WOODLAND VIEW PRIMARY SCHOOL

Multiplication and Division

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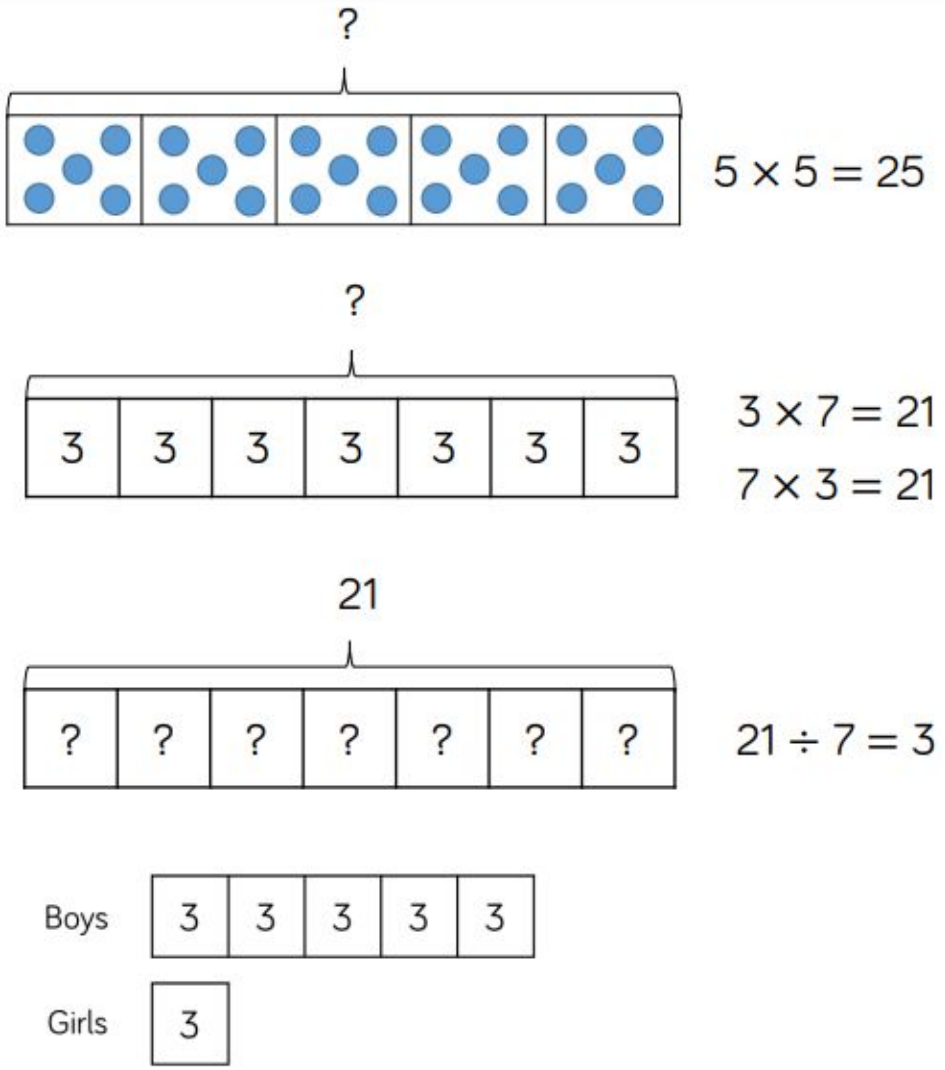
Bar model



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.

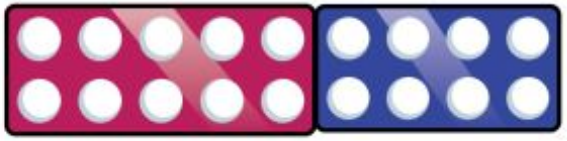
It is important when solving word problems that the bar model represents the problem.

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.

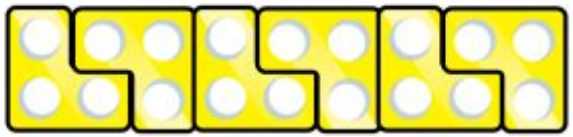
Numicon

$5 \times 4 = 20$
$4 \times 5 = 20$

$5 \times 4 = 20$
$4 \times 5 = 20$



$18 \div 3 = 6$



Numicon 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, numicon supports 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

$5 \times 3 = 15$
$3 \times 5 = 15$

$15 \div 3 = 5$

$5 \times 3 = 15$
$3 \times 5 = 15$

$15 \div 5 = 3$

$4 \times 5 = 20$
$5 \times 4 = 20$

$20 \div 4 = 5$

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.

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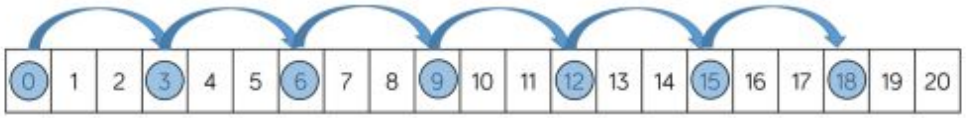
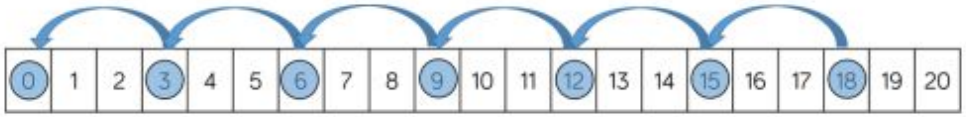
Number tracks



$6 \times 3 = 18$

$3 \times 6 = 18$



$18 \div 3 = 6$

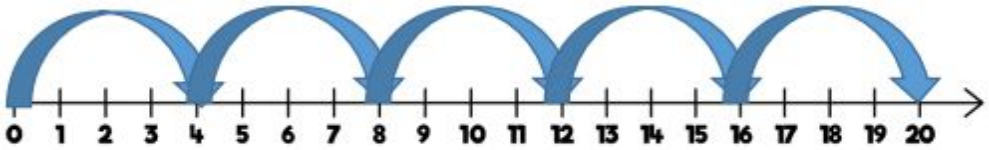
Number tracks are useful to support children to count in multiples, forwards and backwards. Moving counters or cubes along the number track can support children to keep track of their counting. Translucent counters help children to see the number they have landed on whilst counting.

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.

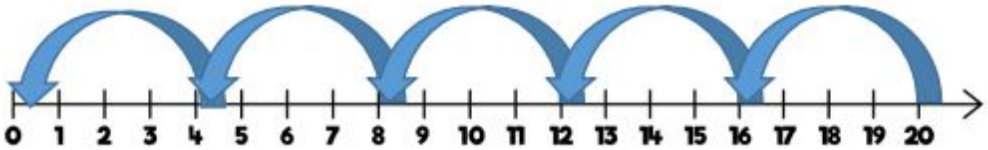
Number tracks can be useful with smaller multiples but when reaching larger numbers they can become less efficient.

Number lines (labelled)



$4 \times 5 = 20$

$5 \times 4 = 20$



$20 \div 4 = 5$

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

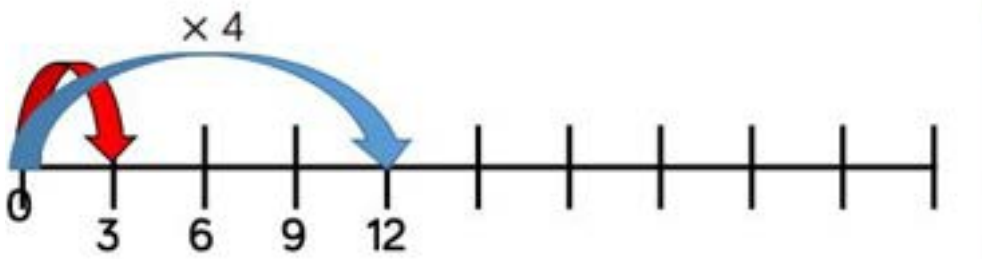
When multiplying, children start at 0 and then count on to find the product of the numbers.

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.

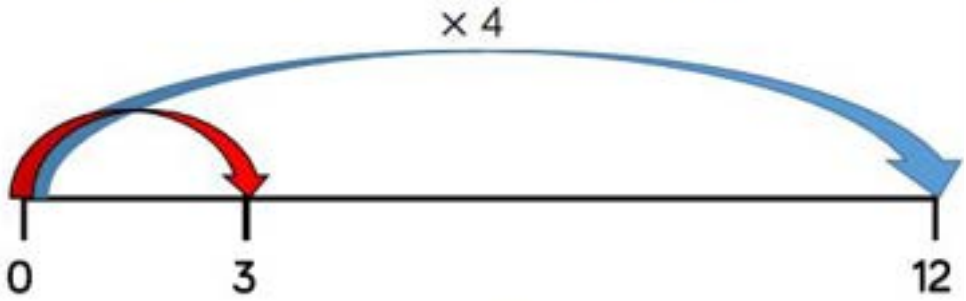
Children record how many jumps they have made to find the answer to the division.

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?

