calculations in a variety of ways, and through this develop greater pace by choosing the most efficient method.
Children need to be clear that a compact written method is not always the best method, and common errors need to be highlighted when teaching.

Number Talks should allow children to develop fluency, making links to their timetables knowledge. For example in KS2 children should be making links such as:
Lower KS2 -

- To multiply by 5, they can x10 and half
- To multiply by 20, they can x10 and double or double and then x10
- To multiply by 4, they can double and double again
- To multiply by 8, they can double, double and double again

Higher KS2

- To multiply by 6, they can x2 then x3 or x3 then x 2
- Dividing by 5, divide by 10 and double
- Dividing by 20, divide by 10 and half

It is important to note that when picking example calculations to teach the children, the numbers that you choose match the method that you are teaching.

St Martin's Primary Progression in Multiplication and Division

<table>
<tr>
<td>R</td>
<td>Children will experience equal groups of objects.

They will count in 1s and 10s.

They will work on practical problem solving activities involving equal sets or groups.</td>
<td>Children will understand equal groups and share items out in play and problem solving.

They will count in 1s and 10s.

  </td>
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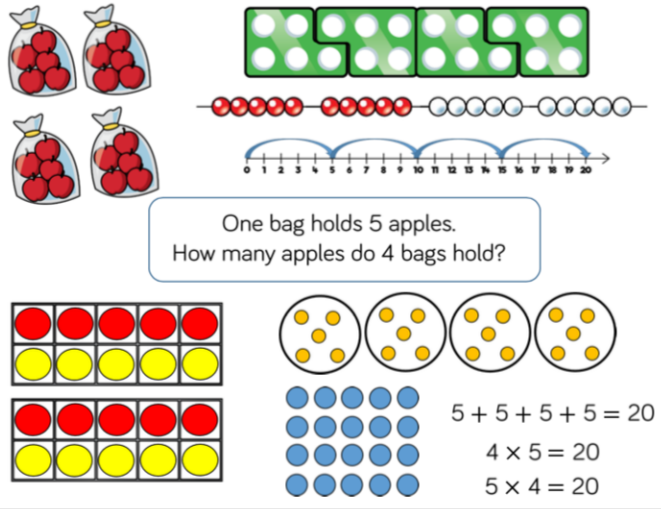
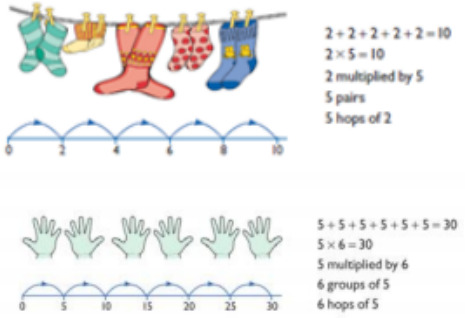
<tr>
<td>Y1</td>
<td>
<table>
<tr><th>Skill: Solve 1-step problems using multiplication</th><th>Year: 1/2</th></tr>
<tr>
<td> 
</td>
<td>Children represent multiplication as repeated addition in many different ways.

In Year 1, children use concrete and pictorial representations to solve problems. They are not expected to record multiplication formally.

In Year 2, children are introduced to the multiplication symbol.</td>
</tr>
</table>

They will count in 2s and 10s and begin to count in 5s.
Use of the vocabulary 'lots of' eg 3 x 4 is 4 lots of 3.

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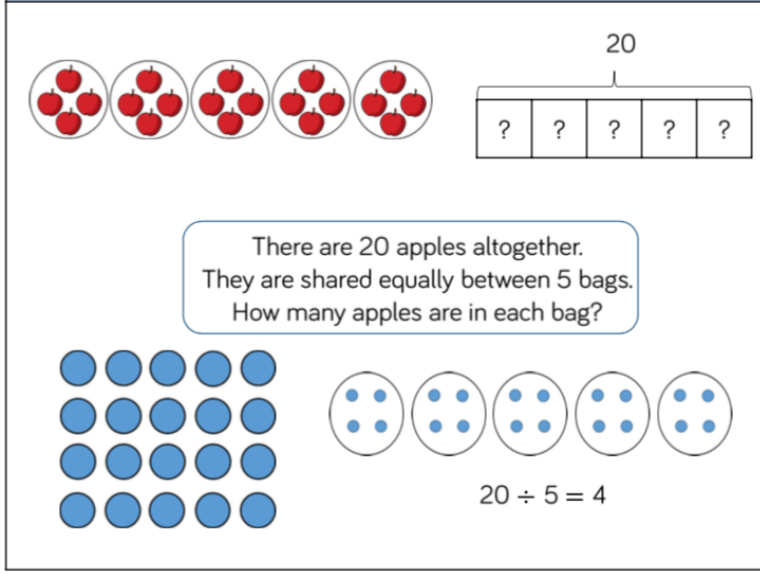
<table>
<tr><th>Skill: Solve 1-step problems using multiplication (sharing)</th><th>Year: 1/2</th></tr>
<tr>
<td> 
</td>
<td>Children solve problems by sharing amounts into equal groups.

In Year 1, children use concrete and pictorial representations to solve problems. They are not expected to record division formally.

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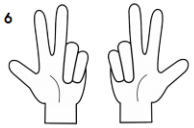
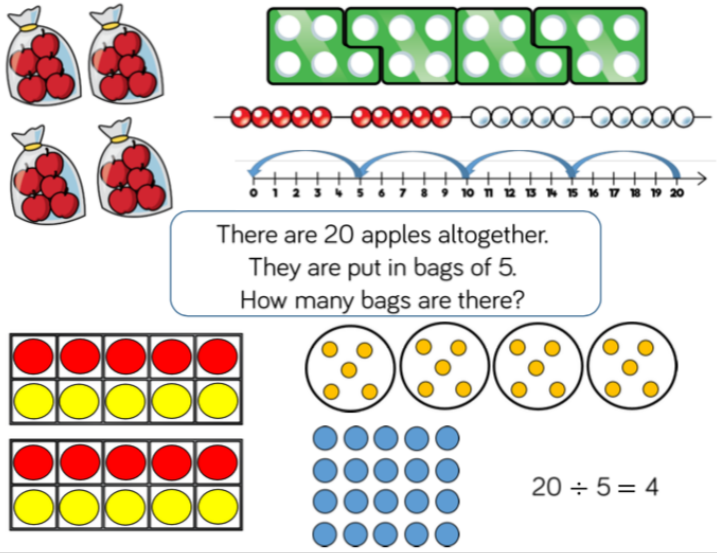
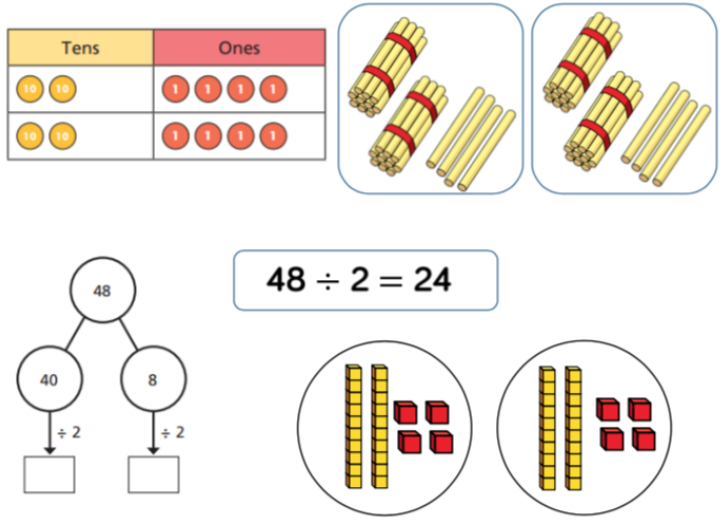
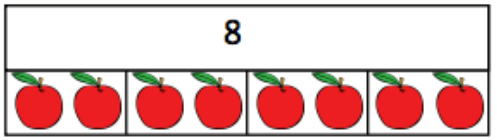
Doubling and halving
Find doubles to double 6 using fingers.



