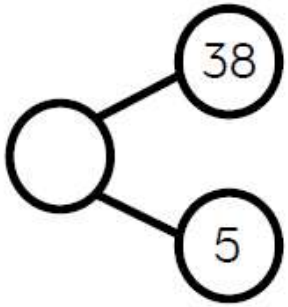
SCPS Calculation Guide

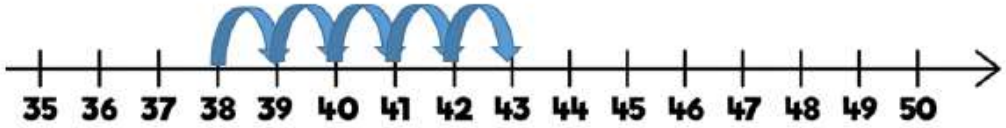
Year 3

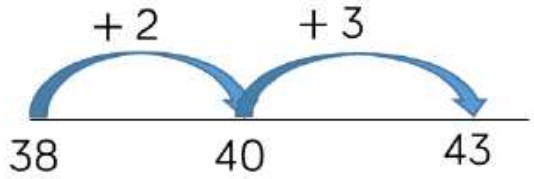
This guide shows illustrations and examples of the methods used to teach addition, subtraction, multiplication and division

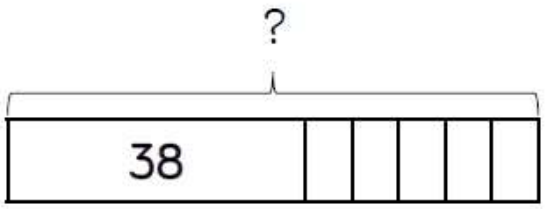
Year 3 Addition

Add one-digit and two-digit numbers to 100

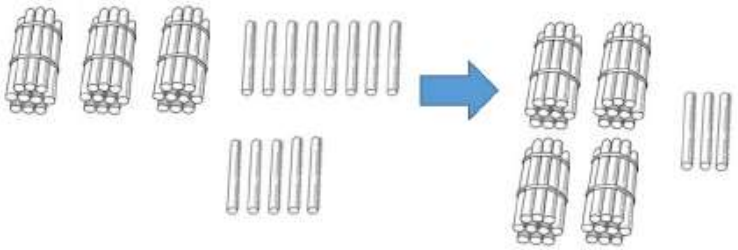








$$38 + 5 = 43$$



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

Models and Representations

- Bar model
- Part-whole model
- Number lines (labelled)
- Number lines (blank)

- Straws
- Hundred square

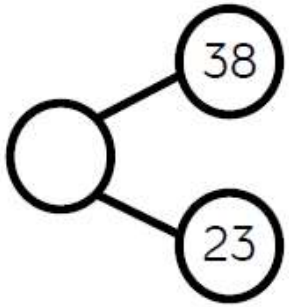
When adding single digits to a two-digit number, children should be encouraged to count on from the larger number.

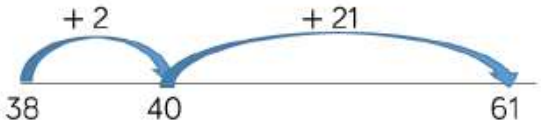
They should also apply their knowledge of ımber bonds to add more efficiently e.g. 8 + 5 = 13 so 38 + 5 = 43.

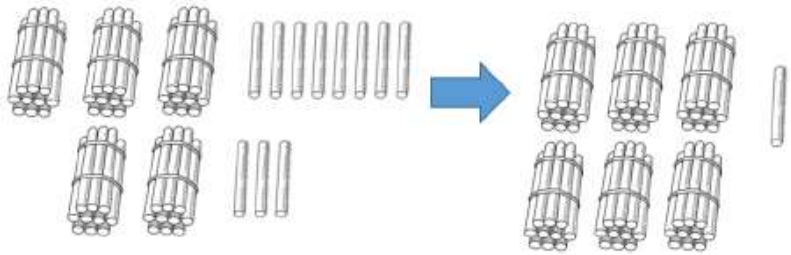
Hundred squares and straws can support children to find the number bond to 10.