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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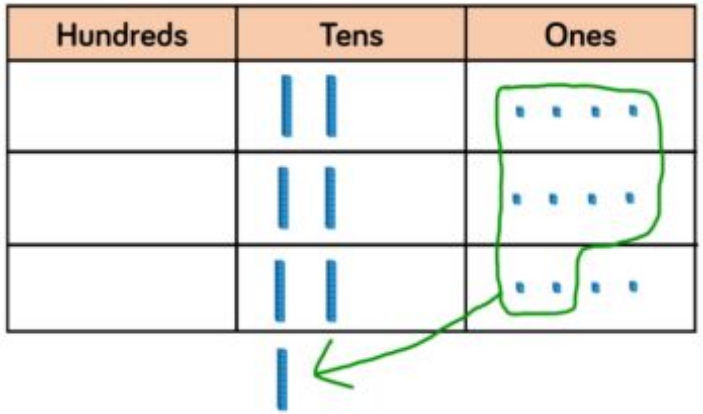
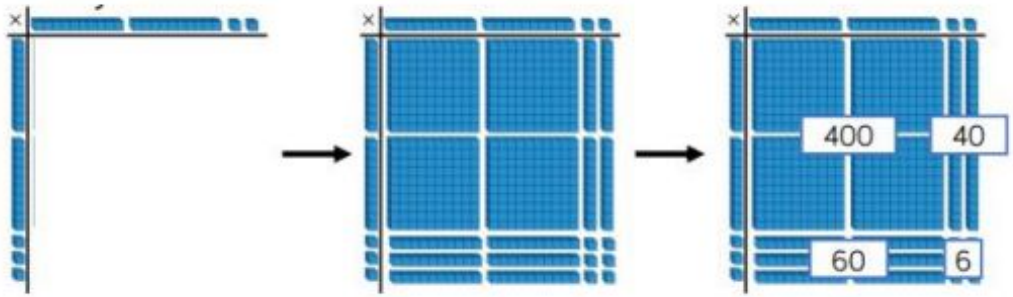
Base 10/Dienes (multiplication)



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



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.

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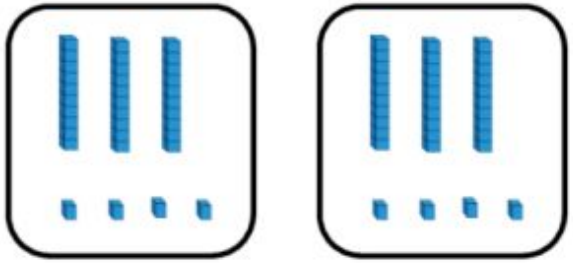
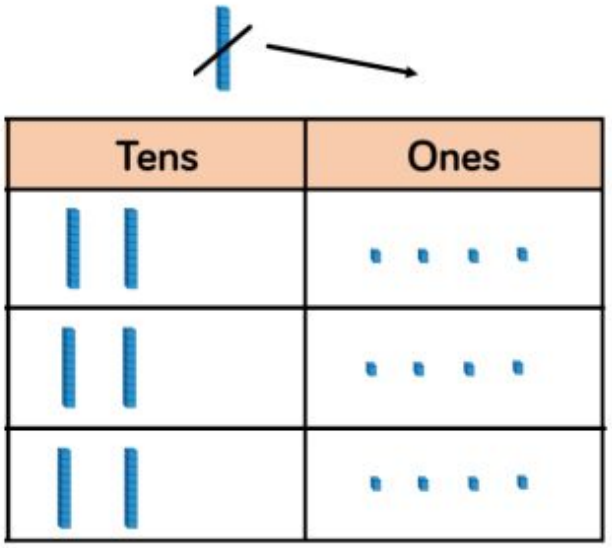
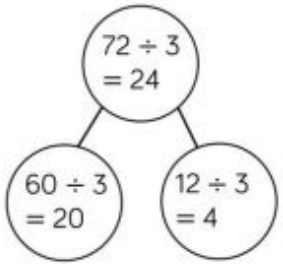
Base 10/Dienes (division)



$68 \div 2 = 34$



$72 \div 3 = 24$



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.

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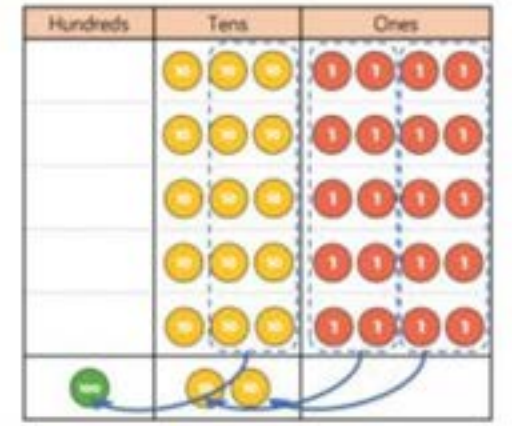
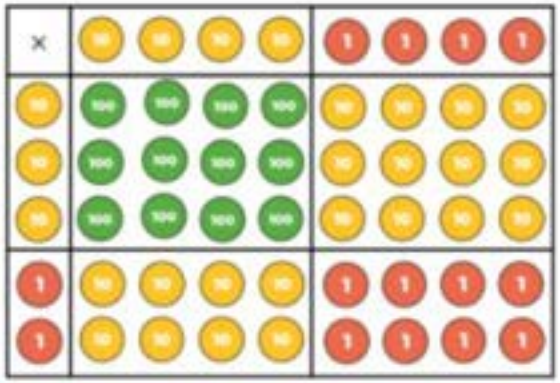
Place value counters (multiplication)



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



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

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.

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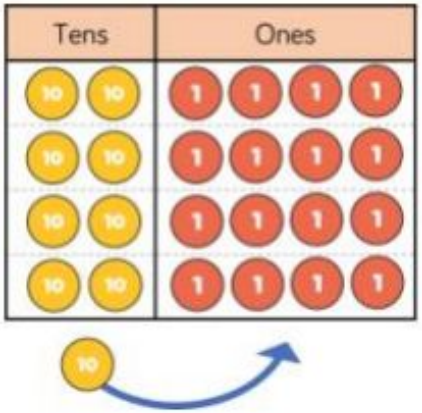
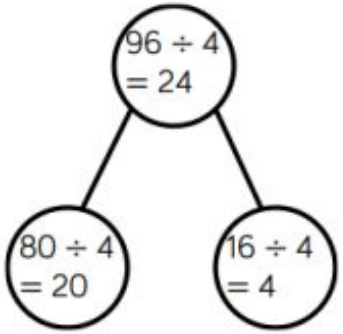
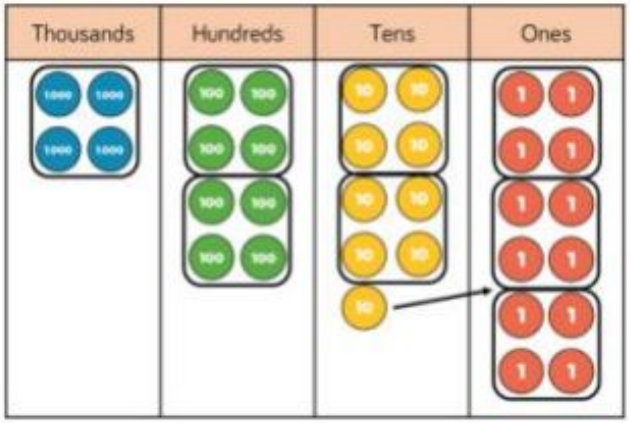
Place value counters (division)







$$\begin{array}{r} 1223 \\ 4\overline{)\,4892^{1}} \end{array}$$

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 leftover 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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Times Tables

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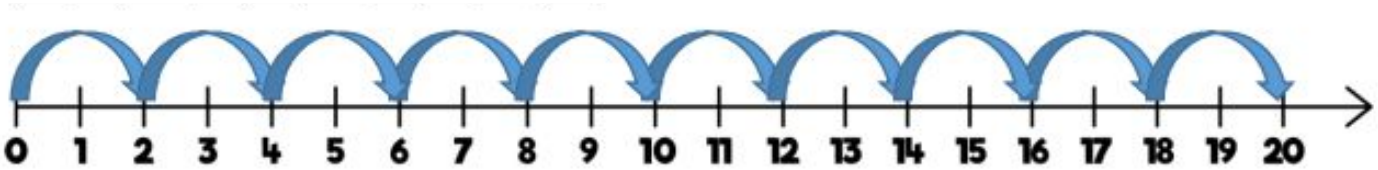
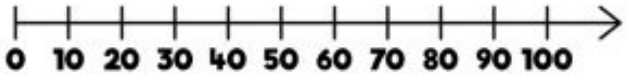
Times Tables

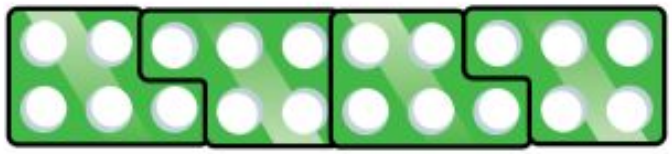
*See Approach to **Times Tables at Woodland View** for further details about how Times Tables are taught and when they are introduced.*

Skill - Recall and use multiplications facts for…	Year group	Representation
Count in steps of 2, 5, 10	FS/1	Numicon, counters, number lines, real-life objects
The 2-times table	2	Bar model, counters, money, ten frames, number lines, everyday objects
The 5-times table	2	
The 10-times table	2	Bar model, ounters, money, ten frames, number lines, base 10
The 4-times table	3	Hundred square, numicon, counters, bead strings, number lines, everyday objects
The 8-times table	3	
The 3-times table	3	
The 6-times table	3	
The 12-times table	3/4	Hundred square, base 10, place value counters, number lines
The 9-times table	4	
The 7-times table	4	
The 11-times table	4	

Skill: Count in steps of 2, 5, 10







FS/Year 1

Encourage counting in multiples forwards.

This can be supported using a number line or number shapes.

Look for patterns in the numbers that they are counting.

Notice how all the numbers are even when counting in 2s, that when you count in tens, they all end in 0 etc.

Use different models to develop fluency.

