



Adapted for Alkrington Primary School – September 2022

Year 1 - 6

Calculation Policy

Multiplication and Division

[#MathsEveryoneCan](#)



Glossary

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.

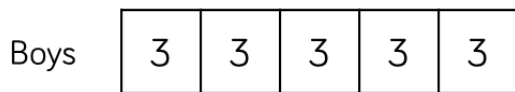
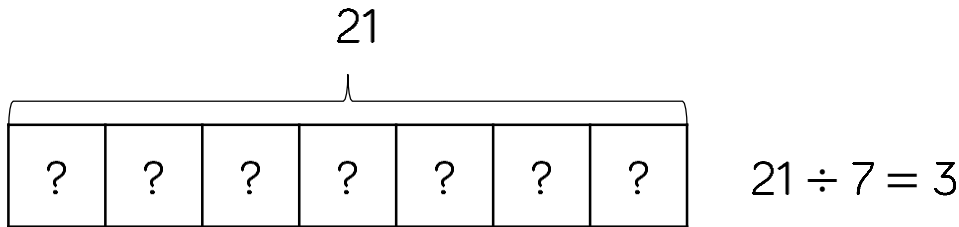
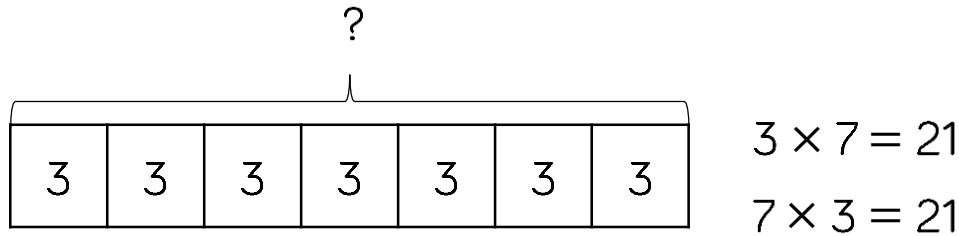
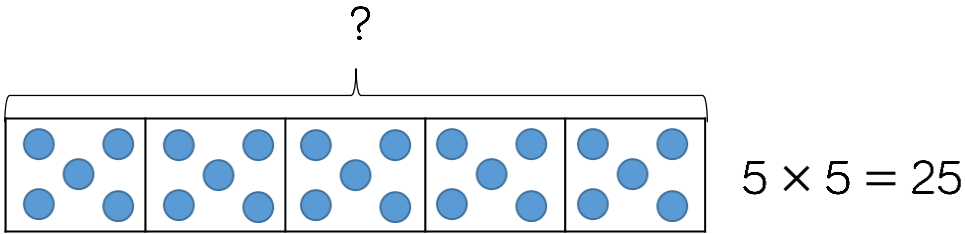
Product – The result of multiplying one number by another.

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

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?

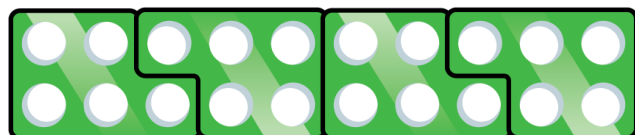
The multiple bar model provides an opportunity to compare the groups.

Numicon



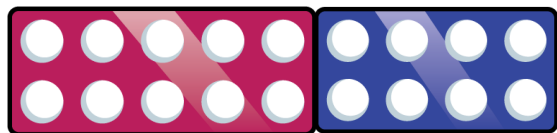
$$5 \times 4 = 20$$

$$4 \times 5 = 20$$

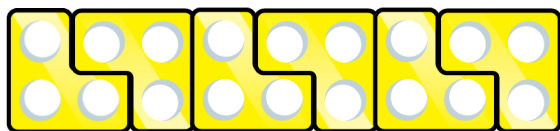


$$5 \times 4 = 20$$

$$4 \times 5 = 20$$



$$18 \div 3 = 6$$



Benefits

Numicon supports children's understanding of multiplication as repeated addition. Children can build multiplication in a row using the Numicon. 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 Numicon in multiplication can support children in discovering patterns of multiplication e.g. odd x odd = even, odd x even = odd, even x even = even.

When dividing, Numicon supports children's understanding of dividing as grouping. Children make the number they are dividing and then place the Numicon 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

5 groups of 3



$$5 \times 3 = 15$$

$$15 \div 3 = 5$$

3 groups of 5



$$3 \times 5 = 15$$

$$15 \div 5 = 3$$

5 groups of 4



$$5 \times 4 = 20$$

$$20 \div 4 = 5$$

Benefits

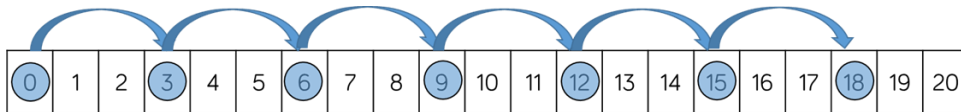
Bead strings to 100 can support children in their understanding of multiplication as repeated addition. Children can build the multiplication using the beads. The colour of beads supports children in seeing how many groups of 10 they have, to calculate the total more efficiently.

Encourage children to count in multiples as they build the number e.g. 4, 8, 12, 16, 20.

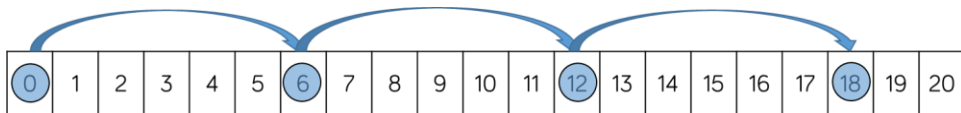
Children can also use the bead string to count forwards and backwards in multiples, moving the beads as they count.

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.