Skill: Solve 1-step problems using division (grouping)	Year: 1/2
	Children solve problems by grouping and counting the number of groups. Grouping encourages children to count in multiples and links to repeated subtraction on a number line. They can use concrete representations in fixed groups such as number shapes which helps to show the link between multiplication and division.

Skill: Divide 2-digits by 1-digit (sharing with no exchange)	Year: 1/2
	When dividing larger numbers, children can use manipulatives that allow them to partition into tens and ones. Straws, Base 10 and place value counters can all be used to share numbers into equal groups. Part-whole models can provide children with a clear written method that matches the concrete representation.

<table>
<tr><td></td><td></td><td>They will count in 2s and 10s and later in 5s.

Begin to find half of a number by sharing
 
</td></tr>
<tr><td>Y2</td><td>
<table>
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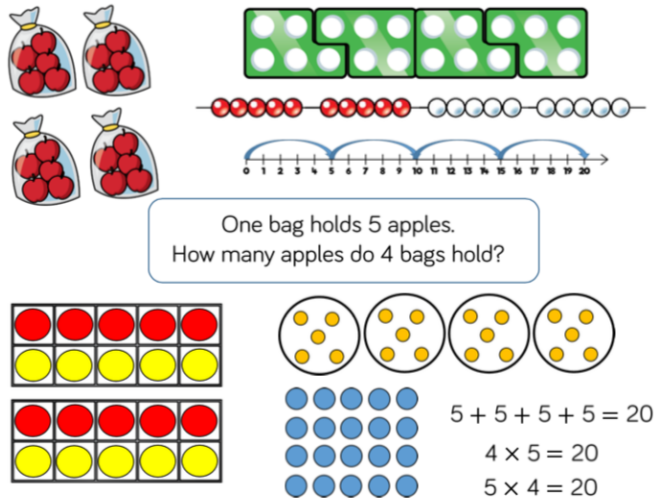
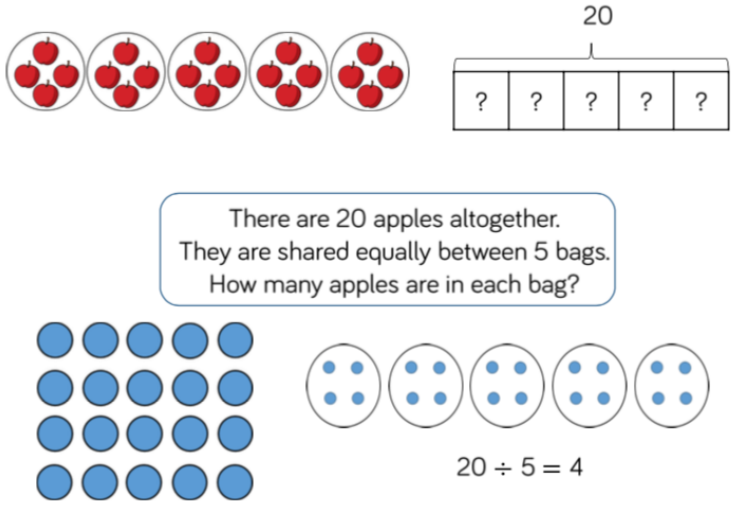
<tr><td> 
</td><td>Children represent multiplication as repeated addition in many different ways.

In Year 1, children use concrete and pictorial representations to solve problems. They are not expected to record multiplication formally.

In Year 2, children are introduced to the multiplication symbol.</td></tr>
</table>

<u>Commutativity</u>
Children will know that 3 x 5 has the same answer as 5 x 3. This can also be shown on the number line and on an array.

<u>Using Number Facts</u>
Children will recall known facts including doubles to 20 and table facts for 2s,5s and 10s and moving to 3s</td><td>
<table>
<tr><th>Skill: Solve 1-step problems using multiplication (sharing)</th><th>Year: 1/2</th></tr>
<tr><td> 
</td><td>Children solve problems by sharing amounts into equal groups.

In Year 1, children use concrete and pictorial representations to solve problems. They are not expected to record division formally.

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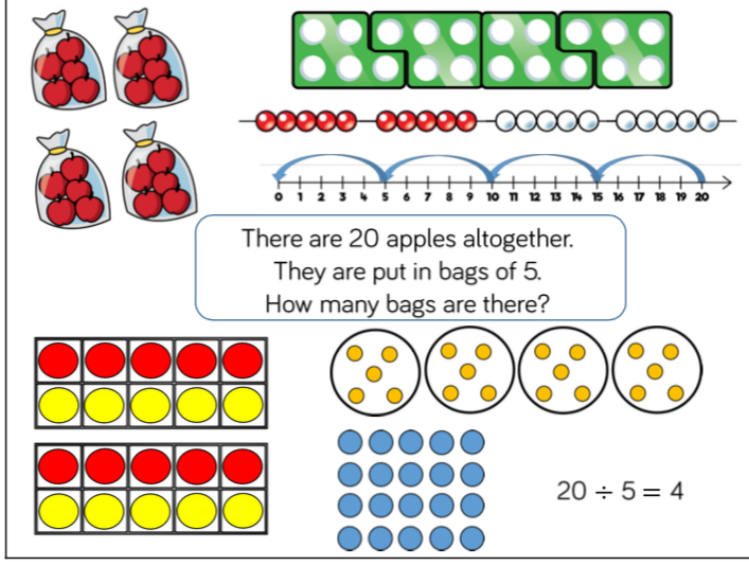
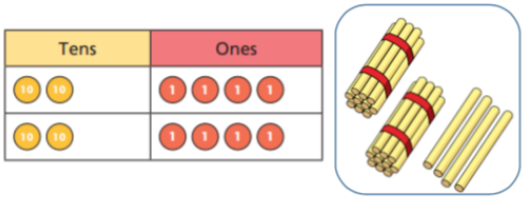
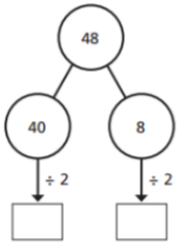
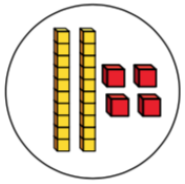
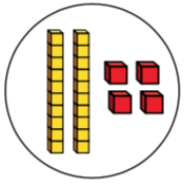
		Skill: Solve 1-step problems using division (grouping) 	**Year: 1/2** Children solve problems by grouping and counting the number of groups. Grouping encourages children to count in multiples and links to repeated subtraction on a number line. They can use concrete representations in fixed groups such as number shapes which helps to show the link between multiplication and division.