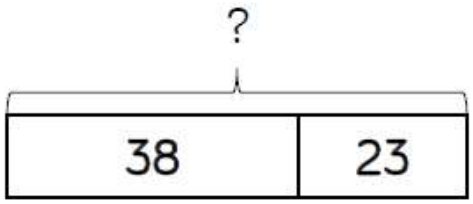
Year 3 Addition

Add 2 two-digit numbers to 100

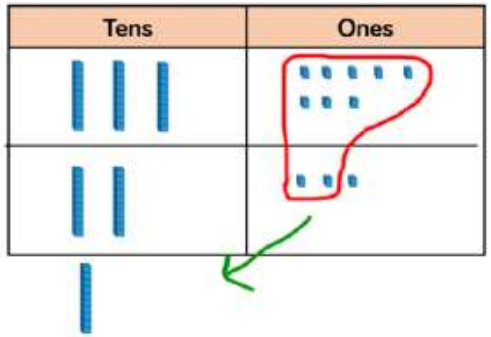




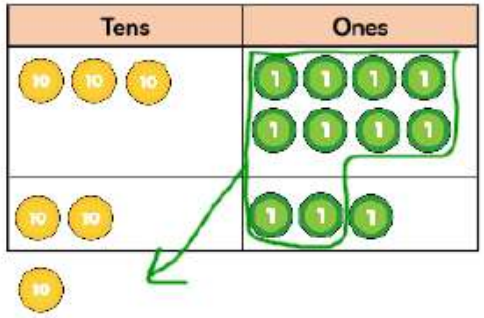




$38 + 23 = 61$



$$\begin{array}{r} 38 \\ +\ 23 \\ \hline 61 \\ \hline 1 \end{array}$$



Models and Representations
Part-whole model Bar model Number lines (blank) Straws
Place value counters Base 10

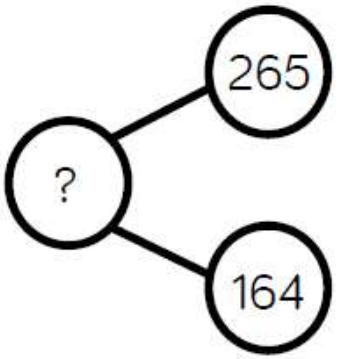
Children can use a blank number line and other representations to count on to find the total.

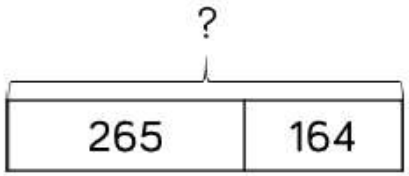
Encourage them to jump to multiples of 10 to become more efficient.

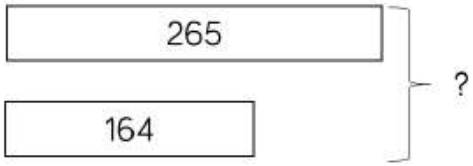
From Year 3, encourage children to use the formal column method when calculating alongside straws, base 10 or place value counters. As numbers become larger, straws become less efficient.