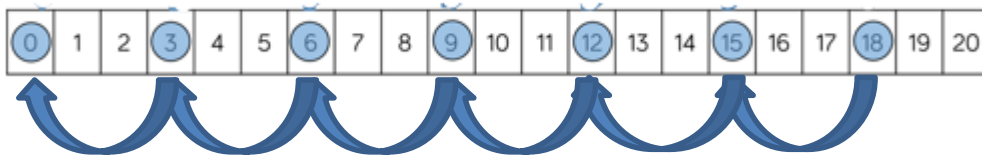
Number Tracks



$$6 \times 3 = 18$$



$$3 \times 6 = 18$$



$$18 \div 3 = 6$$

Benefits

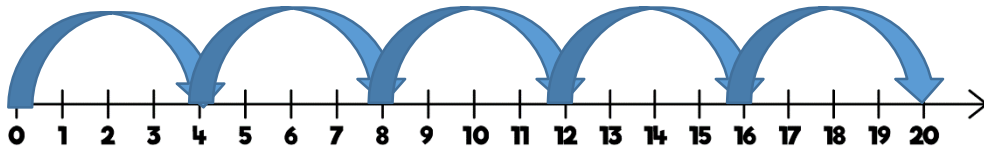
Number tracks are useful to support children to count in multiples, forwards and backwards. Moving counters or cubes along the number track can support children to keep track of their counting. Translucent counters help children to see the number they have landed on whilst counting.

When multiplying, children place their counter on 0 to start and then count on to find the product of the numbers.

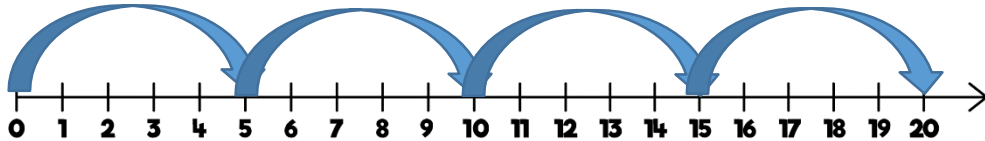
When dividing, children place their counter on the number they are dividing and the count back in jumps of the number they are dividing by until they reach 0. Children record how many jumps they have made to find the answer to the division.

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

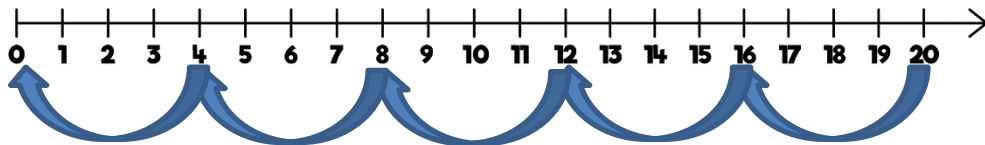
Number Lines (labelled)



$$5 \times 4 = 20$$



$$4 \times 5 = 20$$



$$20 \div 4 = 5$$

Benefits

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

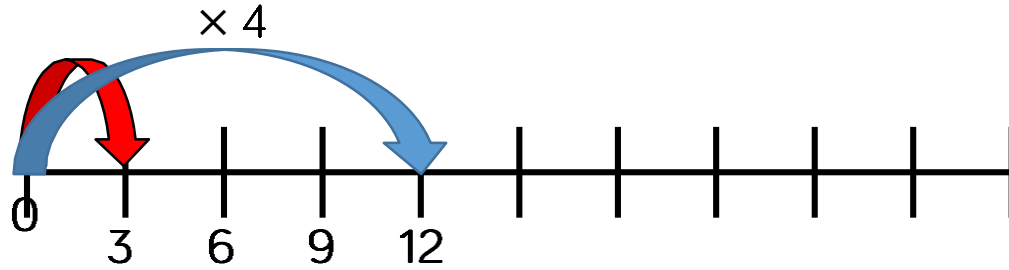
When multiplying, children start at 0 and then count on to find the product of the numbers.

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.

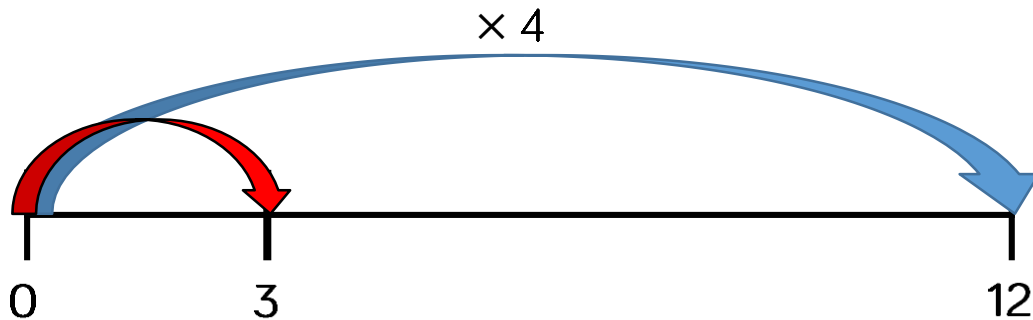
Number Lines (blank)



A red car travels 3 miles.

A blue car 4 times further.

How far does the blue car travel?



A blue car travels 12 miles.

A red car 4 times less.

How far does the red car travel?

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.

Base 10 or counters (multiplication)

Hundreds	Tens	Ones
		□□□□
		□□□□
		□□□□

(Note: A green box highlights the 12 ones in the first three rows, and a green arrow points from this box to a single counter in the Tens column below the table.)

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

X	20	4
3	60	12

(Note: Blue arrows point from the '12' in the second row to the '12' in the written calculation below, and from the '60' in the second row to the '60' in the written calculation below.)

$$60 + 12 = 72$$

$$\begin{array}{r}
 24 \\
 \times 3 \\
 \hline
 12 \\
 60 \\
 \hline
 72 \\
 \hline
 1
 \end{array}$$

Benefits

Using Base 10 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 amounts of groups become higher, Base 10 becomes less efficient due to the amount of equipment and the number of exchanges needed.