Skill: Divide 2-digits by 1-digit (sharing with no exchange)	Year: 1/2
  48 ÷ 2 = 24  	When dividing larger numbers, children can use manipulatives that allow them to partition into tens and ones. Straws, Base 10 and place value counters can all be used to share numbers into equal groups. Part-whole models can provide children with a clear written method that matches the concrete representation.

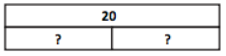
Children continue to count in steps of 2,5 and 10

Sharing

Begin to find half or a quarter of a quantity using sharing, e.g. ¼ of 16 cubes by sorting the subes into four piles.

Find ¼, ½, ¾ of small quantities.

half of 20 is...

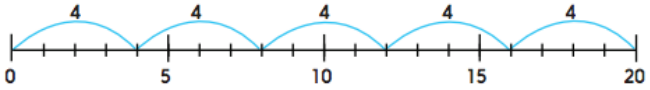
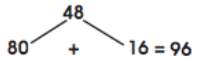
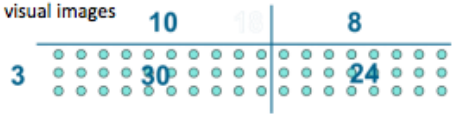
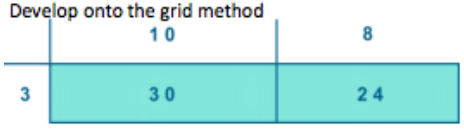
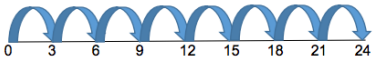
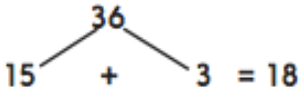
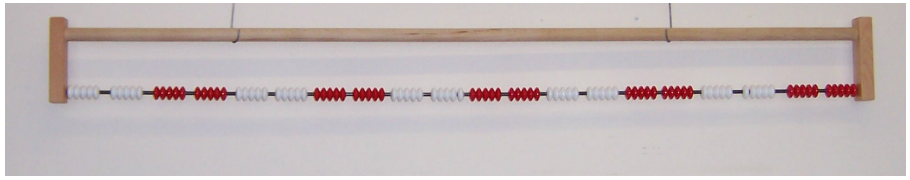


(Cuisenaire is a useful image to support the bar model)

Find half of numbers up to 40, including realising that half of an odd number gives a remainder of 1 or an answer containing a ½.

Begin to know half of multiples of 10 to 100, *e.g. half of 70 is 35.*

St Martin's Primary Progression in Multiplication and Division

	Multiplication	Division
Y3	Count in 2s, 3s, 4s, 5s, 9s and 10s by colouring numbers on the 1-100 grid or using a landmarked line.  **Counting supports repeated addition** 4 times 6 is 6 + 6 + 6 + 6 = 24 or 4 lots of 6 or 6 x 4 Children will use number lines or bead bars to support their understanding.  **Children will understand how an array replicates repeated addition within the image also how it supports understanding of the inverse**  Find doubles to double 50 using partitioning. Use doubling as a strategy in multiplying by 2, e.g. 18 x 2 is double 18 (36).  **Partitioning** 18 x 5 = (10 x 5) + (8 x 5) = 50 + 40 = 90 **Using known Facts** 20 x 3 = 2 x 3 x 10 = 20 x 2 + 20 Developing written methods using understanding of visual images  Develop onto the grid method  	**The emphasis in Y3 is on grouping rather than sharing. Counting remains an important element.** Using an empty number line to count forwards… **24 ÷ 3 = 8** 'How many threes are in 24?'   Children will see that arrays represent groups within the rows and the column. They can also begin to use the array as an image to find fractions of the total array and to understand inverse relationships **Grouping** Recognise that division is not commutative, e.g. 16 ÷ 8 does not equal 8 ÷ 16. Relate division to multiplications 'with holes in', e.g. ☐ x 5 = 30 is the same calculation as 30 ÷ 5 = ? thus we can count in in 5s to find the answer. Divide multiples of 10 by single-digit numbers, e.g. 240 ÷ 8 = 30. **Using number facts** Know halves of even numbers to 40. **Halving by partitioning**   The bead bar shows multiplying and dividing by 5 very clearly

Y4

COMMUTATIVITY remains an important piece of understanding – that the ~~Answer is the same with either representation – however they need to know how~~ Each calculation is different
Eg – you can have 5 horses with 4 legs each, but you cant have 4 horses with 5 legs each!!

Partitioning

38 x 5 = (30 x 5) + (8 x 5)
= 150 + 40
= 190

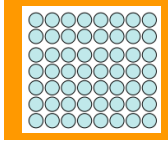
Using known Facts

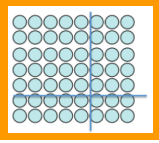
38 x 5 = (38 x 10) divided by 2

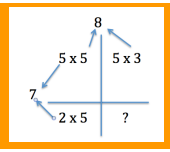
Grid method

The arrays provide a good image for understanding the grid method

7 x 8 exemplification

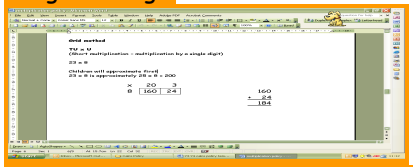






x	5	3
5	25	15
2	10	6

2 digit x 1 digit



Make the link between grid method and a vertical method (ladder method).

x	200	50	3
6	1200	300	18

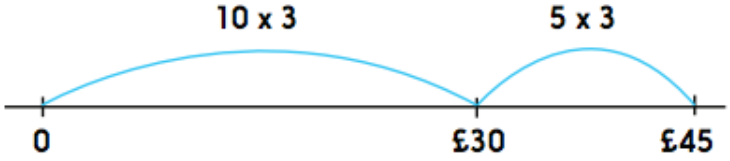
= 1518

253
x 6
1200
300
18
1518

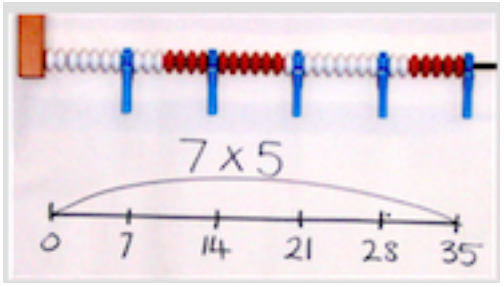
Halving

Begin to half amounts of money, e.g. £9 halved is £4.50.
Use halving as a strategy in dividing by 2, 4 and 8, e.g. 164 ÷ 4 is half of 164 (82) halved again (41).