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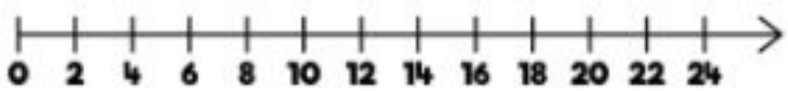
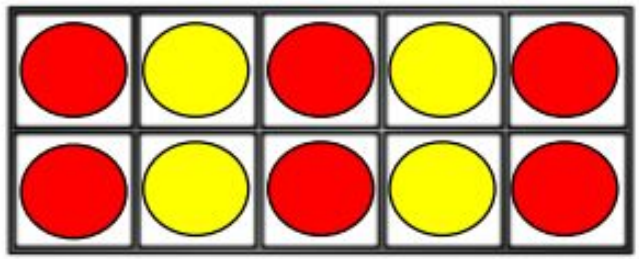
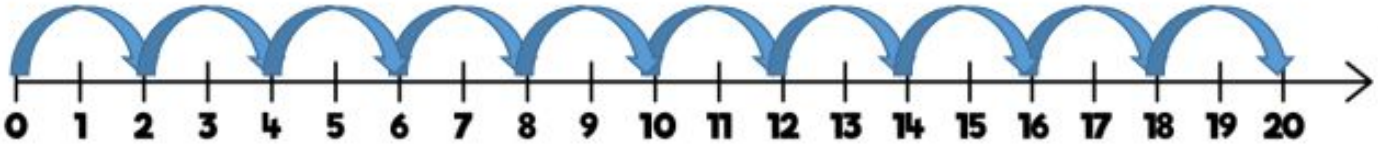
Skill: The 2-times table



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





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.

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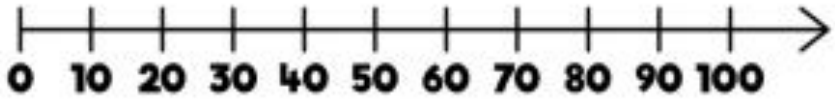
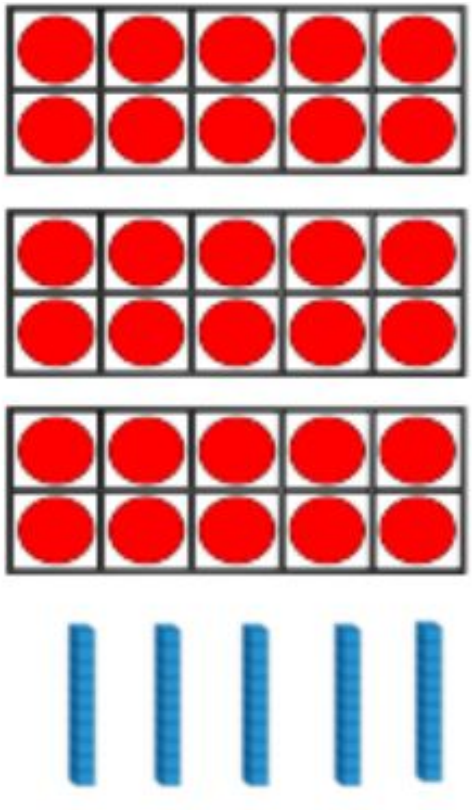
Skill: The 10-times table





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

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.

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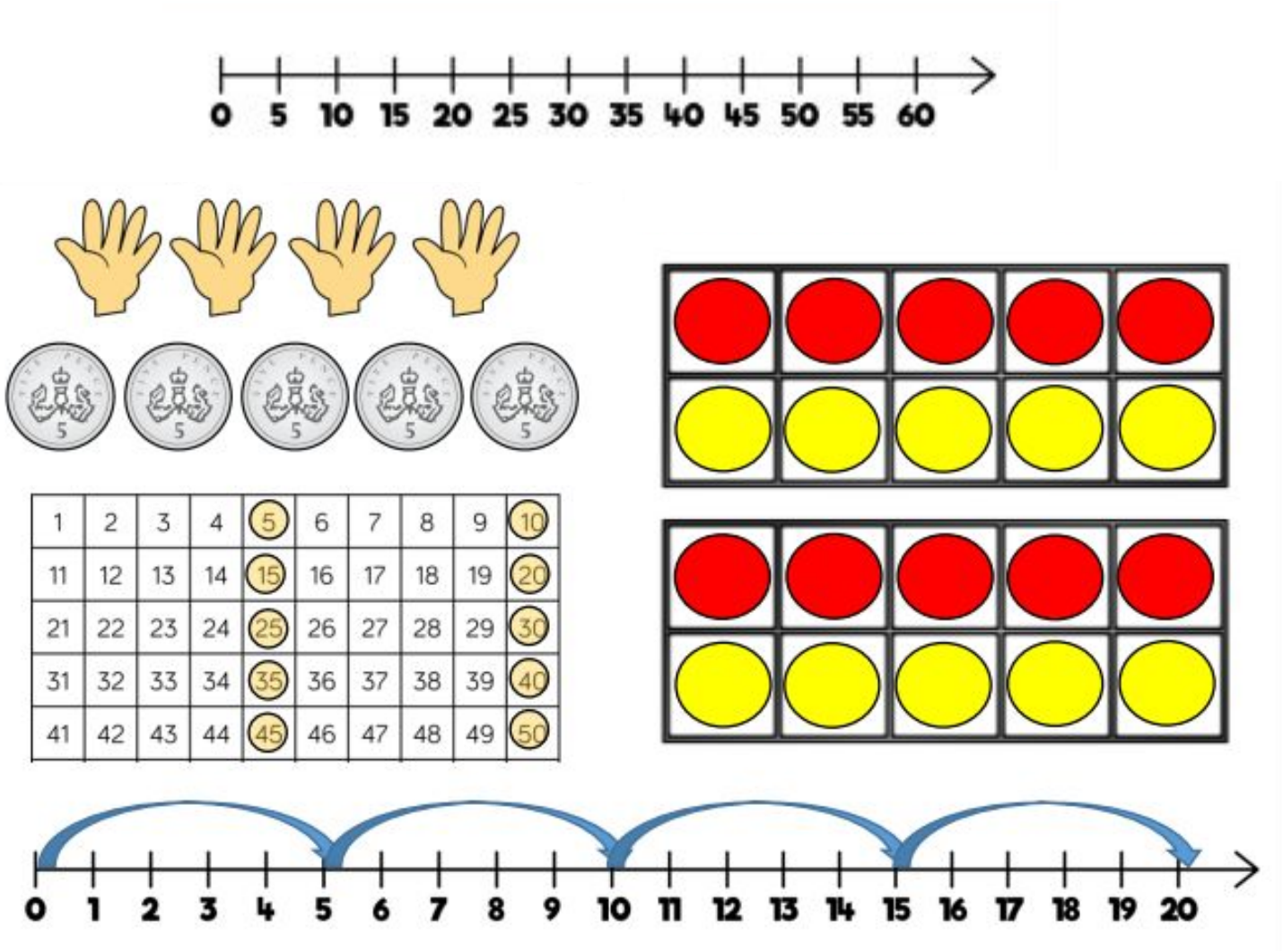
Skill: The 5-times table



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.

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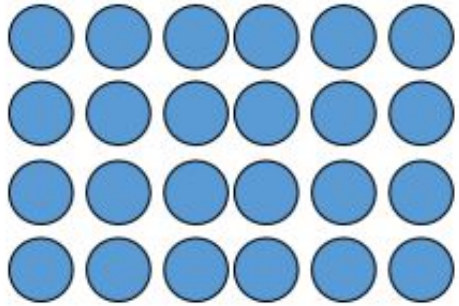
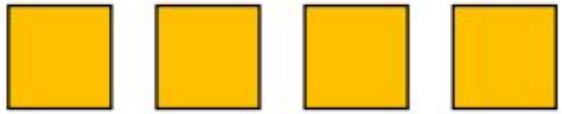
Skill: The 4-times table

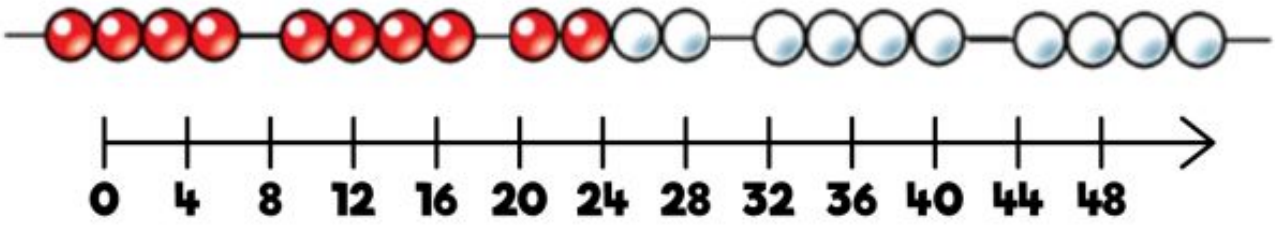


1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50



4 8 12 16

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



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.

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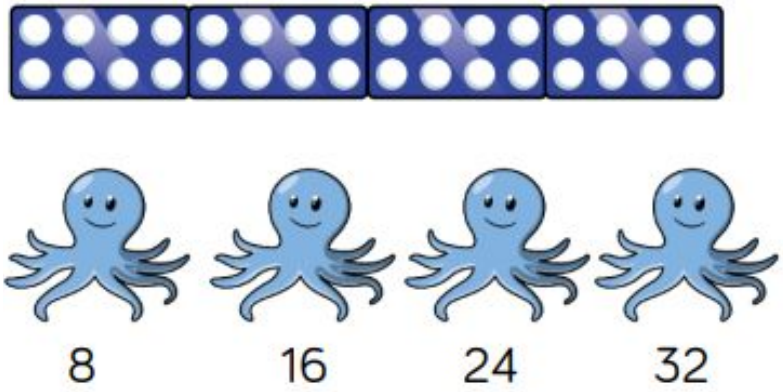
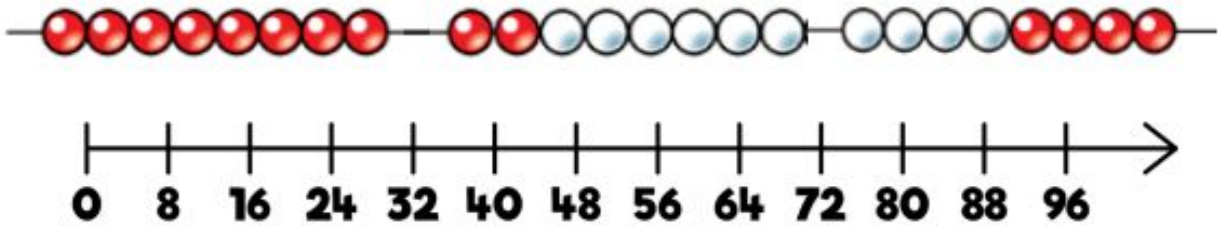
Skill: The 8-times table



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

8	16	24	32	40
48	56	64	72	80



Year 2

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.