Times Tables

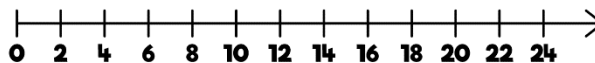
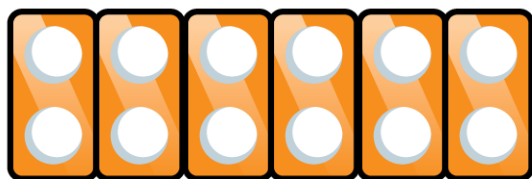
Skill	Year	Representations and models	
Recall and use multiplication and division facts for the 2-times table	2	Bar model Numicon Counters Money	Ten frames Bead strings Number lines Everyday objects
Recall and use multiplication and division facts for the 5-times table	2	Bar model Numicon Counters Money	Ten frames Bead strings Number lines Everyday objects
Recall and use multiplication and division facts for the 10-times table	2	Hundred square Numicon Counters Money	Ten frames Bead strings Number lines Base 10

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

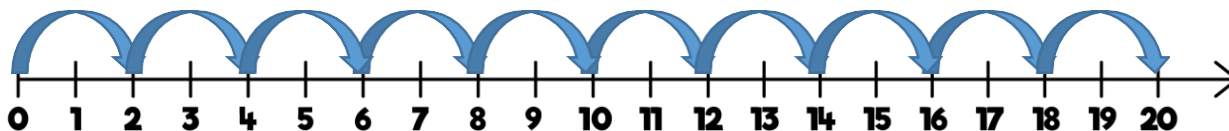
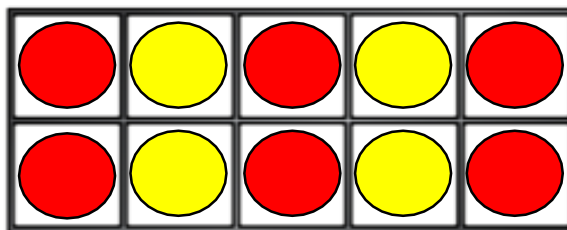
Skill	Year	Representations and models	
Recall and use multiplication and division facts for the 7-times table	4	Hundred square Numicon	Bead strings Number lines
Recall and use multiplication and division facts for the 9-times table	4	Hundred square Numicon	Bead strings Number lines
Recall and use multiplication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

Skill: 2 times table

Year: 2



1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50



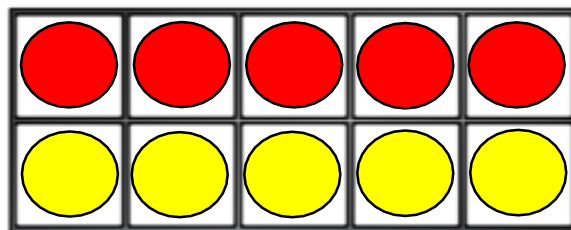
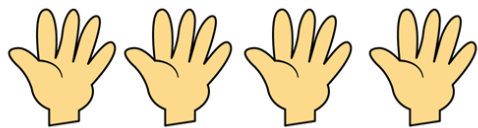
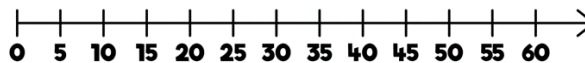
Encourage daily counting in multiples both forwards and backwards. This can be supported using a number line or a hundred square.

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.

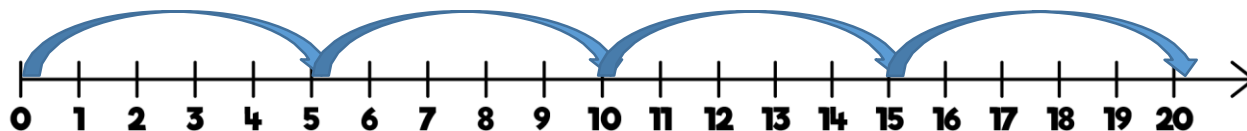
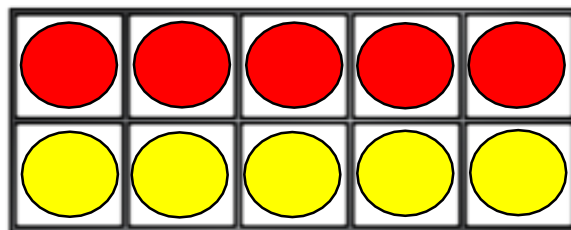
Use different models to develop fluency.

Skill: 5 times table

Year: 2



1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50

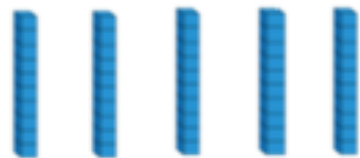
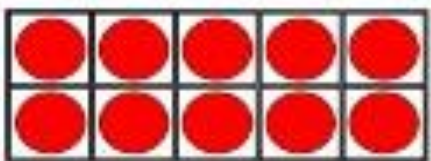
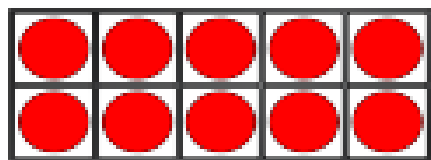
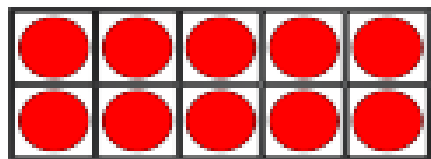
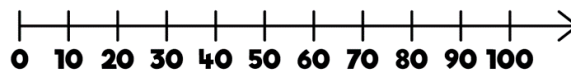
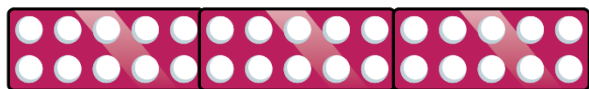


Encourage daily counting in multiples both forwards and backwards. This can be supported using a number line or a hundred square.