Grouping
Use multiples of 10 times the divisor to divide by numbers <9 above the tables facts, e.g. 45 ÷ 3.



Divide multiples of 100 by single-digit numbers using division facts, e.g. 3200 ÷ 8 = 4000.



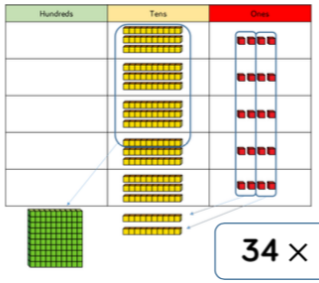
When dividing using the bead bar it can help to separate groups using pegs. This is important as the bead bar provides a link to the number line, which can be used as a jotting for both multiplication and division. E.g. 35 ÷ 7

Using number facts
Know times tables up to 12 x 12 and all related division facts.
Use division facts to find unit and non-unit fractions of amounts within the times tables, e.g. ⅞ of 56 is 7 x (56 ÷ 8).

St Martin's Primary Progression in Multiplication and Division

Skill: Multiply 2-digit numbers by 1-digit numbers

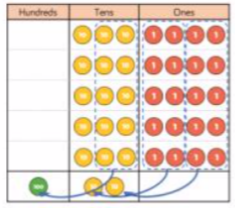
Year: 3/4



	H	T	O	
		3	4	
×			5	
		2	0	(5 × 4)
+	1	5	0	(5 × 30)
	1	7	0	

$34 \times 5 = 170$

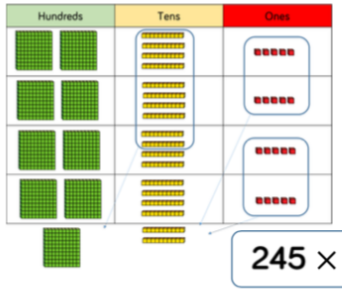
	H	T	O	
		3	4	
×			5	
	1	7	0	
	1	2		



Teachers may decide to first look at the expanded column method before moving on to the short multiplication method.
The place value counters should be used to support the understanding of the method rather than supporting the multiplication, as children should use times table knowledge.

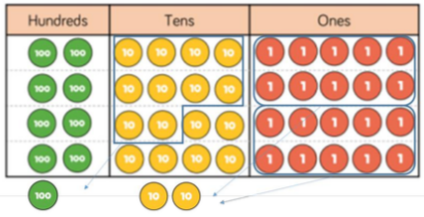
Skill: Multiply 3-digit numbers by 1-digit numbers

Year: 3/4



	H	T	O
	2	4	5
×			4
	9	8	0
	1	2	

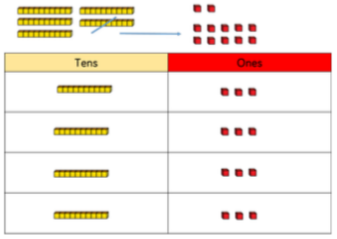
$245 \times 4 = 980$

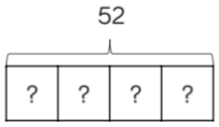


When moving to 3-digit by 1-digit multiplication, encourage children to move towards the short, formal written method.
Base 10 and place value counters continue to support the understanding of the written method.
Limit the number of exchanges needed in the questions and move children away from resources when multiplying larger numbers.

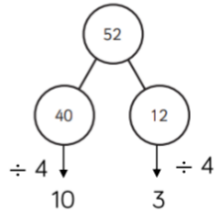
Skill: Divide 2-digits by 1-digit (sharing with exchange)

Year: 3/4

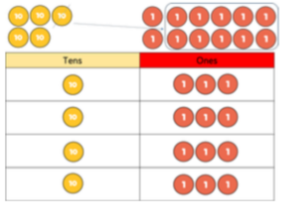




$52 \div 4 = 13$



$10 + 3 = 13$

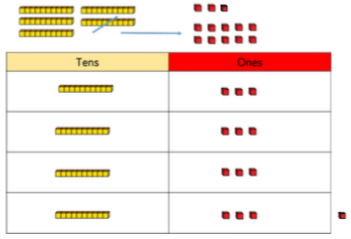


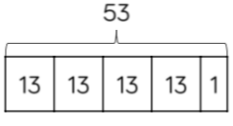
When dividing numbers involving an exchange, children can use Base 10 and place value counters to exchange one ten for ten ones.
Children should start with the equipment outside the place value grid before sharing the tens and ones equally between the rows.

Flexible partitioning in a part-whole model supports this method.

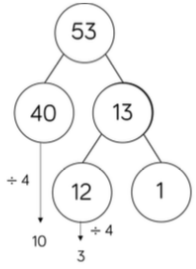
Skill: Divide 2-digits by 1-digit (sharing with remainders)

Year: 3/4



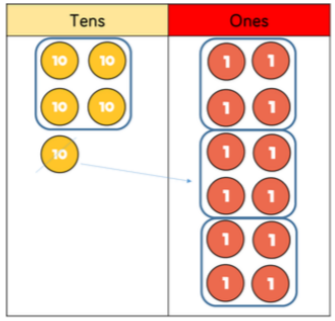


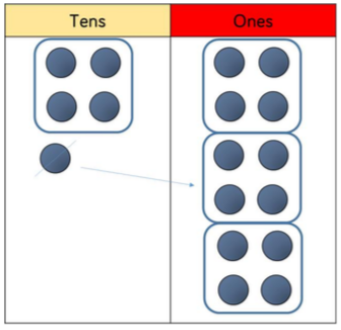
$53 \div 4 = 13\ r1$



When dividing numbers with remainders, children can use Base 10 and place value counters to exchange one ten for ten ones.
Starting with the equipment outside the place value grid will highlight remainders, as they will be left outside the grid once the equal groups have been made.
Flexible partitioning in a part-whole model supports this method.

		Skill: Divide 2-digits by 1-digit (grouping)	**Year: 4/5**





$52 \div 4 = 13$

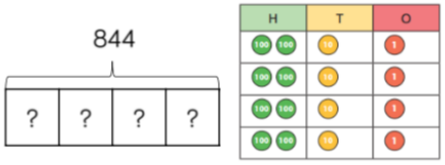
When using the short division method, children use grouping. Starting with the largest place value, they group by the divisor.

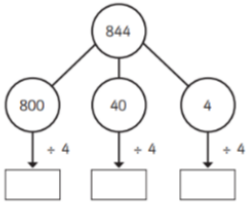
Language is important here. Children should consider 'How many groups of 4 tens can we make?' and 'How many groups of 4 ones can we make?'

Remainders can also be seen as they are left ungrouped.