Year 3 Addition

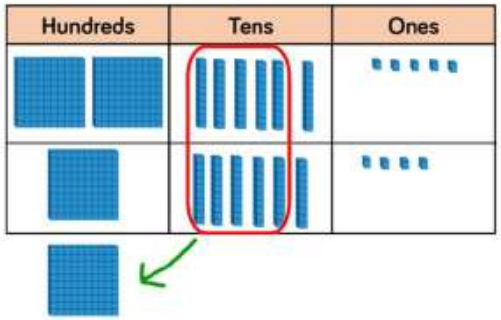
Add numbers with up to 3 digits



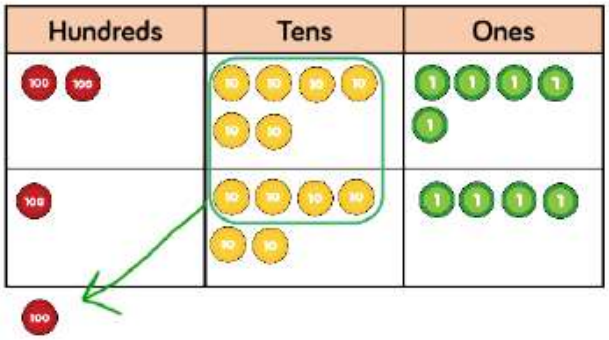




$$265 + 164 = 429$$



$$\begin{array}{r} 265 \\ +\ 164 \\ \hline 429 \\ \hline 1 \end{array}$$



Models and Representations
Part-whole model Bar model **Column Addition**
Place value counters Base 10

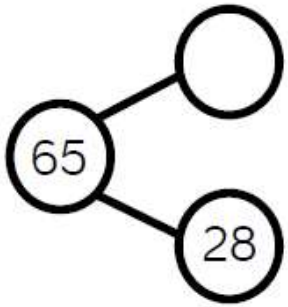
Base 10 and place value counters are the most effective manipulatives when adding numbers with up to 3 digits.

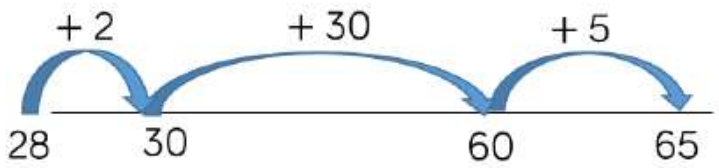
Ensure children write out their calculation alongside any concrete resources so they can see the links to the written column method.

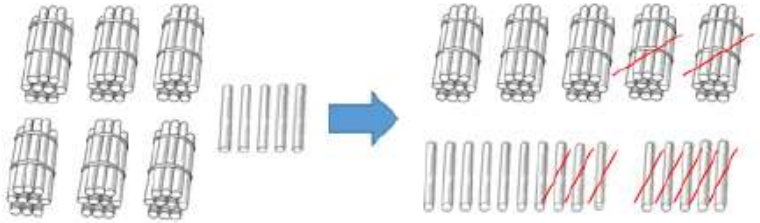
Plain counters on a place value grid can also be used to support learning.

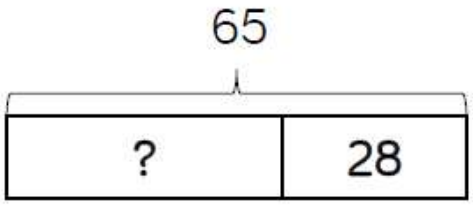
Year 3 Subtraction

Subtract one- and two-digit numbers to 100

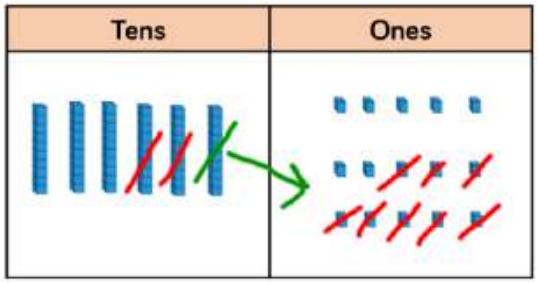




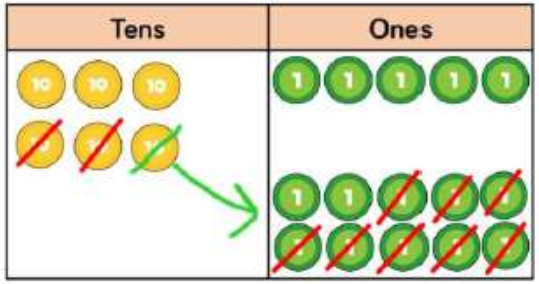




$65 - 28 = 37$



$$\begin{array}{r} {}^{5}\cancel{6}\,{}^{1}5 \\ -\ 2\ 8 \\ \hline 3\ 7 \end{array}$$



Models and Representations
Part-whole model Bar model Number lines (labelled or blank)
Hundred square Straws

Children can also use a blank number line to count back to find the difference.