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



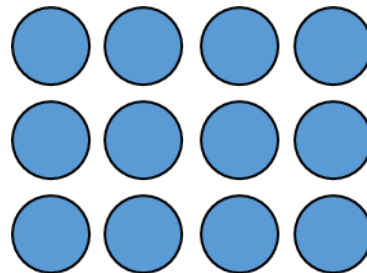
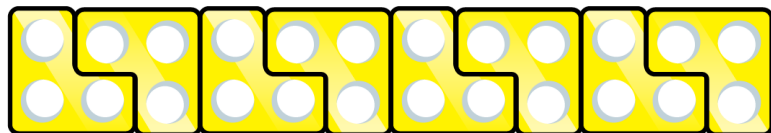
1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

Encourage daily counting in multiples both forwards and backwards. This can be supported using a number line or a hundred square.

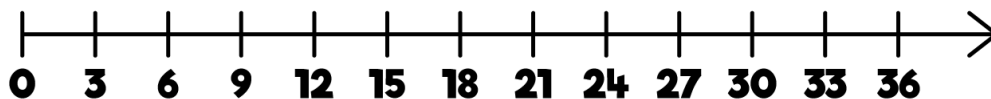
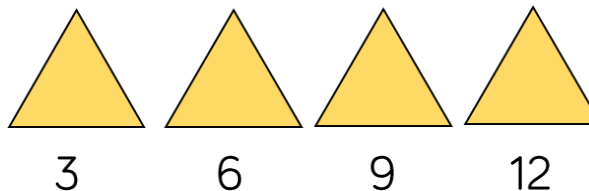
Look for patterns in the ten times table, using concrete manipulatives to support. Notice the pattern in the digits—the ones are always 0, and the tens increase by 1 ten each time.

Skill: 3 times table

Year: 3



1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50

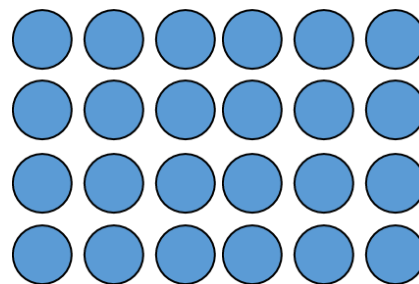


Encourage daily counting in multiples both forwards and backwards. This can be supported using a number line or a hundred square.

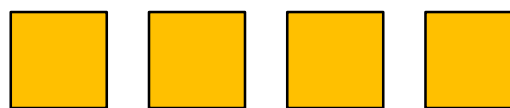
Look for patterns in the three times table, using concrete manipulatives to support. Notice the odd, even, odd, even pattern using number shapes to support. Highlight the pattern in the ones using a hundred square.

Skill: 4 times table

Year: 3

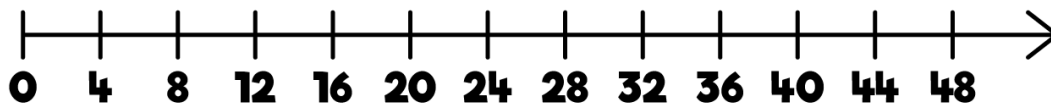


1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50



4 8 12 16

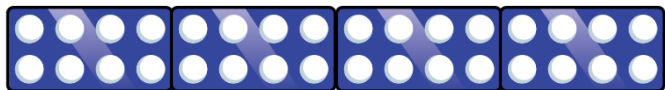
4	8	12	16	20
24	28	32	36	40
44	48	52	56	60



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



8

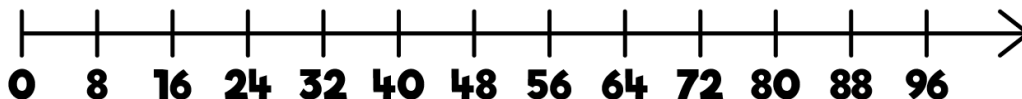
16

24

32

8	16	24	32	40
48	56	64	72	80

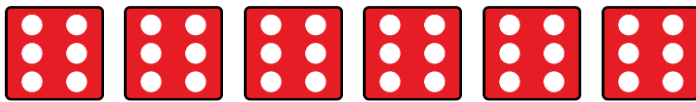
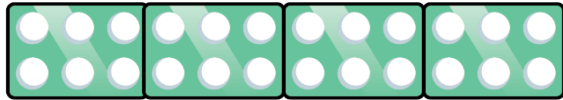
1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100



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.

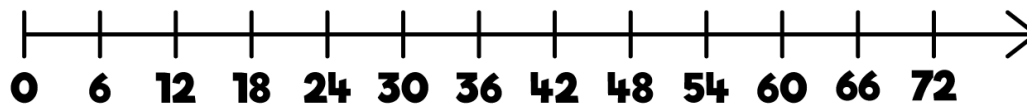
Skill: 6 times table

Year: 4



6	12	18	24	30
36	42	48	54	60
66	72	78	84	90

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100



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.

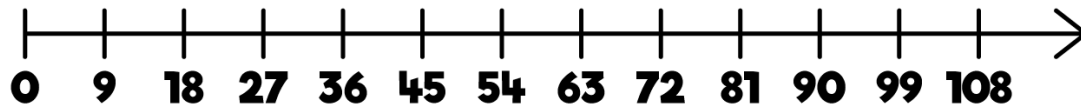
Skill: 9 times table

Year: 4



9	18	27	36	45
54	63	72	81	90

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100



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.