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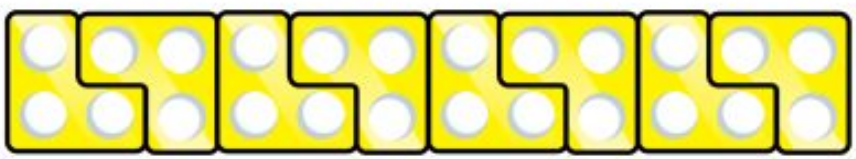
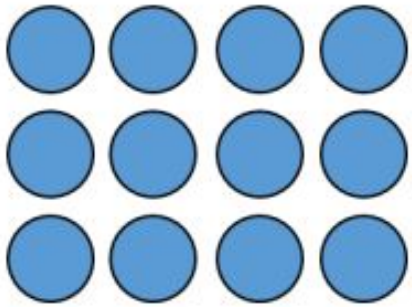
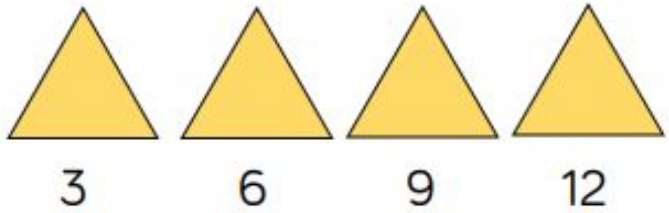
Skill: The 3-times table





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



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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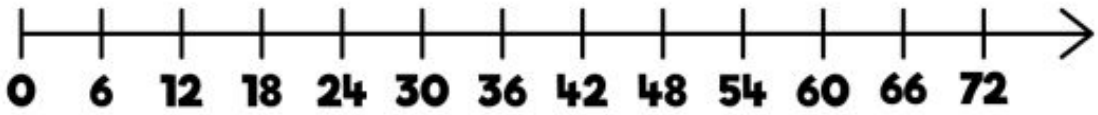
Skill: The 6-times table

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



Year 3

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.

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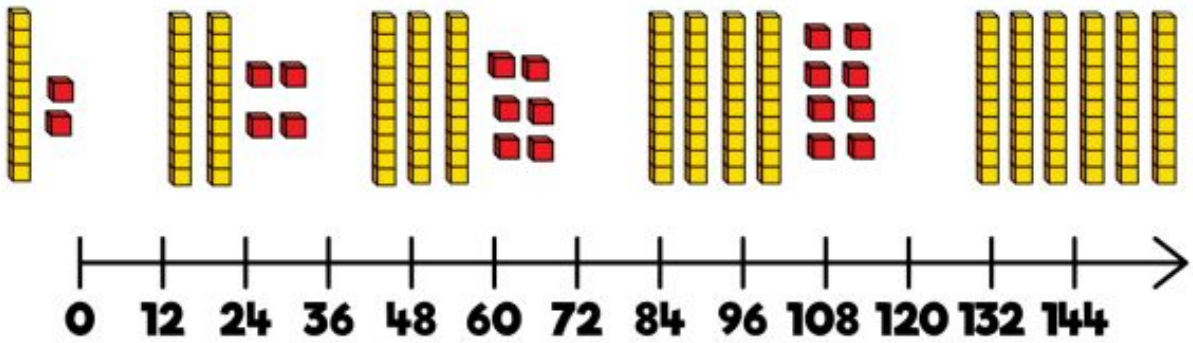
Skill: The 12-times table

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



Year 3/4

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.

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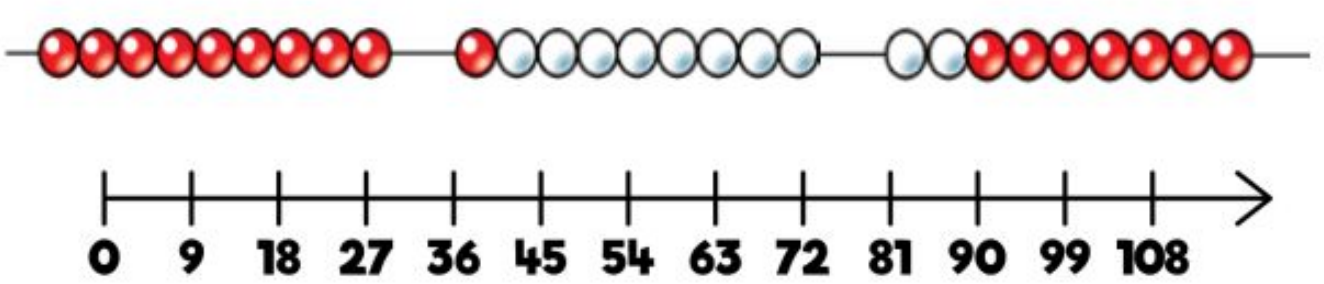
Skill: The 9-times table

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



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.

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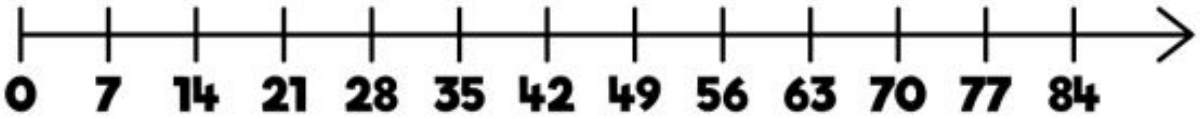
Skill: The 7-times table

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



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.

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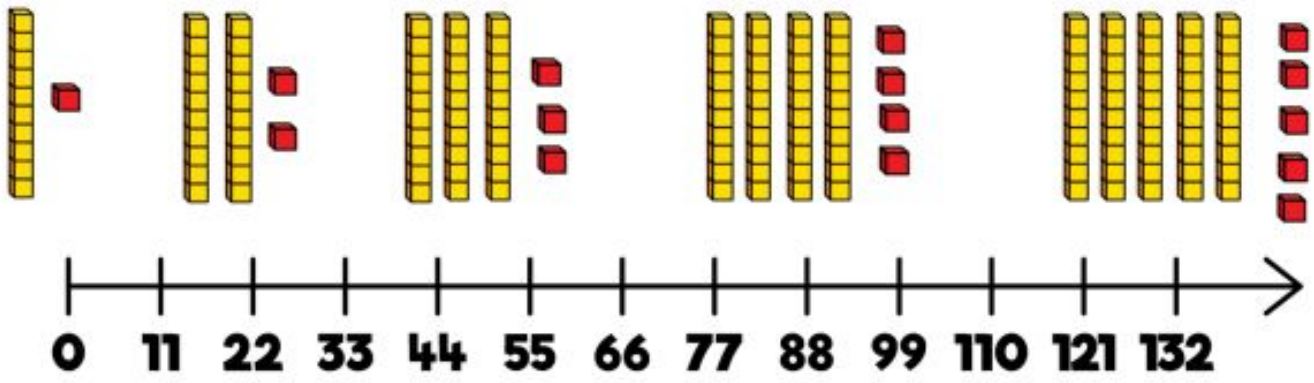
Skill: The 11-times table

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



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

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Multiplication

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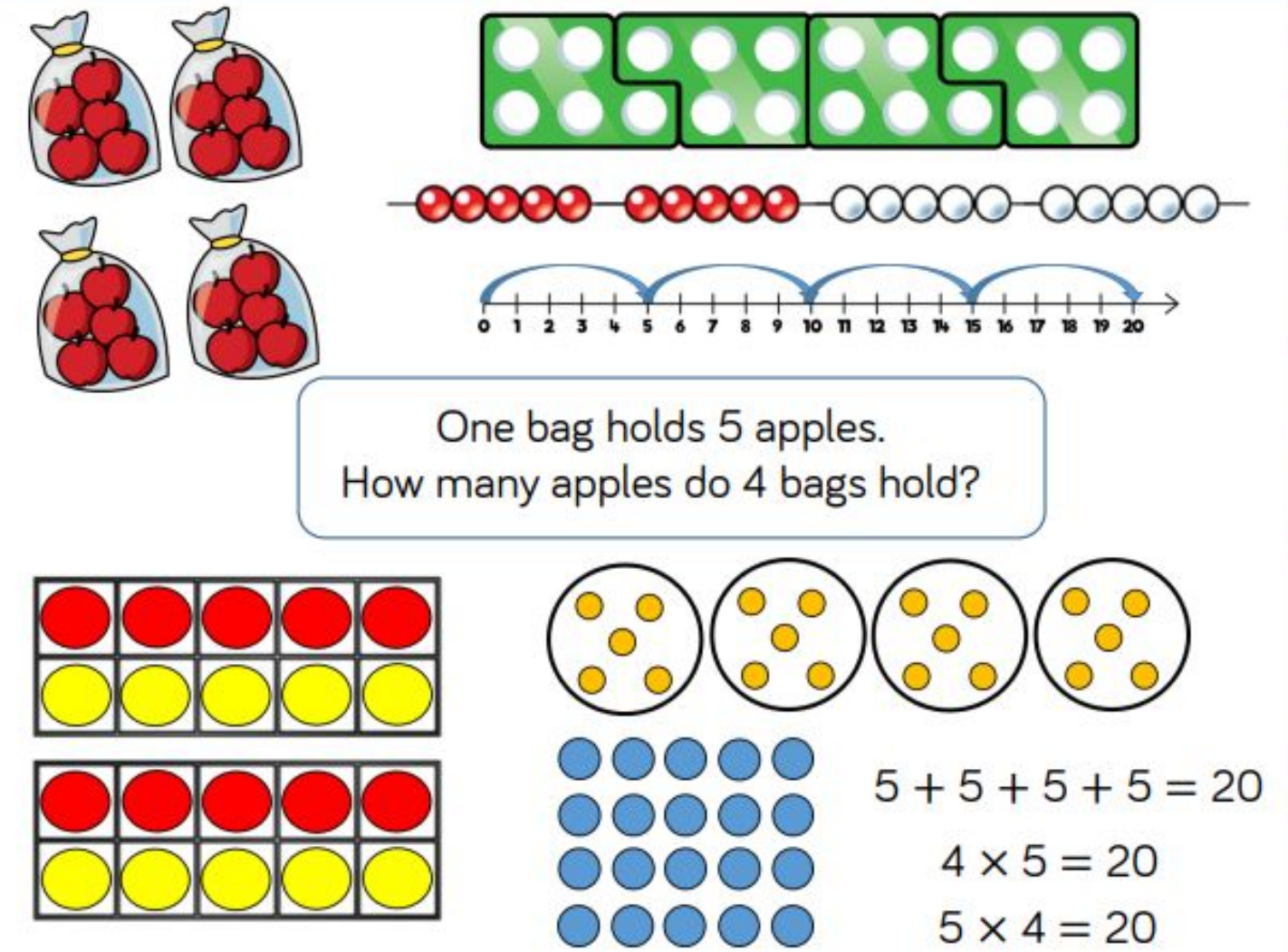
Multiplication