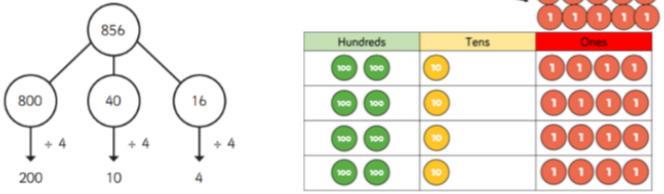
		Skill: Divide 3-digits by 1-digit (sharing)	**Year: 4**

$844 \div 4 = 122$





$844 \div 4 = 122$



Children can continue to use place value counters to share 3-digit numbers into equal groups. Children should start with the equipment outside the place value grid before sharing the hundreds, tens and ones equally between the rows. This method can also help to highlight remainders. Flexible partitioning in a part-whole model supports this method.

St Martin’s Primary Progression in Multiplication and Division

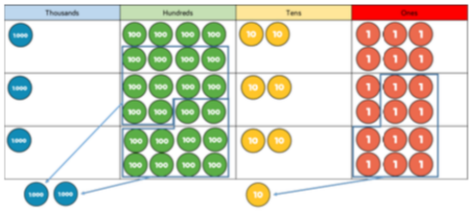
November 2020

St Martin's Primary Progression in Multiplication and Division

Y5

Multiplication

Skill: Multiply 4-digit numbers by 1-digit numbers — **Year: 5**

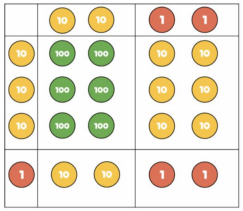


$1{,}826 \times 3 = 5{,}478$

	Th	H	T	O
	1	8	2	6
×				3
	5	4	7	8
	2		1	

When multiplying 4-digit numbers, place value counters are the best manipulative to use to support children in their understanding of the formal written method.
If children are multiplying larger numbers and struggling with their times tables, encourage the use of multiplication grids so children can focus on the use of the written method.

Skill: Multiply 2-digit numbers by 2-digit numbers — **Year: 5**



×	20	2
30	600	60
1	20	2

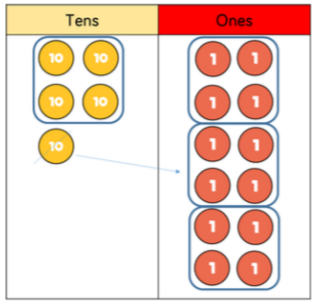
	H	T	O
		2	2
×		3	1
		2	2
	6	6	0
	6	8	2

$22 \times 31 = 682$

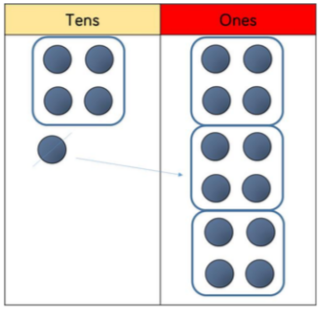
The grid method as an initial written method before moving on to the formal written multiplication method.

Division

Skill: Divide 2-digits by 1-digit (grouping) — **Year: 4/5**



		1	3
	4	5	$^{1}2$



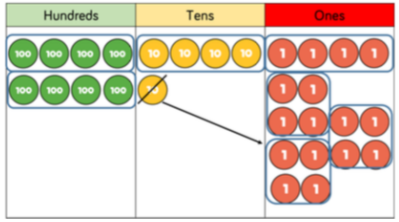
$52 \div 4 = 13$

When using the short division method, children use grouping. Starting with the largest place value, they group by the divisor.

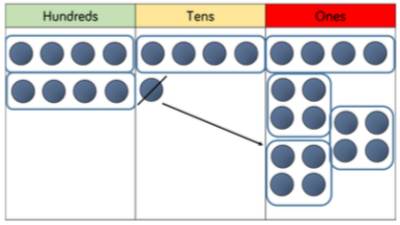
Language is important here. Children should consider 'How many groups of 4 tens can we make?' and 'How many groups of 4 ones can we make?'

Remainders can also be seen as they are left ungrouped.

Skill: Divide 3-digits by 1-digit (grouping) — **Year: 5**



		2	1	4
	4	8	5	$^{1}6$



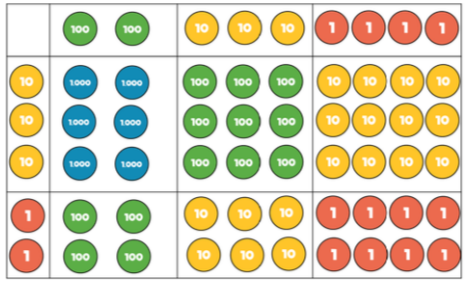
$856 \div 4 = 214$

Children can continue to use grouping to support their understanding of short division when dividing a 3-digit number by a 1-digit number.

Place value counters or plain counters can be used on a place value grid to support this understanding. Children can also draw their own counters and group them through a more pictorial method.

Skill: Multiply 3-digit numbers by 2-digit numbers

Year: 5



Th	H	T	O
	2	3	4
×		3	2
	4	6	8
1	7	1 0	2	0
7	4	8	8

×	200	30	4
30	6,000	900	120
2	400	60	8

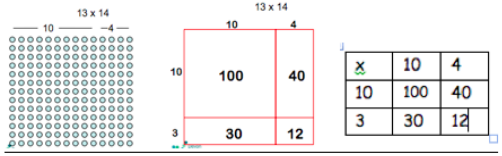
$234 \times 32 = 7{,}488$

Children can continue to use the area model when multiplying 3-digits by 2-digits. Place value counters become more efficient to use but Base 10 can be used to highlight the size of numbers.

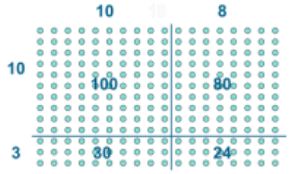
Encourage children to move towards the formal written method, seeing the links with the grid method.

Grid method

2 digit x 2 digit exemplification

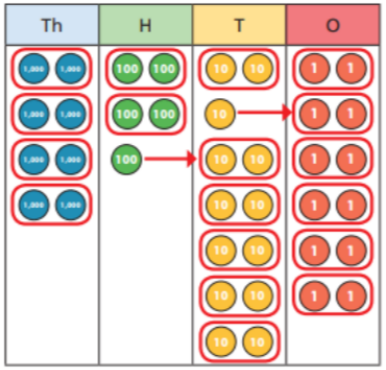


x	10	4
10	100	40
3	30	12



Skill: Divide 4-digits by 1-digit (grouping)

Year: 5



	4	2	6	6
2	8	5	1 3	1 2

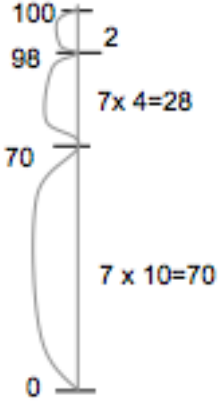
$8{,}532 \div 2 = 4{,}266$

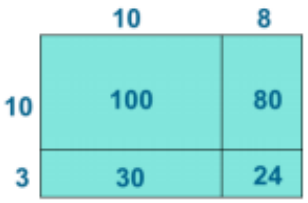
Place value counters or plain counters can be used on a place value grid to support children to divide 4-digits by 1-digit. Children can also draw their own counters and group them through a more pictorial method.