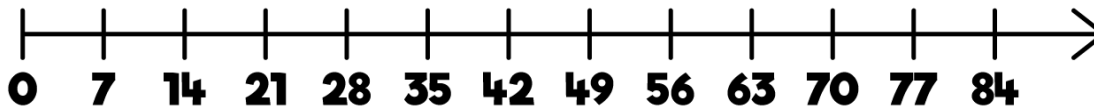
Skill: 7 times table

Year: 4



7	14	21	28	35
42	49	56	63	70

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100



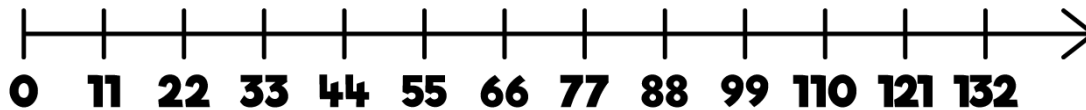
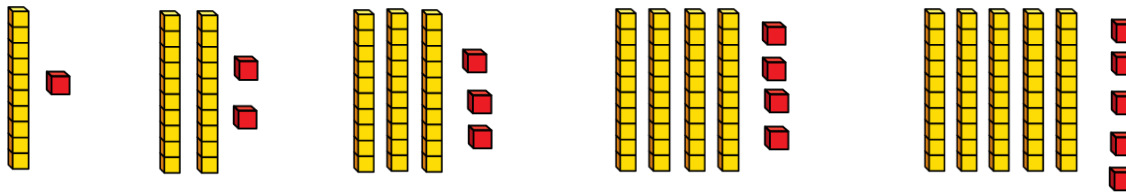
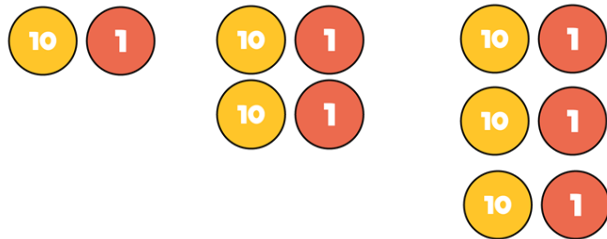
Encourage daily counting in multiples both forwards and backwards, supported by a number line or a hundred square. The seven times table can be trickier to learn due to the lack of obvious pattern in the numbers, however they already know several facts due to commutativity. Children can still see the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

Skill: 11 times table

Year: 4

11	22	33	44	55	66
77	88	99	110	121	132

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100



Encourage daily counting in multiples both forwards and backwards. This can be supported using a number line or a hundred square.

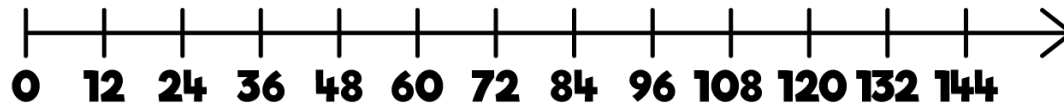
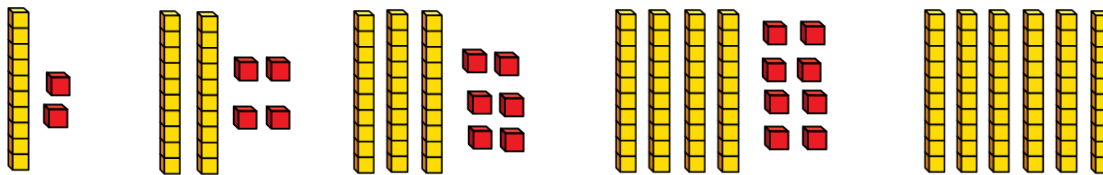
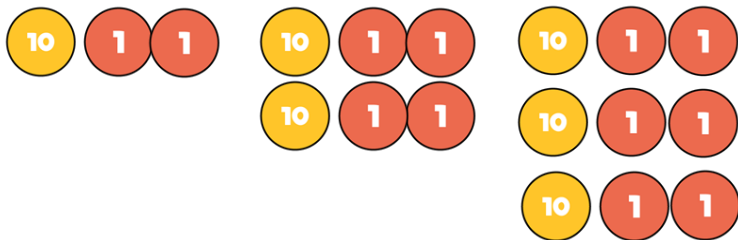
Look for patterns in the eleven times table, using concrete manipulatives to support. Notice the pattern in the tens and ones using the hundred square to support. Also consider the pattern after crossing 100

Skill: 12 times table

Year: 4

12	24	36	48	60
72	84	96	108	120
132	144			

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100



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.

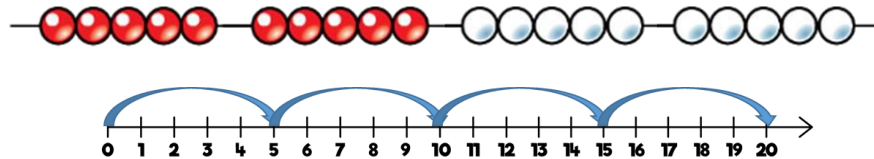
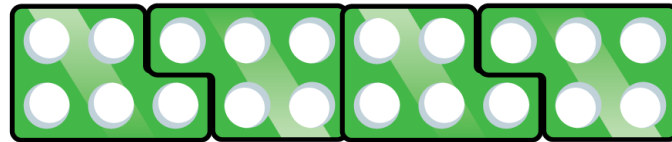
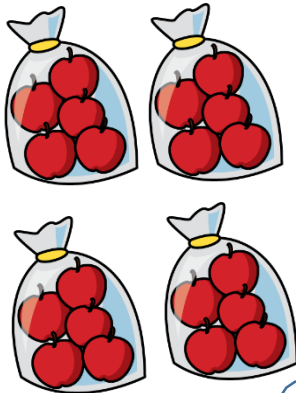
Multiplication