Skill	Year group	Representation
Count in steps of 2, 5 and 10	FS/Y1	*See skills in Times table section of policy*
Solve 1-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, expanded written method, short written method
Multiply 3-digit by 1-digit numbers	4	Place value counters, base 10, short written method
Multiply 4-digit by 1-digit number	5	Place value counters, short written method
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

Skill: Solve 1-step problems involving multiplication



Year 1/2

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.

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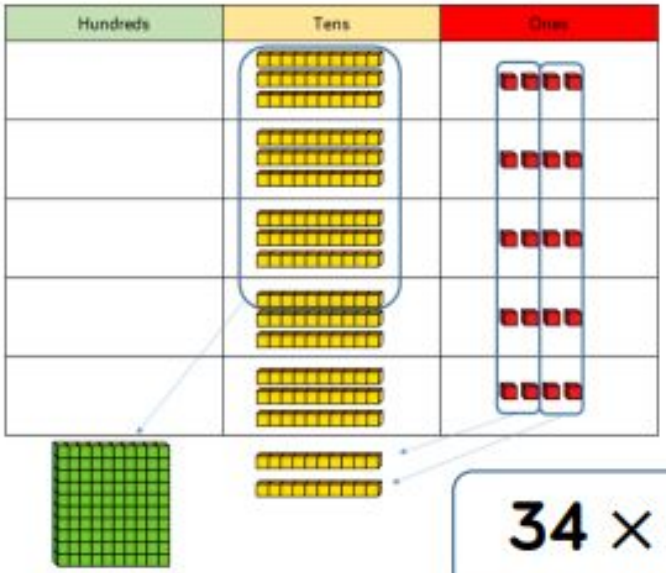
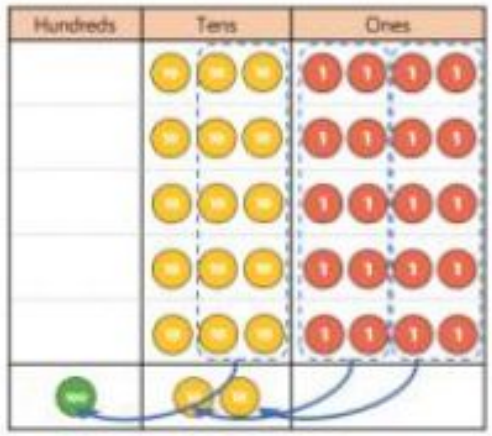
Skill: Multiply 2-digit numbers by 1-digit numbers



	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		



Year 3/4

Informal methods and the expanded method are used in Year 3 before moving on to the short multiplication method in Year 4. 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.

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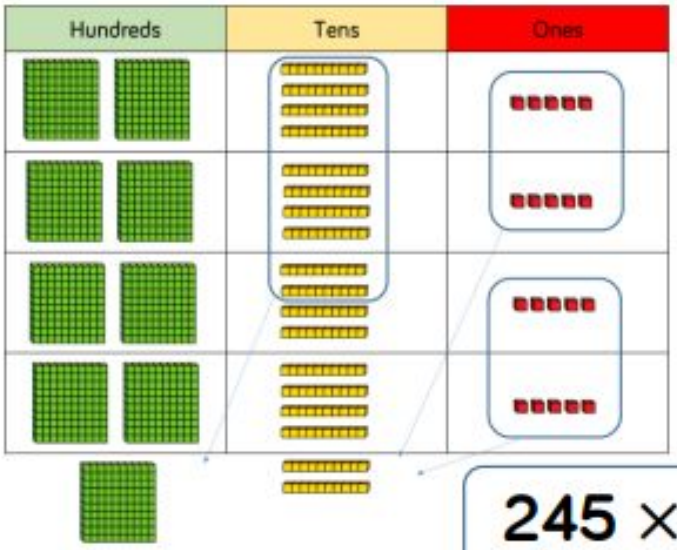
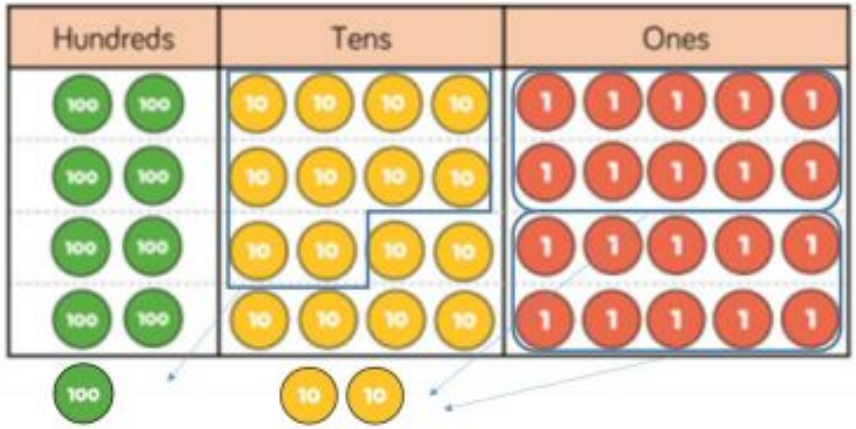
Skill: Multiply 3-digit numbers by 1-digit numbers



	H	T	O
	2	4	5
×			4
	9	8	0
	1	2	

$$245 \times 4 = 980$$



Year 4

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.

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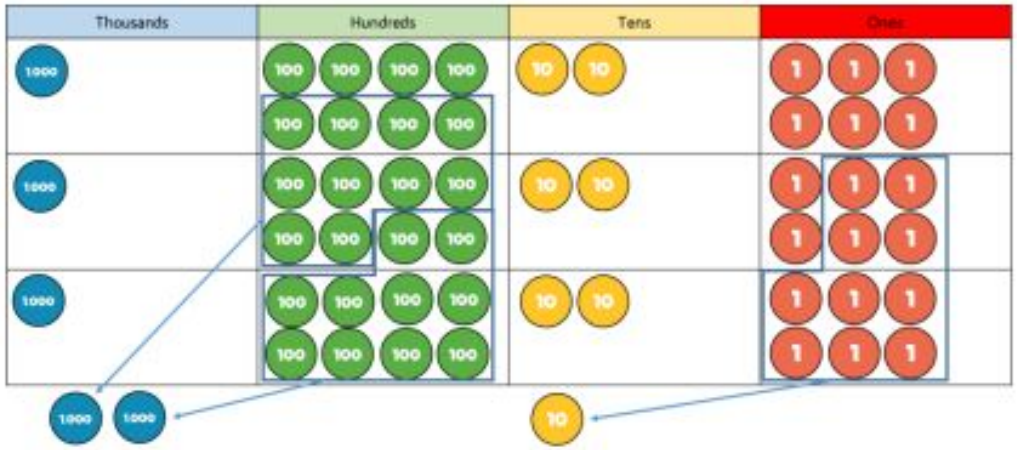
Skill: Multiply 4-digit numbers 1-digit numbers



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

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

Year 5

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.