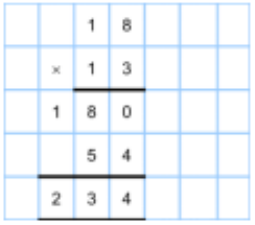
Children should be encouraged to move away from the concrete and pictorial when dividing numbers with multiple exchanges.

Division by Grouping – 100 divided by 7

Children need to develop a Toolbox of Facts that will help them to solve the calculations.

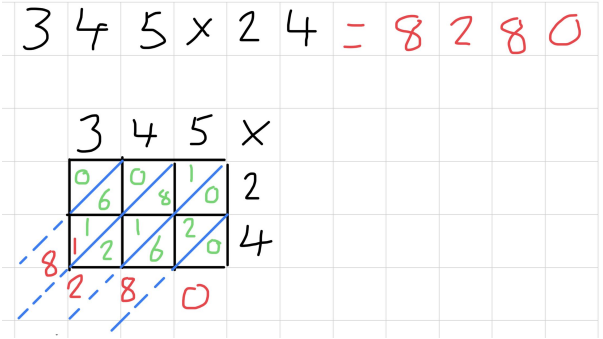






Gelosia method

Children will be equipped with different strategies to solve multiplication problems



e.g. 4.9 x 3

Children will approximate first
4.9 x 3 is approximately 5 x 3 = 15

X	4	0.9
3	12	2.7

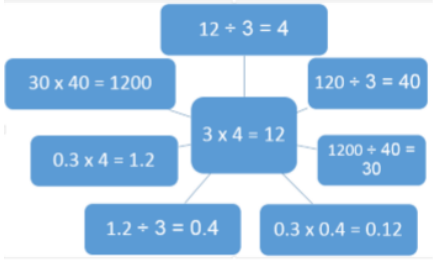
Using the Toolbox with increased multiples

432 ÷ 5 =

I know 5 x 80 = 400;
5 x 5 = 25;
5 x 2 = 10
5 x 1 = 5

5 x 80 5x5 5x1

There are 86 5s in 432 with a remainder of 2; the answer is 86 r 2
The remainder will initially be expressed as a number, then as a fraction and finally as a decimal (Year 6)



Children will need to become fluent in multiplying and dividing numbers by 10,100,1000 and using what they know to derive unknown facts.

Y6

Skill: Multiply 4-digit numbers by 2-digit numbers — **Year: 5/6**

TTh	Th	H	T	O
	2	7	3	9
×			2	8
2	1	9	1	2
5	4	7	8	0
7	6	6	9	2

2,739 × 28 = 76,692

When multiplying 4-digits by 2-digits, children should be confident in the written method.

If they are still struggling with times tables, provide multiplication grids to support when they are focusing on the use of the method.

Consider where exchanged digits are placed and make sure this is consistent.

Skill: Divide multi digits by 2-digits (short division) — **Year: 6**

		0	3	6
	12	4	4 3	7 2

432 ÷ 12 = 36

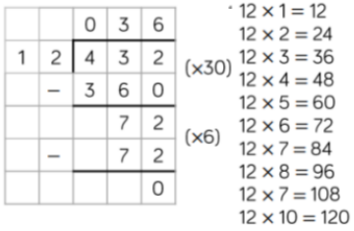
7,335 ÷ 15 = 489

	0	4	8	9
15	7	7 3	13 3	13 5

15	30	45	60	75	90	105	120	135	150

When children begin to divide up to 4-digits by 2-digits, written methods become the most accurate as concrete and pictorial representations become less effective. Children can write out multiples to support their calculations with larger remainders. Children will also solve problems with remainders where the quotient can be rounded as appropriate.

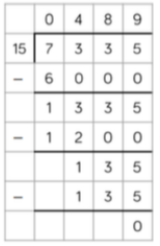
Skill: Divide multi-digits by 2-digits (long division)	Year: 6



12 × 1 = 12
12 × 2 = 24
12 × 3 = 36
12 × 4 = 48
12 × 5 = 60
12 × 6 = 72
12 × 7 = 84
12 × 8 = 96
12 × 7 = 108
12 × 10 = 120

432 ÷ 12 = 36

7,335 ÷ 15 = 489



1 × 15 = 15
2 × 15 = 30
3 × 15 = 45
4 × 15 = 60
5 × 15 = 75
10 × 15 = 150

Children can also divide by 2-digit numbers using long division.

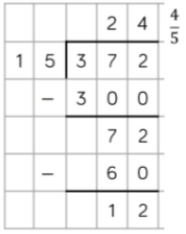
Children can write out multiples to support their calculations with larger remainders.

Children will also solve problems with remainders where the quotient can be rounded as appropriate.

Skill: Divide multi digits by 2-digits (long division)	Year: 6

372 ÷ 15 = 24 r12

1 × 15 = 15
2 × 15 = 30
3 × 15 = 45
4 × 15 = 60
5 × 15 = 75
10 × 15 = 150

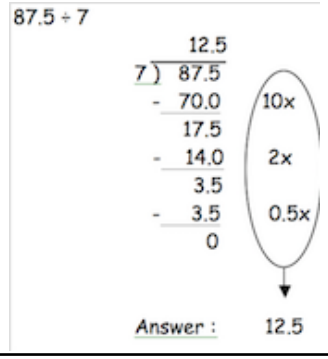


372 ÷ 15 = 24 $\frac{4}{5}$

When a remainder is left at the end of a calculation, children can either leave it as a remainder or convert it to a fraction.
This will depend on the context of the question.

Children can also answer questions where the quotient needs to be rounded according to the context.