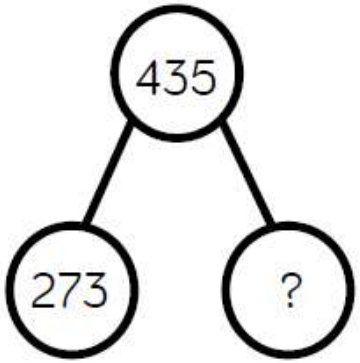
Encourage them to jump to multiples of 10 to become more efficient.

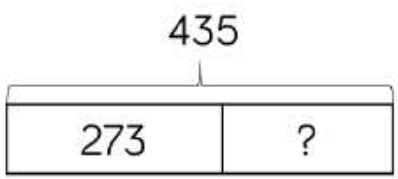
From Year 3, encourage children to use the formal column method when calculating alongside straws, base 10 or place value counters.

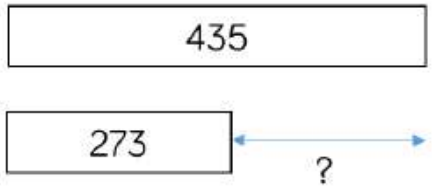
As numbers become larger, straws become less efficient.

Year 3 Subtraction

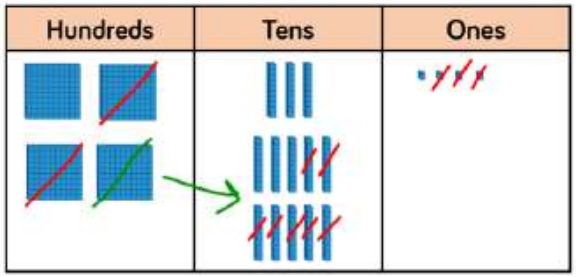
Subtract numbers with up to 3 digits



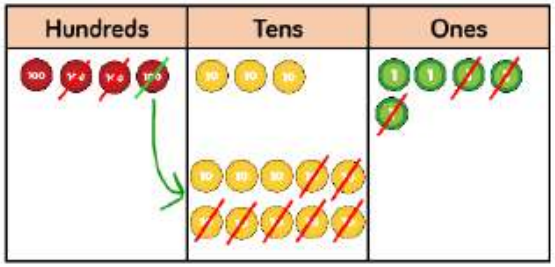




$$435 - 273 = 162$$



$$\begin{array}{r} {}^{3}\cancel{4}^{1}35 \\ -\ 273 \\ \hline 162 \end{array}$$



Models and Representations
Part-whole model Bar model Column Subtraction
Base 10 Place value counters

Base 10 and place value counters are the most effective manipulative when subtracting numbers with up to 3 digits.

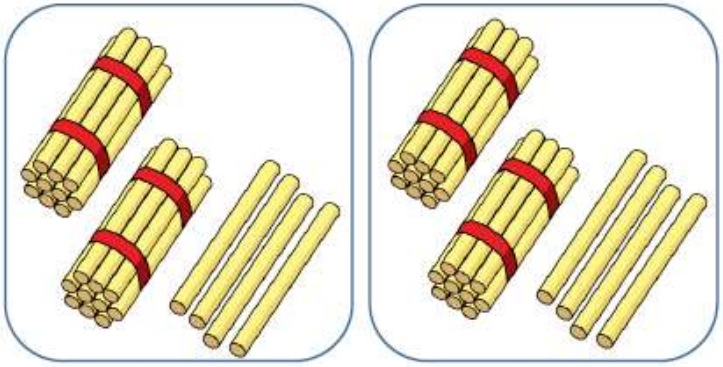
Ensure children write out their calculation alongside any concrete resources so they can see the links to the written column method.