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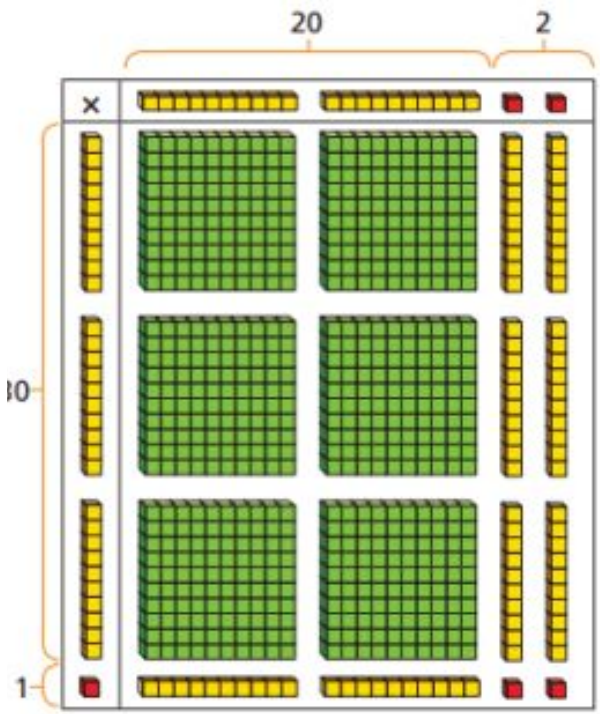
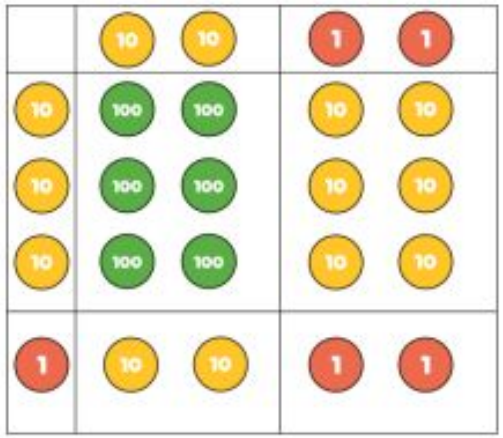
Skill: Multiply 2-digit numbers by 2-digit numbers





×	20	2
30	600	60
1	20	2

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

$22 \times 31 = 682$

Year 5

When multiplying a multi-digit number by 2-digits, use the area /grid model to help children understand the size of the numbers they are using. This links to finding the area of a rectangle by finding the space covered by the Base 10.

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

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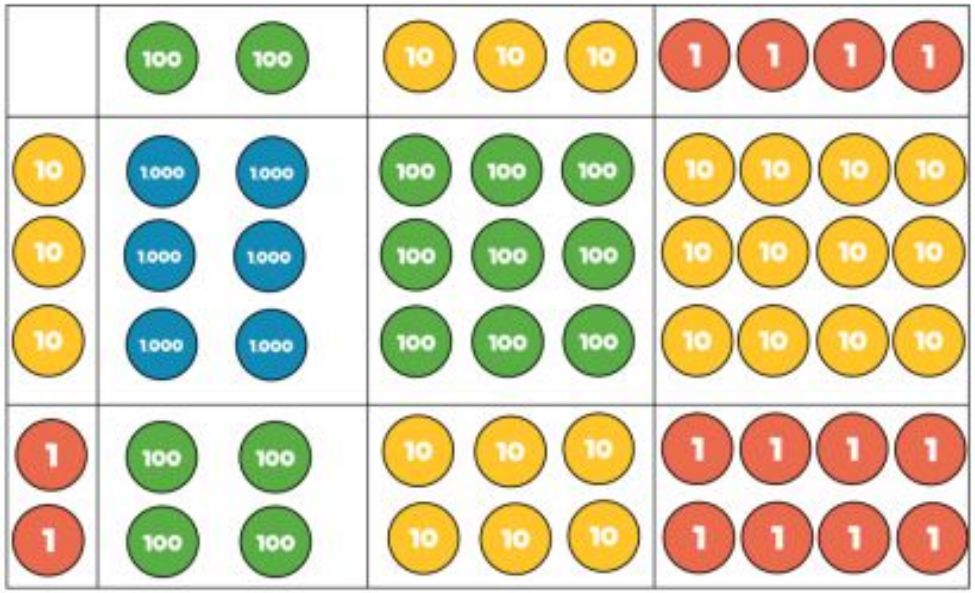
Skill: Multiply 3-digit numbers by 2-digit numbers



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

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

Year 5

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. Children should now move towards the formal written method, seeing the links with the grid method.

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

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

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

Year 5/6

When multiplying 4- digits by 2-digits, children should be confident in using the formal 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.

Exchanged digits should be placed below. Children will need to be taught how to write these clearly and neatly to ensure accuracy in calculations.

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Division

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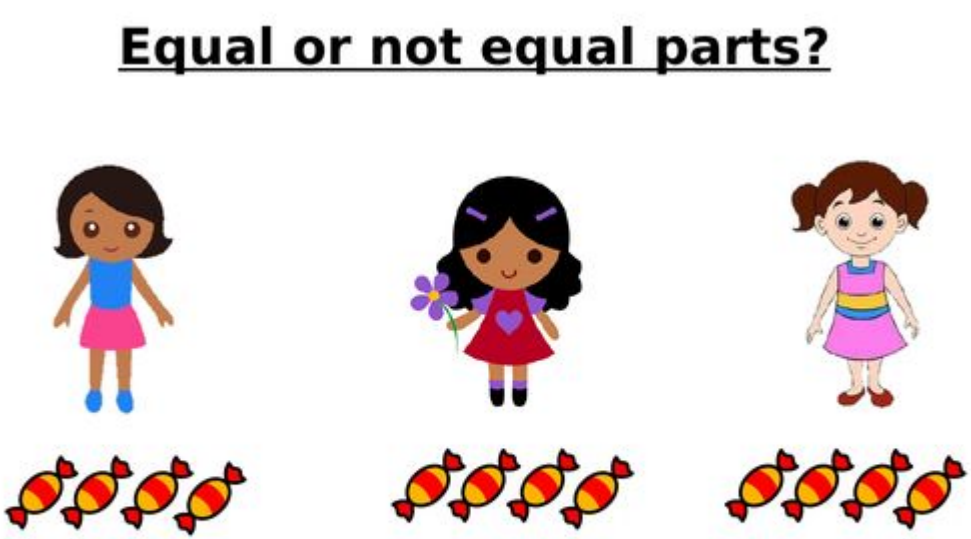
Division

Skill	Year group	Representation
Solve simple shapring problems	FS	Counters, real life objects, pictorial jottings
Solve 1-step problems with division (sharing)	1/2	Bar model, real life objects, arrays, counters
Solve 1-step problems with division (grouping)	1/2	Real life objects, 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
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

Division (continued)

Skill	Year group	Representation
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
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 short division, list of multiples

Skill: Solve simple sharing problems



FS

Children recognise when sharing is equal or not equal.

Children use real life objects to share items between themselves or to suit a purpose (e.g. buttons on a chocolate cake).

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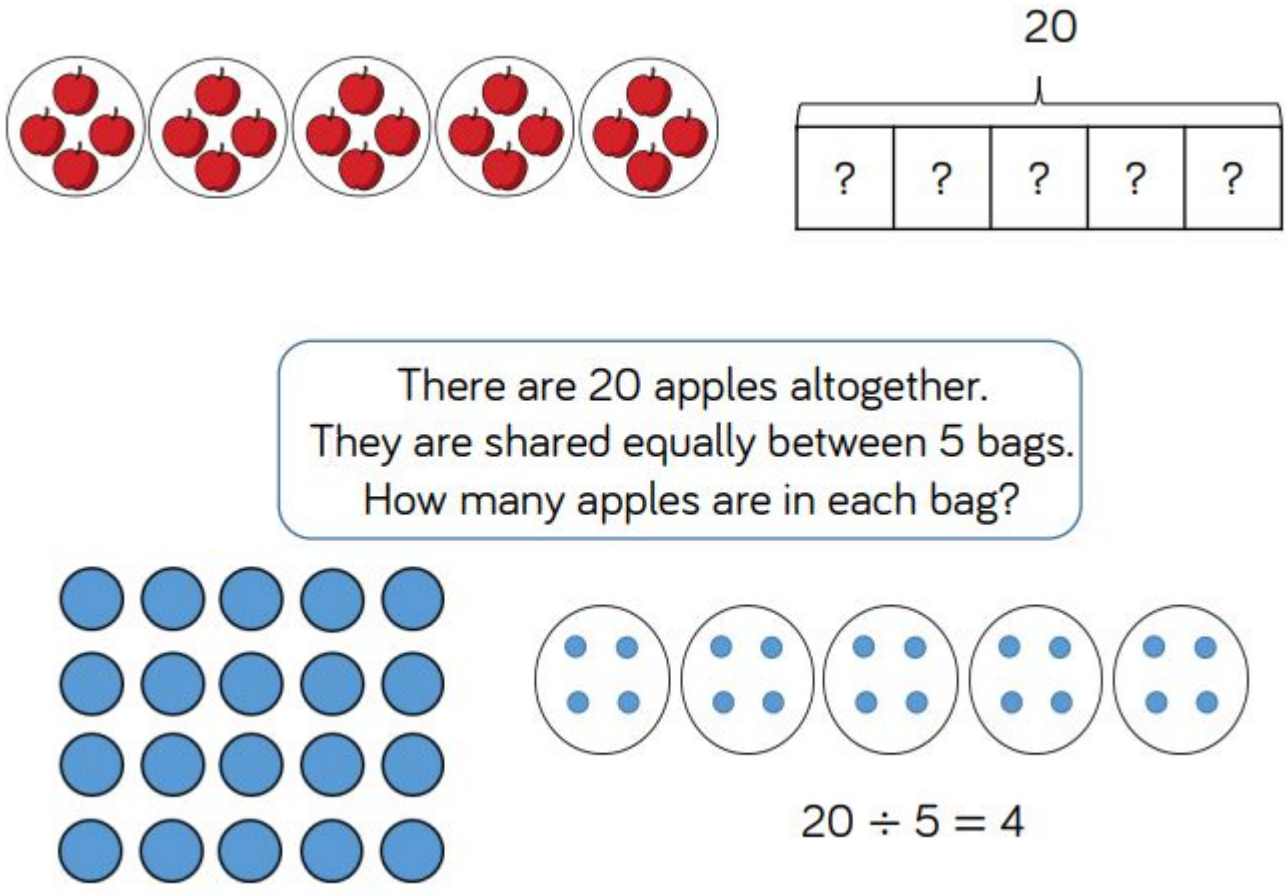
Skill: Solve 1-step problems using division (sharing)



Year 2

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.