Make links from Toolbox to Short division

Times Tables

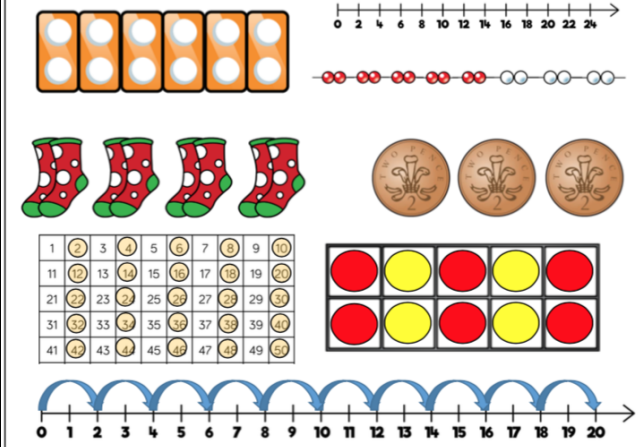
Overview

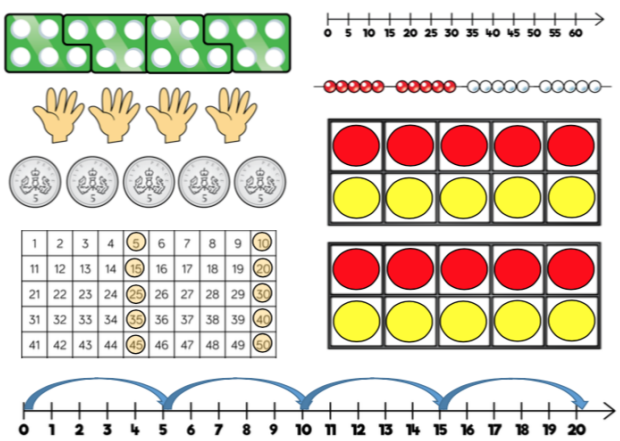
Skill	Year	Representations and models	
Recall and use multiplication and division facts for the 3-times table	3	Hundred square Number shapes Counters	Bead strings Number lines Everyday objects
Recall and use multiplication and division facts for the 4-times table	3	Hundred square Number shapes Counters	Bead strings Number lines Everyday objects
Recall and use multiplication and division facts for the 8-times table	3	Hundred square Number shapes	Bead strings Number tracks Everyday objects
Recall and use multiplication and division facts for the 6-times table	4	Hundred square Number shapes	Bead strings Number tracks Everyday objects

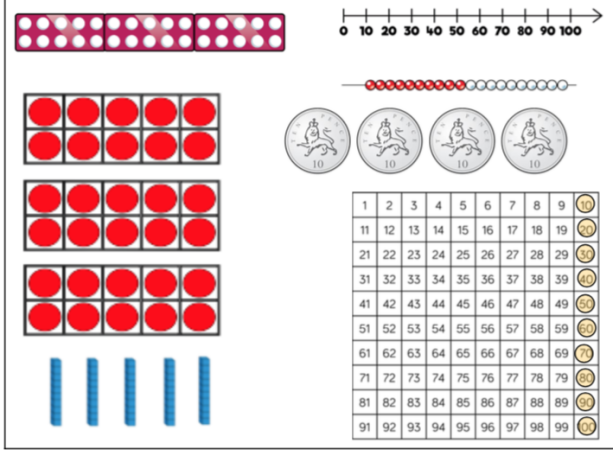
Skill	Year	Representations and models	
Recall and use multiplication and division facts for the 7-times table	4	Hundred square Number shapes	Bead strings Number lines
Recall and use multiplication and division facts for the 9-times table	4	Hundred square Number shapes	Bead strings Number lines
Recall and use multiplication and division facts for the 11-times table	4	Hundred square Base 10	Place value counters Number lines
Recall and use multiplication and division facts for the 12-times table	4	Hundred square Base 10	Place value counters Number lines

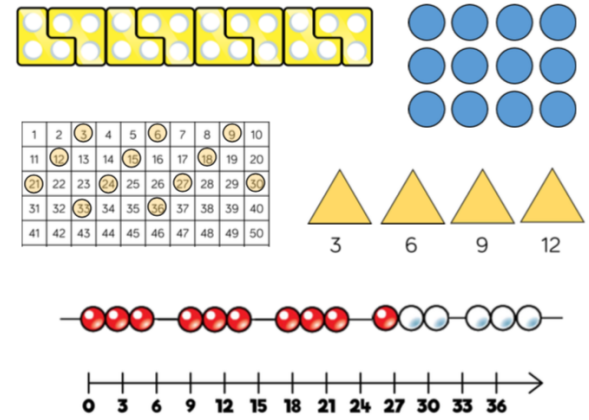
St Martin's Primary Progression in Multiplication and Division

Years 2-4

Skill: 2 times table	Year: 2
	Encourage daily counting in multiples both forwards and backwards. This can be supported using a number line or a hundred square. Look for patterns in the two times table, using concrete manipulatives to support. Notice how all the numbers are even and there is a pattern in the ones. Use different models to develop fluency.

Skill: 5 times table	Year: 2
	Encourage daily counting in multiples both forwards and backwards. This can be supported using a number line or a hundred square. Look for patterns in the five times table, using concrete manipulatives to support. Notice the pattern in the ones as well as highlighting the odd, even, odd, even pattern.

Skill: 10 times table	Year: 2
	Encourage daily counting in multiples both forwards and backwards. This can be supported using a number line or a hundred square. Look for patterns in the ten times table, using concrete manipulatives to support. Notice the pattern in the digits- the ones are always 0, and the tens increase by 1 ten each time.

Skill: 3 times table	Year: 3
	Encourage daily counting in multiples both forwards and backwards. This can be supported using a number line or a hundred square. Look for patterns in the three times table, using concrete manipulatives to support. Notice the odd, even, odd, even pattern using number shapes to support. Highlight the pattern in the ones using a hundred square.