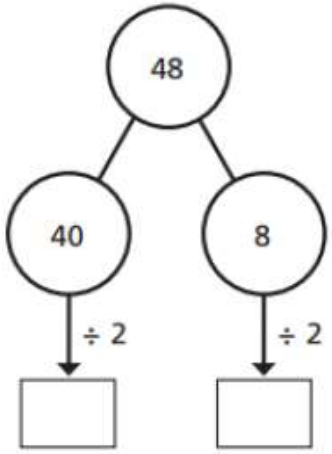
Plain counters on a place value grid can also be used to support learning

Year 3 Division

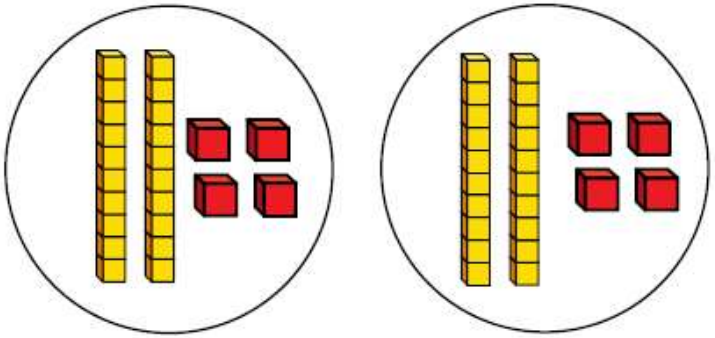
Divide 2-digits by 1-digit (sharing with no exchange)

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





$$48 \div 2 = 24$$



Models and Representations
Part-whole model Bar model Straws
Base 10 Place value counters

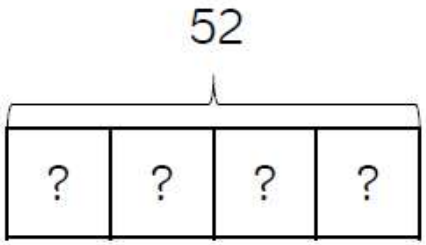
When dividing larger numbers, children can use manipulatives that allow them to partition into tens and ones.

Straws, Base 10 and place value counters can all be used to share numbers into equal groups.

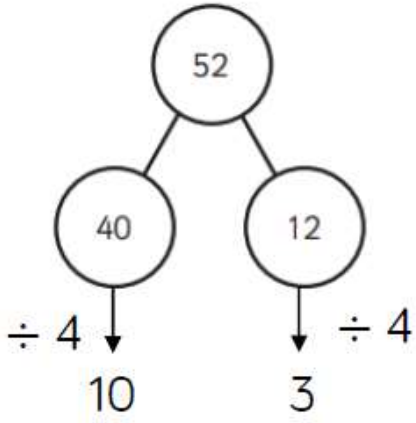
Part-whole models can provide children with a clear written method that matches the concrete representation.

Year 3 Division

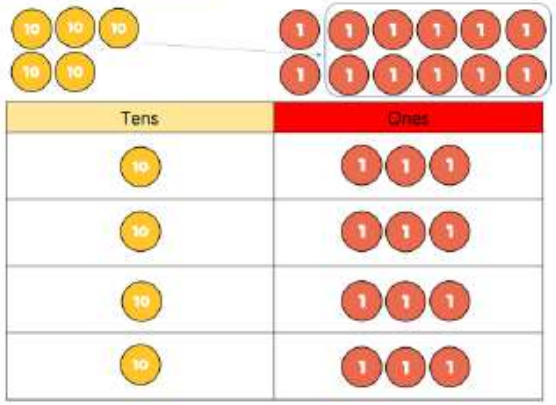
Divide 2-digits by 1-digit (sharing with exchange)



$52 \div 4 = 13$



$10 + 3 = 13$



Models and Representations
Part-whole model Bar model Straws
Base 10 Place value counters