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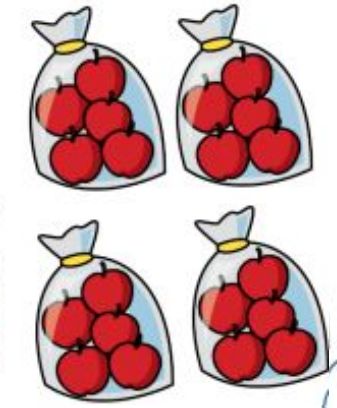
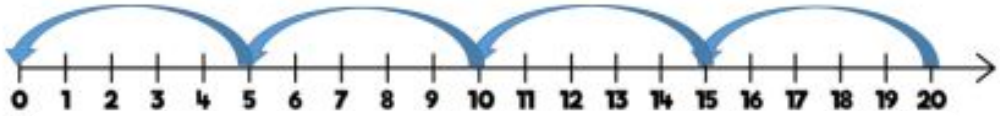
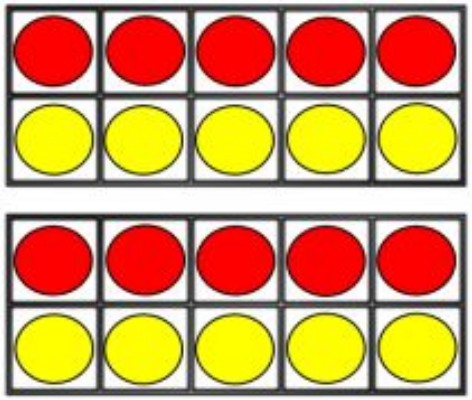
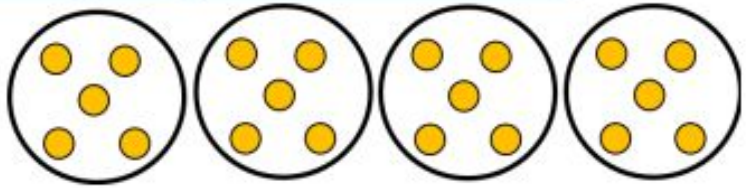
Skill: Solve 1-step problems using division (grouping)

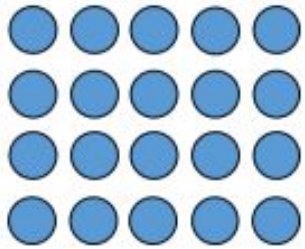




There are 20 apples altogether.
They are put in bags of 5.
How many bags are there?







$20 \div 5 = 4$

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.

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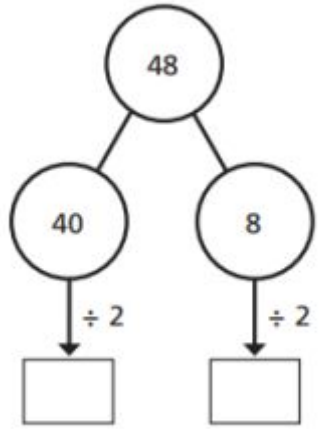
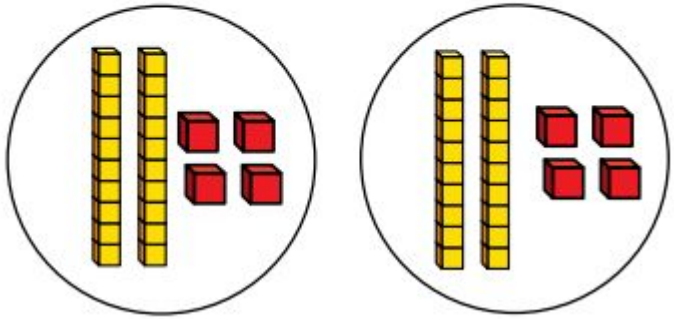
Skill: Divide 2-digits by 1-digit (sharing with no exchange)

Tens	Ones
10 10	1 1 1 1
10 10	1 1 1 1



$48 \div 2 = 24$



Year 1/2

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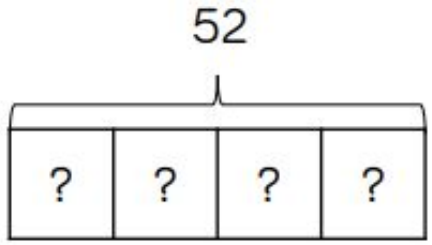
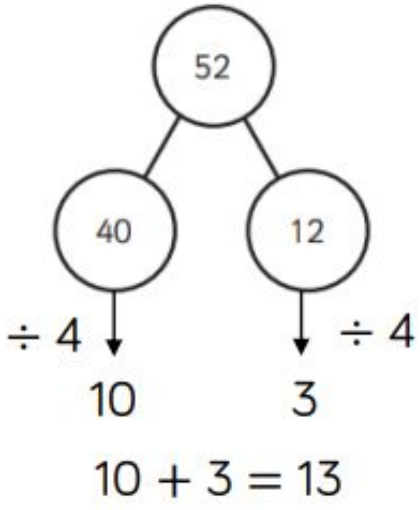
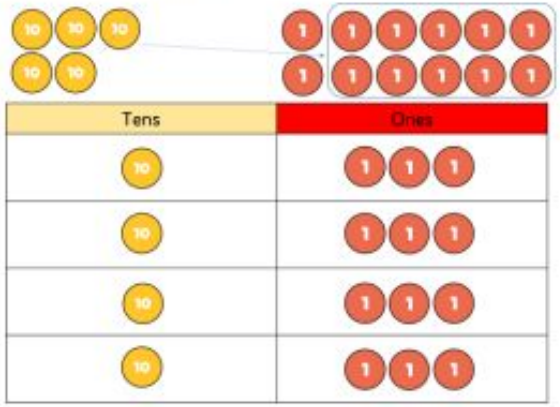
Skill: Divide 2-digits by 1-digit (sharing with exchange)



$$52 \div 4 = 13$$





Year 3/4

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.

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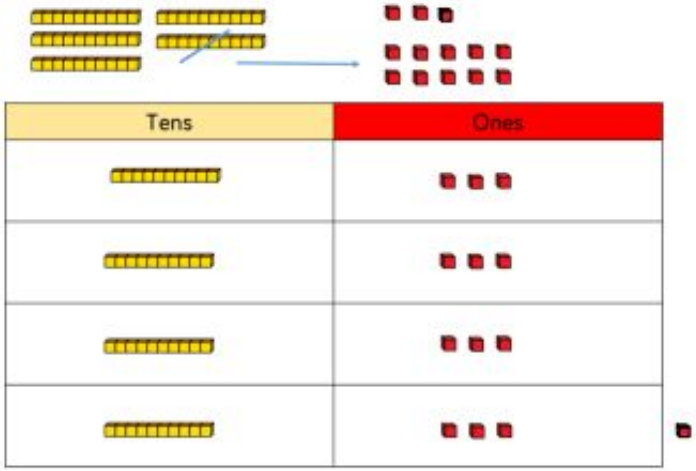
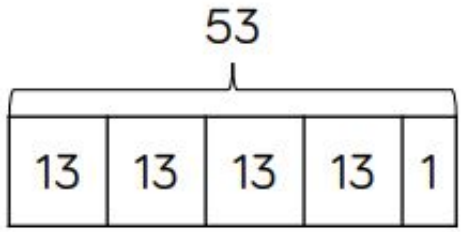
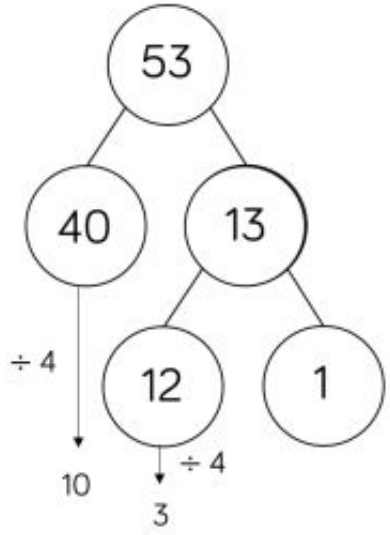
Skill: Divide 2-digits by 1-digit (sharing with remainders)







53 ÷ 4 = 13 r1

Year 3/4

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.

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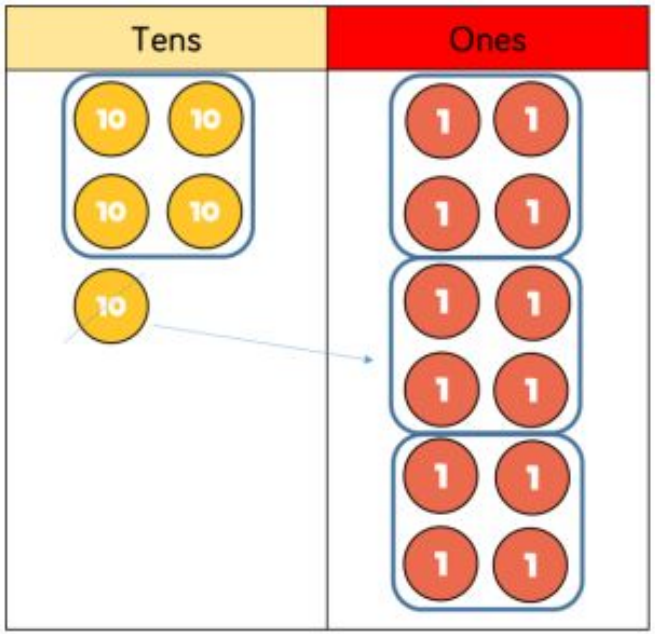
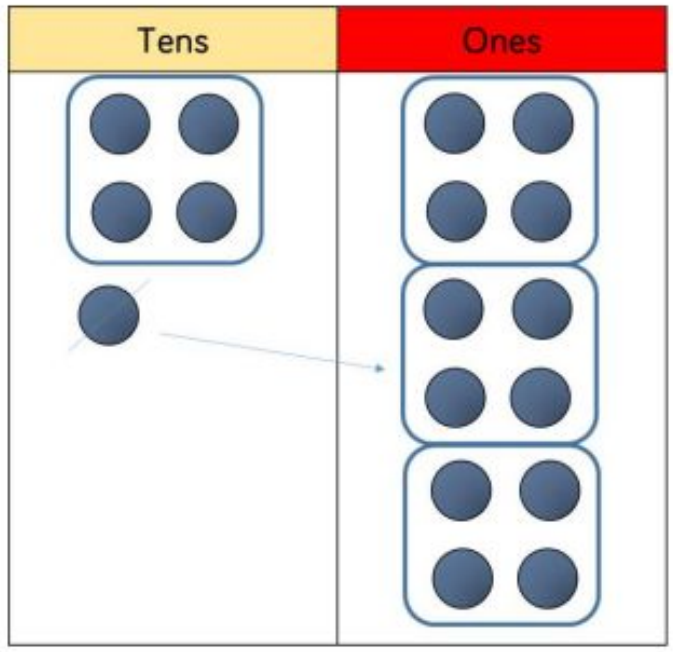
Skill: Divide 2-digits by 1-digit (grouping)



		1	3	
	4	5	12	



$52 \div 4 = 13$

Year 4/5

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.