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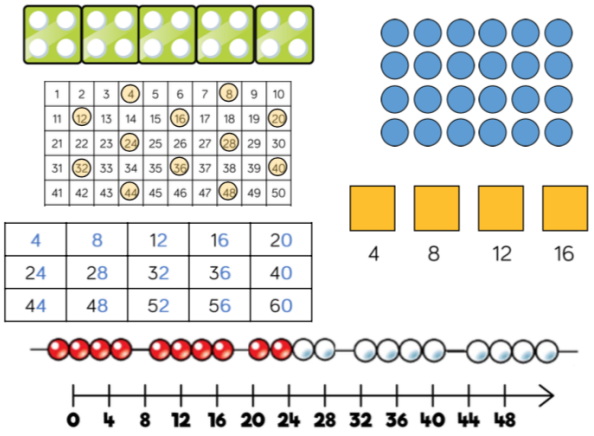
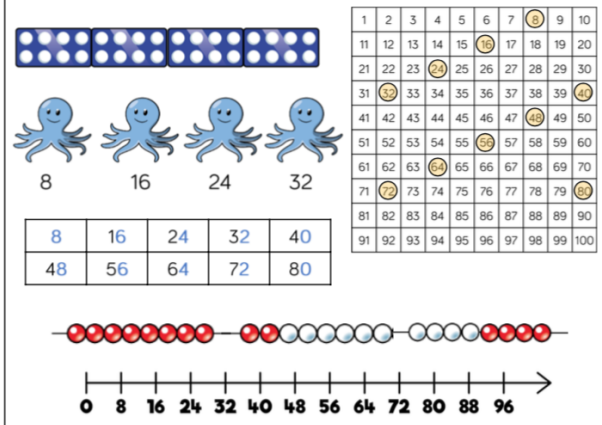
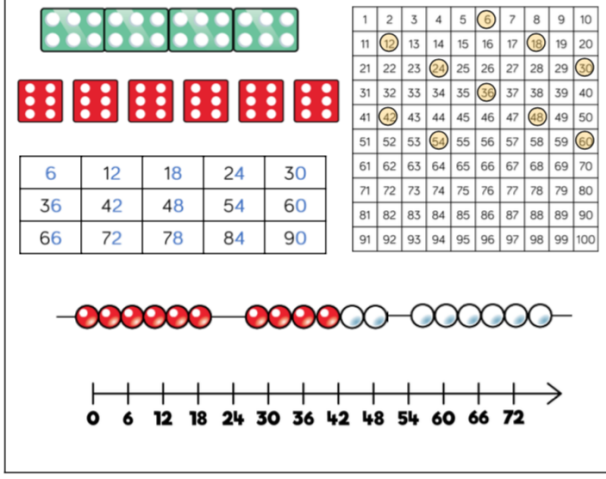
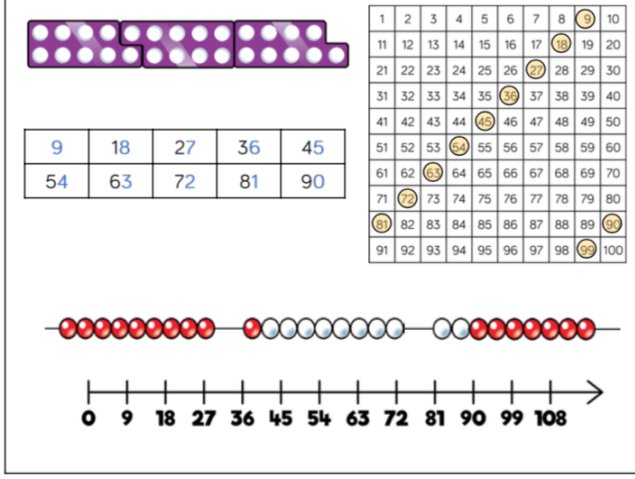
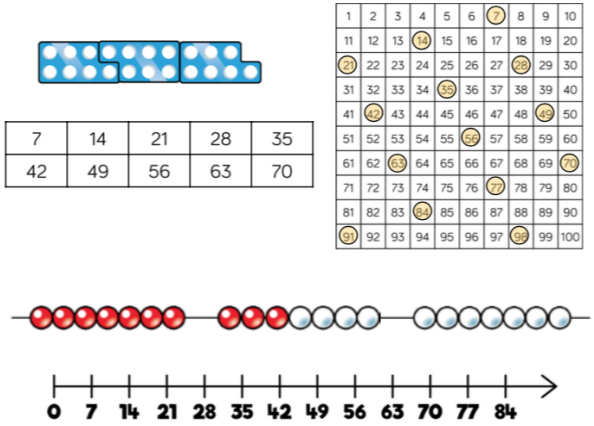
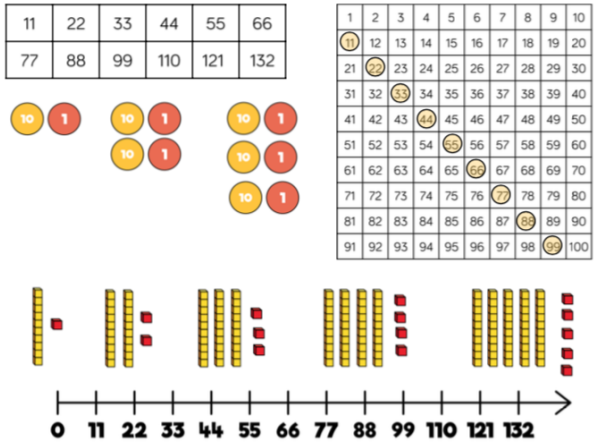
Skill: 4 times table	Year: 3
	Encourage daily counting in multiples, supported by a number line or a hundred square. Look for patterns in the four times table, using manipulatives to support. Make links to the 2 times table, seeing how each multiple is double the twos. Notice the pattern in the ones within each group of five multiples. Highlight that all the multiples are even using number shapes to support.

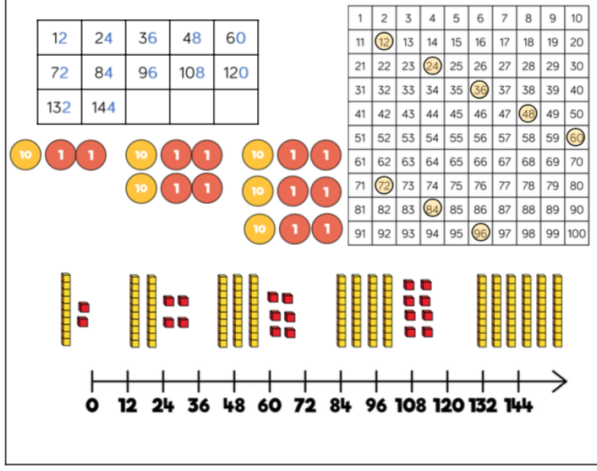
Skill: 8 times table	Year: 3
	Encourage daily counting in multiples, supported by a number line or a hundred square. Look for patterns in the eight times table, using manipulatives to support. Make links to the 4 times table, seeing how each multiple is double the fours. Notice the pattern in the ones within each group of five multiples. Highlight that all the multiples are even using number shapes to support.

Skill: 6 times table	Year: 4
	Encourage daily counting in multiples, supported by a number line or a hundred square. Look for patterns in the six times table, using manipulatives to support. Make links to the 3 times table, seeing how each multiple is double the threes. Notice the pattern in the ones within each group of five multiples. Highlight that all the multiples are even using number shapes to support.

Skill: 9 times table	Year: 4
	Encourage daily counting in multiples both forwards and backwards. This can be supported using a number line or a hundred square. Look for patterns in the nine times table, using concrete manipulatives to support. Notice the pattern in the tens and ones using the hundred square to support as well as noting the odd, even pattern within the multiples.

Skill: 7 times table	Year: 4
	Encourage daily counting in multiples both forwards and backwards, supported by a number line or a hundred square. The seven times table can be trickier to learn due to the lack of obvious pattern in the numbers, however they already know several facts due to commutativity. Children can still see the odd, even pattern in the multiples using number shapes to support.

Skill: 11 times table	Year: 4
	Encourage daily counting in multiples both forwards and backwards. This can be supported using a number line or a hundred square. Look for patterns in the eleven times table, using concrete manipulatives to support. Notice the pattern in the tens and ones using the hundred square to support. Also consider the pattern after crossing 100

Skill: 12 times table	Year: 4
	Encourage daily counting in multiples, supported by a number line or a hundred square. Look for patterns in the 12 times table, using manipulatives to support. Make links to the 6 times table, seeing how each multiple is double the sixes. Notice the pattern in the ones within each group of five multiples. The hundred square can support in highlighting this pattern.

Array – An ordered collection of counters, cubes or other item in rows and columns.

Commutative – Numbers can be multiplied in any order.

Dividend – In division, the number that is divided.

Divisor – In division, the number by which another is divided.

Exchange – Change a number or expression for another of an equal value.

Factor – A number that multiplies with another to make a product.

Multiplicand – In multiplication, a number to be multiplied by another.

Partitioning – Splitting a number into its component parts.

Product – The result of multiplying one number by another.

Quotient – The result of a division

Remainder – The amount left over after a division when the divisor is not a factor of the dividend.

Scaling – Enlarging or reducing a number by a given amount, called the scale factor