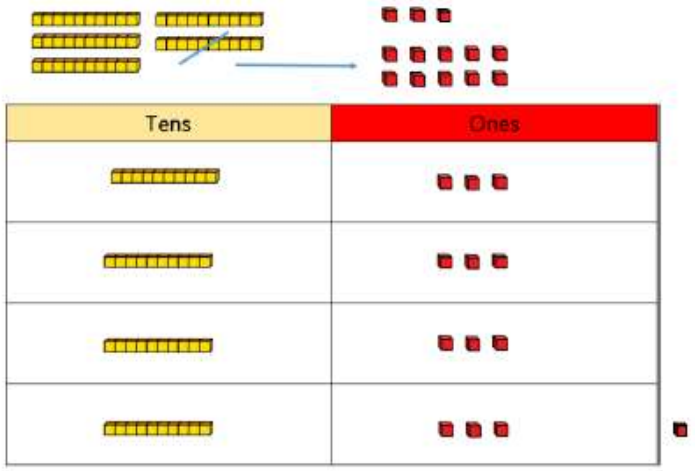
When dividing numbers involving an exchange, children can use Base 10 and place value counters to exchange one ten for ten ones.

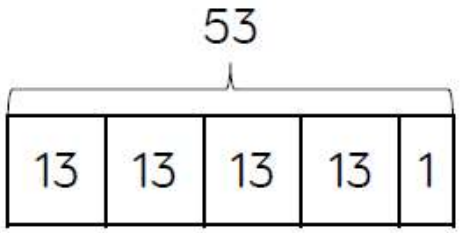
Children should start with the equipment outside the place value grid before sharing the tens and ones equally between the rows.

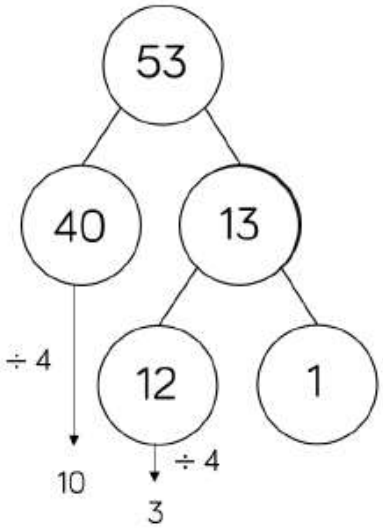
Flexible partitioning in a part-whole model supports this method.

Year 3 Division

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







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

Models and Representations
Part-whole model Bar model Straws
Base 10 Place value counters

When dividing numbers with remainders, children can use Base 10 and place value counters to exchange one ten for ten ones.

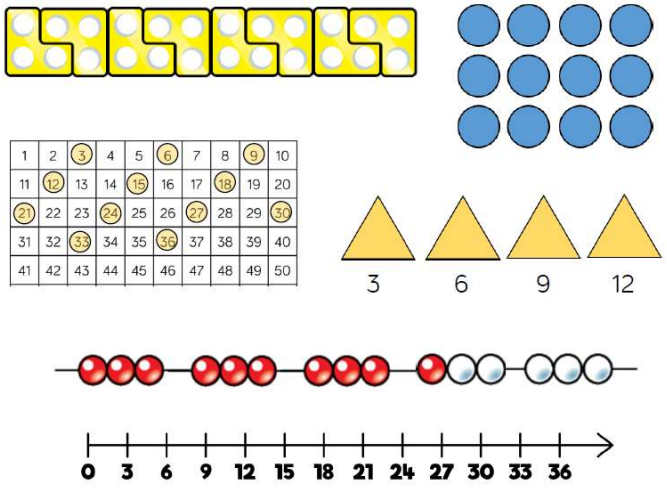
Starting with the equipment outside the place value grid will highlight remainders, as they will be left outside the grid once the equal groups have been made.

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

Year 3 Times Tables

Representations and models	
Bar model	Ten frames
Number shapes	Bead strings
Counters	Number lines
Money	Everyday objects
Bar model	Ten frames
Number shapes	Bead strings
Counters	Number lines
Money	Everyday objects
Hundred square	Ten frames
Number shapes	Bead strings
Counters	Number lines
Money	Base 10