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

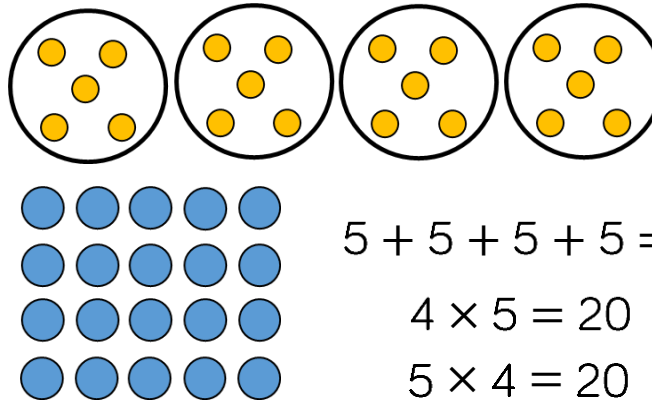
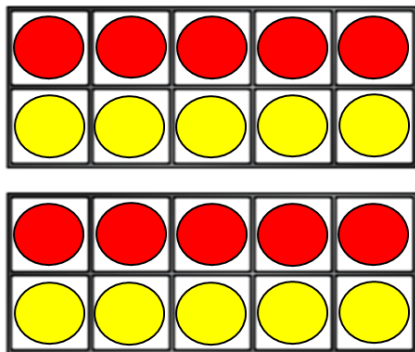
Skill	Year	Representations and models
Multiply 2-digit by 2-digit numbers	5	Short written method Grid method
Multiply 2-digit by 3-digit numbers	5	Short written method Grid method
Multiply 2-digit by 4-digit numbers	5/6	Formal written method

Skill: Solve 1-step problems using multiplication

Year: 1/2



One bag holds 5 apples.
How many apples do 4 bags hold?



$$5 + 5 + 5 + 5 = 20$$

$$4 \times 5 = 20$$

$$5 \times 4 = 20$$

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 KS1, children are introduced to the multiplication symbols.

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

Year: 3/4

X	30	4
5	150	20

$$150 + 20 = 170$$

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

$$34 \times 5 = 170$$

	H	T	O	
		3	4	
x			5	
	1	7	0	
	1	2		

Teachers may decide to first look at the grid method, then the expanded column method before moving on to the short multiplication method.

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

Year: 4

X	200	40	5
4	800	160	20

$$\begin{array}{r} 800 \\ 160 \\ + 20 \\ \hline 980 \end{array}$$

$$245 \times 4 = 980$$

	H	T	O
	2	4	5
x			4
	9	8	0
	1	2	

When moving to 3 digit by 1 digit multiplication, encourage children to move towards the short, formal written method.

Skill: Multiply 4-digit numbers by 1-digit numbers

Year: 5

$$\begin{array}{r} 1826 \\ \times \quad 3 \\ \hline 18 \\ 60 \\ 2400 \\ + 3000 \\ \hline 5468 \\ \hline \end{array}$$

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

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

If children are multiplying larger numbers and struggling with their time tables, encourage the use known fact cards (KFC), so children can focus on the use of written methods.

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

Year: 5

$$22 \times 31 = 682$$

x	20	2
30	600	60
1	20	2

	H	T	O
		2	2
x		3	1
<hr/>			
		2	2
	6	6	0
<hr/>			
	6	8	2

When multiplying a multi-digit number by 2 digits, use the grid method as an initial written method, before moving onto the formal written multiplication method.

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

Year: 5

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

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

Th	H	T	O
	2	3	4
×		3	2
<hr/>			
	4	6	8
1	7	1	0
<hr/>			
7	4	8	8

When multiplying a 3 digit number by 2 digits, encourage children to move towards the formal written method, seeing the links with the grid method.

Skill: Multiply 4-digit numbers by 2-digit numbers

Year: 5/6

$$2,739 \times 28 = 76,692$$

X	2000	700	30	9
20	40000	14000	600	180
8	16000	5600	240	72

40000	16000
14000	5600
600	240
+ 180	+ 72
<u>54780</u>	<u>21912</u>
	1 1

$$54,780 + 21,912 = 76,692$$

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

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.

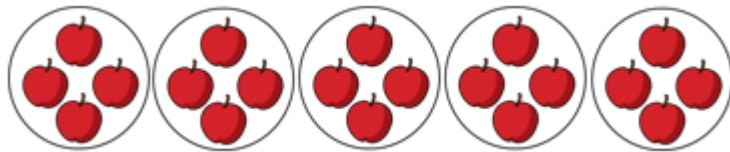
Division

dividend divisor quotient

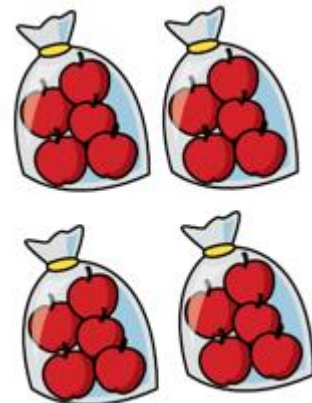
↓ ↓ ↓

$$20 \div 5 = 4$$

20 apples \div 5 bags = 4 apples per bag – Sharing



20 apples \div 5 apples per bag = 4 bags - Grouping



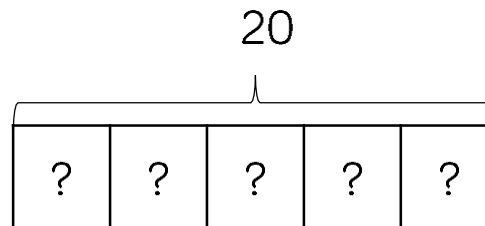
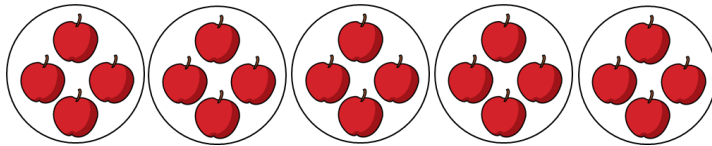
Skill	Year	Representations and models	
Solve one-step problems with division (sharing)	1/2	Bar model Real life objects	Arrays Counters
Solve one-step problems with division (grouping)	1/2	Real life objects Numicon Bead strings Ten frames	Number lines Arrays Counters
Divide 2-digits by 1-digit (no exchange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