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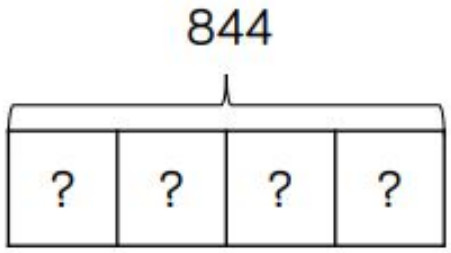
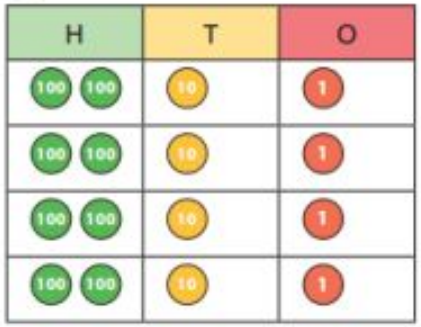
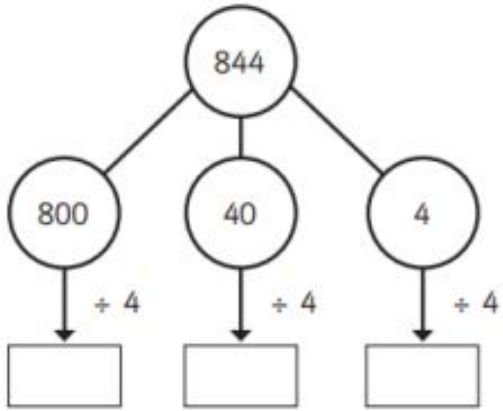
Skill: Divide 3-digits by 1-digit (sharing)

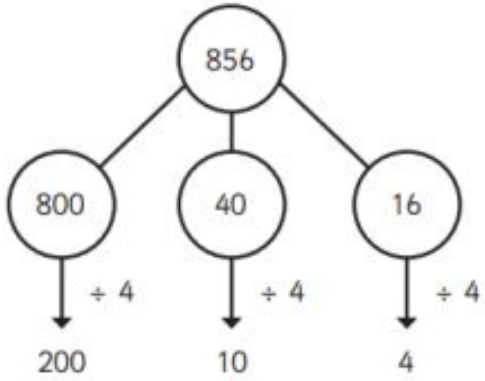
844 ÷ 4 = 211

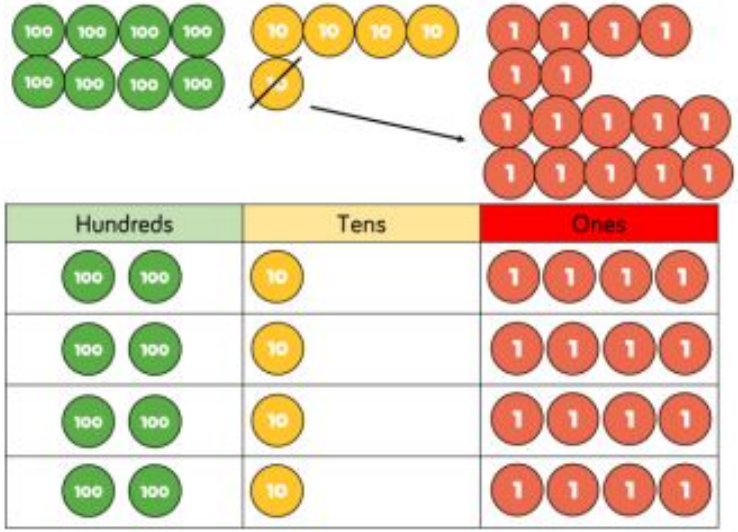






856 ÷ 4 = 214





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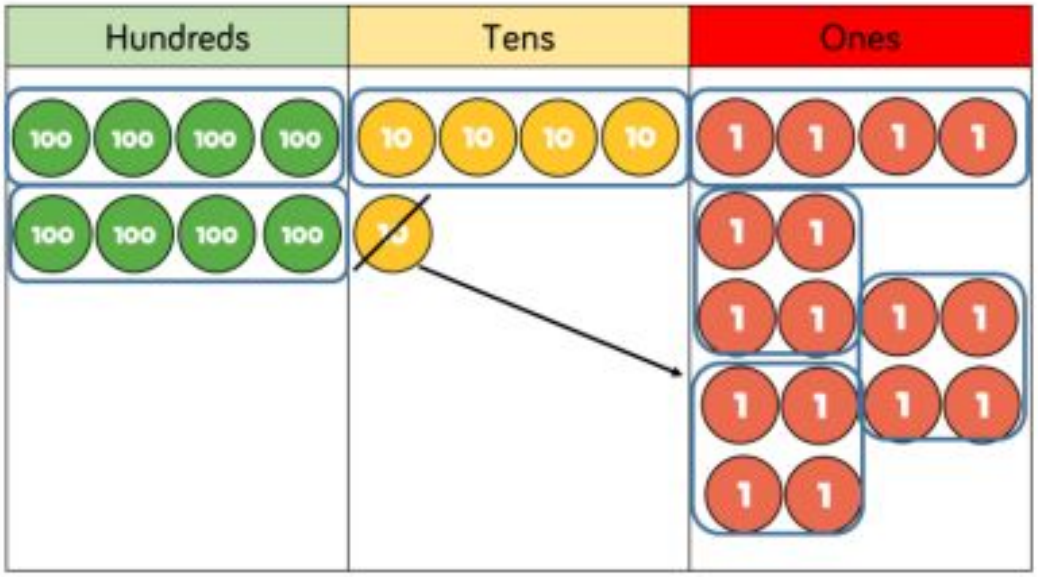
Year 4

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.

Skill: Divide 3-digits by 1-digit (grouping)



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

Year 5

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.

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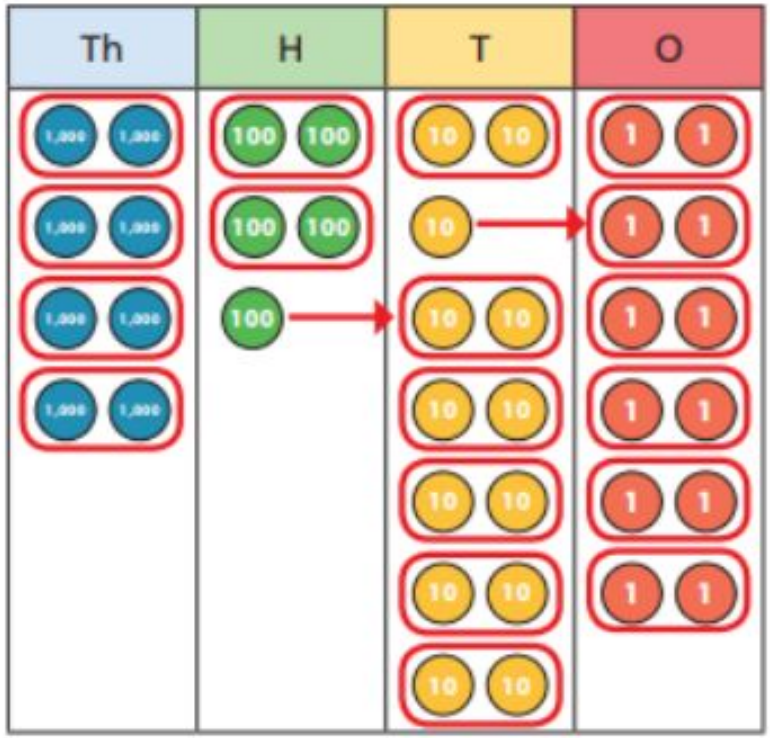
Skill: Divide 4-digits by 1-digit (grouping)



	4	2	6	6
2	8	5	$^{1}3$	$^{1}2$

8,532 ÷ 2 = 4,266

Year 5

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.

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Skill: Divide multi-digits by 2-digits (short division)

		0	3	6
	12	4	$^{4}3$	$^{7}2$

$$432 \div 12 = 36$$

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

	0	4	8	9
15	7	$^{7}3$	$^{13}3$	$^{13}5$

15	30	45	60	75	90	105	120	135	150

Year 6

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.

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

		0	3	6
1	2	4	3	2
	–	3	6	0
			7	2
	–		7	2
				0

(×30)

(×6)

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

$$432 \div 12 = 36$$

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

Year 6

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

Children are encouraged to write out multiples to support their calculations with larger remainders, using partitioning to help with this.

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

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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