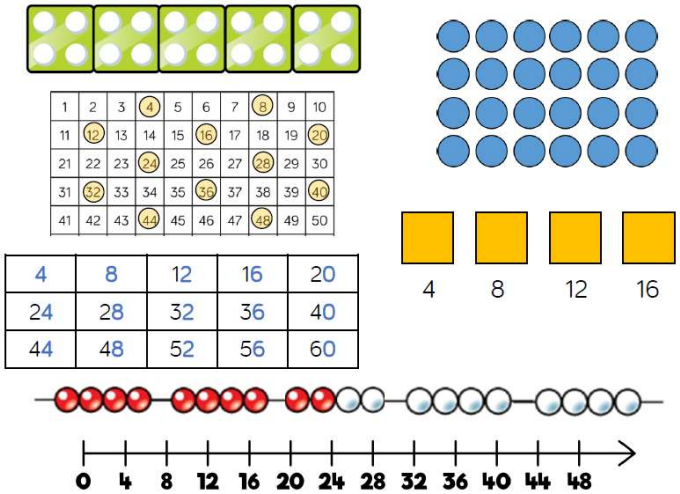
Skill: 3 times table — Year: 3



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.

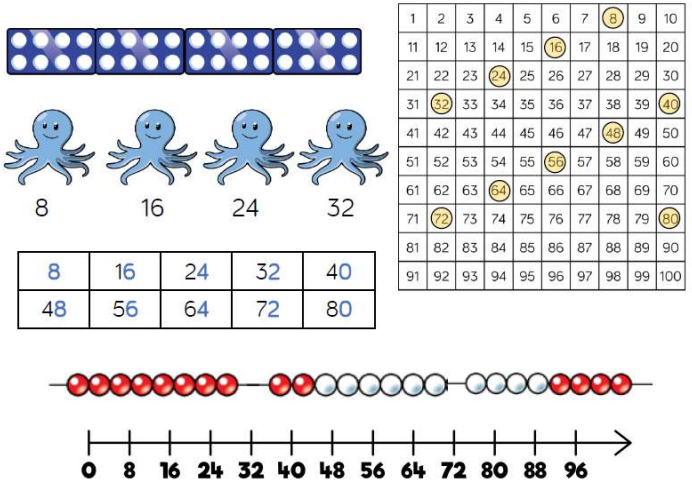
Skill: 4 times table — Year: 3



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

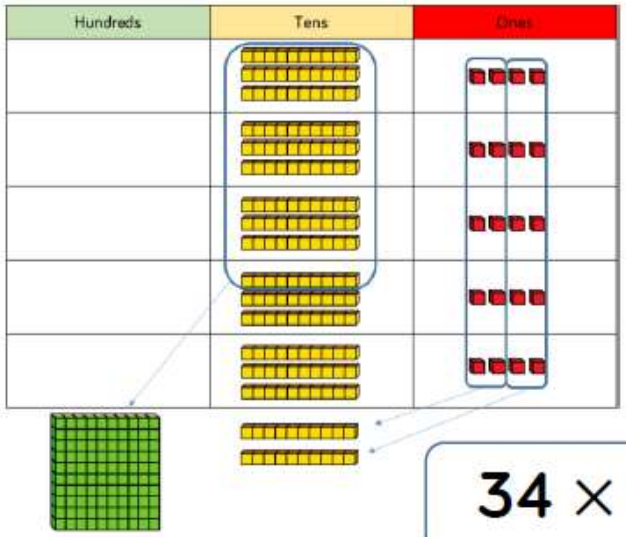


8	16	24	32	40
48	56	64	72	80

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.

Year 3 Multiplication

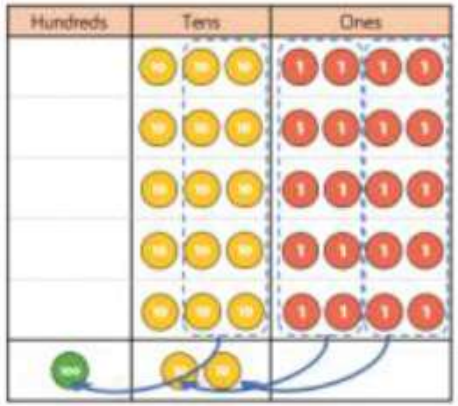
Multiply 2-digit numbers by 1-digit numbers



	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		



Models and Representations
Hundred square Number shapes Counters Bead strings
Number lines Everyday objects

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.