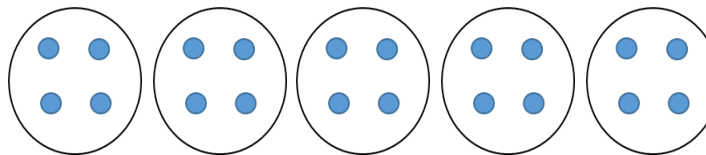
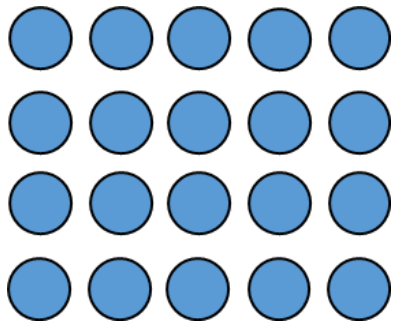
Skill	Year	Representations and models	
Divide 4-digits by 1-digit (grouping)	5	Place value counters Counters	Place value grid Written short division
Divide multi-digits by 2-digits (short division)	6	Written short division	List of multiples
Divide multi-digits by 2-digits (long division)	6	Written long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

Skill: Solve 1-step problems using multiplication (sharing)

Year: 1/2



There are 20 apples altogether.
They are shared equally between 5 bags.
How many apples are in each bag?



$$20 \div 5 = 4$$

Children solve problems by sharing amounts into equal groups.

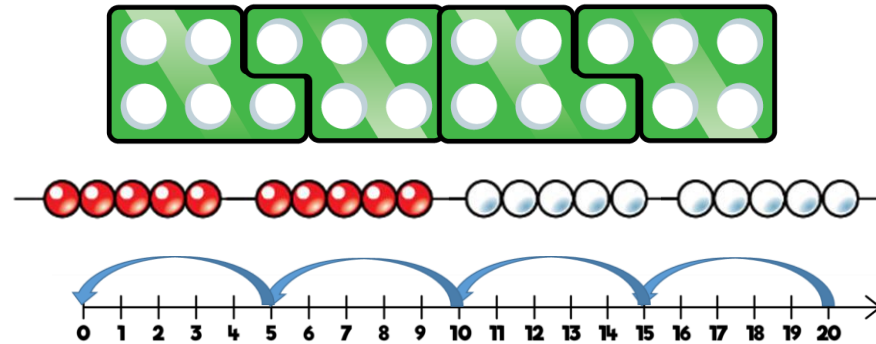
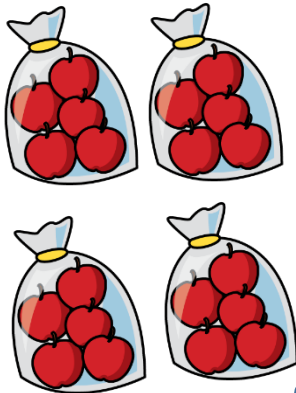
In Year 1, children use concrete and pictorial representations to solve problems.

They are not expected to record division formally.

In Year 2, children are introduced to the division symbol.

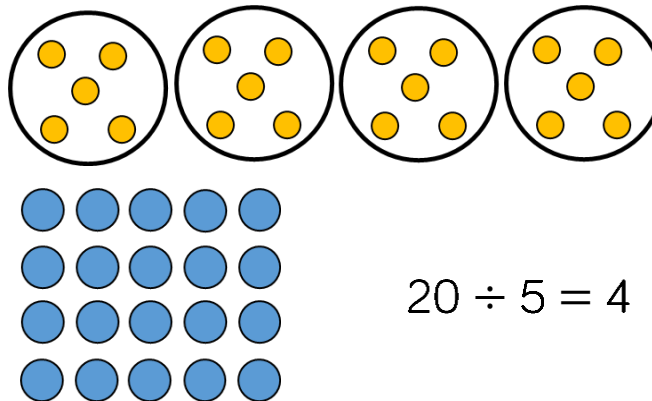
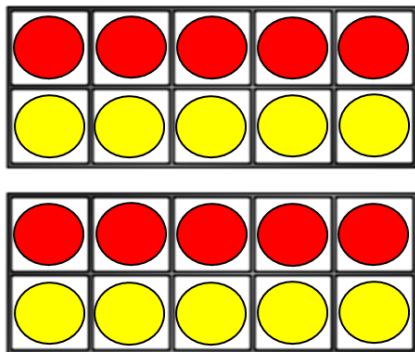
Skill: Solve 1-step problems using division (grouping)

Year: 1/2



There are 20 apples altogether.
They are put in bags of 5.
How many bags are there?

grouping







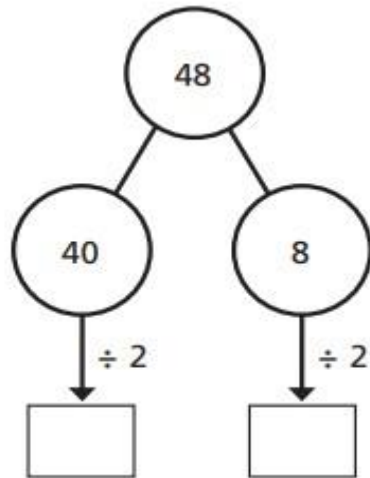
$$20 \div 5 = 4$$

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.

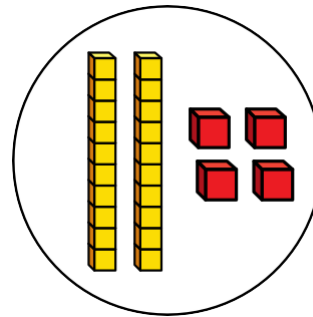
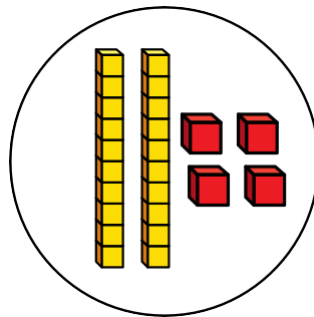
Skill: Divide 2-digits by 1-digit (sharing with no exchange)

Year: 2

Tens	Ones
	
	



$$48 \div 2 = 24$$



When dividing larger numbers, children can use manipulatives that allow them to partition into tens and ones.

Part-whole models can provide children with a clear written method that matches the concrete representation.

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

Year: 3/4

$$95 \div 5 = 19$$

KFC (known fact card)

1	5
2	10
4	20
8	40
10	50
5	25

$$\begin{array}{r}
 \textcircled{19} \\
 5 \overline{) 95} \\
 \underline{- 50} \quad (\times 10) \\
 45 \\
 \underline{- 40} \quad (\times 8) \\
 5 \\
 \underline{- 5} \quad (\times 1) \\
 0
 \end{array}$$

$$10 + 8 + 1 = \textcircled{19}$$

When dividing numbers involving exchange, children can use KFC (known fact cards) to chunk off parts of the number and help them solve the calculations.

Calculations should involve facts that are expected to be known in that year group, for example –

Year 2 – $x \div 2$, 5 and 10

Year 3 – $x \div 2$, 5, 10, 4, 8 and 3

Year 4 onwards – all $x \div$ to 12

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

Year: 3/4

$$53 \div 4 = 13 \text{ r}1$$

KFC (known fact card)

1	4
2	8
4	16
8	32
10	40
5	20

$$\begin{array}{r} 4 \overline{) 53} \\ \underline{- 40} \quad (\times 10) \\ 13 \\ \underline{- 12} \quad (\times 3) \\ 1 \quad (\text{r } 1) \end{array}$$

$10 + 3 = 13$

When dividing numbers involving remainders, children can use KFC (known fact cards) to chunk off parts of the number and help them solve the calculations.

Calculations should involve facts that are expected to be known in that year group, for example –

Year 2 – $x \div 2$, 5 and 10

Year 3 – $x \div 2$, 5, 10, 4, 8 and 3

Year-4 onwards – all $x \div$ to 12

Skill: Divide 3 or 4 digits by 1 digit (grouping)

Year: 5

$$856 \div 4 = 214$$

KFC (known fact card)

1	4
2	8
4	16
8	32
10	40
5	20

$$\begin{array}{r}
 \textcircled{214} \\
 4 \overline{) 856} \\
 \underline{- 400} \quad (\times 100) \\
 456 \\
 \underline{- 400} \quad (\times 100) \\
 56 \\
 \underline{- 40} \quad (\times 10) \\
 16 \\
 \underline{- 16} \quad (\times 4) \\
 0
 \end{array}$$

$$100 + 100 + 10 + 4 = \textcircled{214}$$

	2	1	4
4	8	5	16

Children can continue to use KFC (known fact cards) to chunk off parts of the number to support their understanding of short division.

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

Skill: Divide multi digits by 2 digits

Year: 5/6

$$432 \div 12 = 36$$

$$\begin{array}{r}
 \textcircled{36} \\
 12 \overline{) 432} \\
 \underline{- 360} \quad (\times 30) \\
 72 \\
 \underline{- 72} \quad (\times 6) \\
 0
 \end{array}$$

$$30 + 6 = \textcircled{36}$$

KFC (known fact card)

1	12
2	24
4	48
8	96
10	120
5	60

		0	3	6
	12	4	⁴ 3	⁷ 2

When dividing up to 4 digits by 2 digits, written method becomes the most accurate as concrete and pictorial representations become less effective. Children can continue to use KFC (known fact cards) to help 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

		0	3	6
1	2	4	3	2
	-	3	6	0
			7	2
	-		7	2
				0

(x30)

$$12 \times 1 = 12$$

$$12 \times 2 = 24$$

$$12 \times 3 = 36$$

$$12 \times 4 = 48$$

$$12 \times 5 = 60$$

(x6)

$$12 \times 6 = 72$$

$$12 \times 7 = 84$$

$$12 \times 8 = 96$$

$$12 \times 7 = 108$$

$$12 \times 10 = 120$$

$$432 \div 12 = 36$$

$$7,335 \div 15 = 489$$

		0	4	8	9
15		7	3	3	5
	-	6	0	0	0
		1	3	3	5
	-	1	2	0	0
			1	3	5
	-		1	3	5
					0

(x400)

$$1 \times 15 = 15$$

$$2 \times 15 = 30$$

$$3 \times 15 = 45$$

$$4 \times 15 = 60$$

$$5 \times 15 = 75$$

(x80)

$$10 \times 15 = 150$$

(x9)

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

$$372 \div 15 = 24 \text{ r}12$$

			2	4	r	1	2
1	5	3	7	2			
	-	3	0	0			
			7	2			
	-		6	0			
			1	2			

- $1 \times 15 = 15$
- $2 \times 15 = 30$
- $3 \times 15 = 45$
- $4 \times 15 = 60$
- $5 \times 15 = 75$
- $10 \times 15 = 150$

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.

			2	4	$\frac{4}{5}$
1	5	3	7	2	
	-	3	0	0	
			7	2	
	-		6	0	
			1	2	

$$372 \div 15 = 24 \frac{4}{5}$$