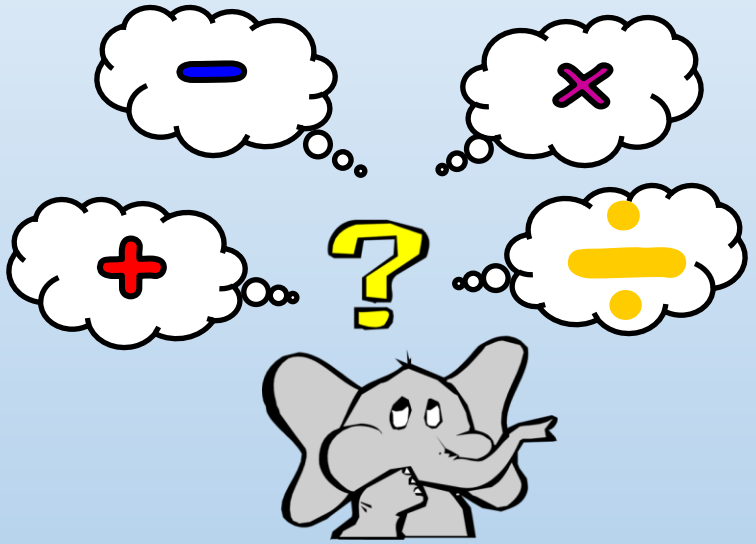
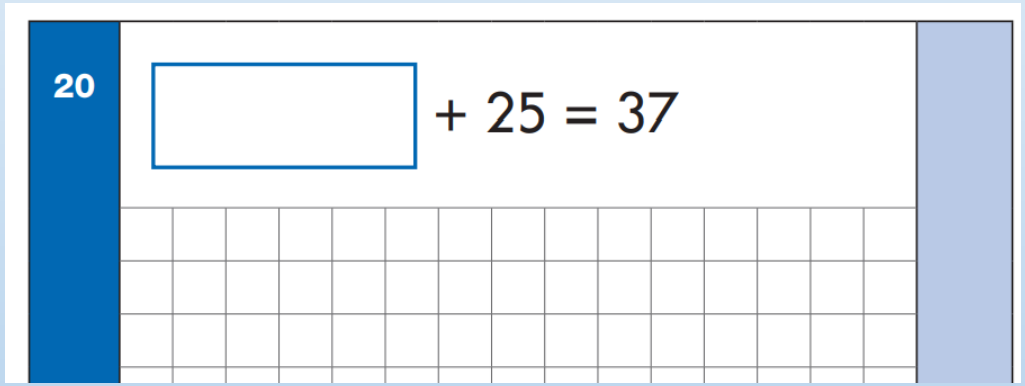
Mathematics at Wickham Common

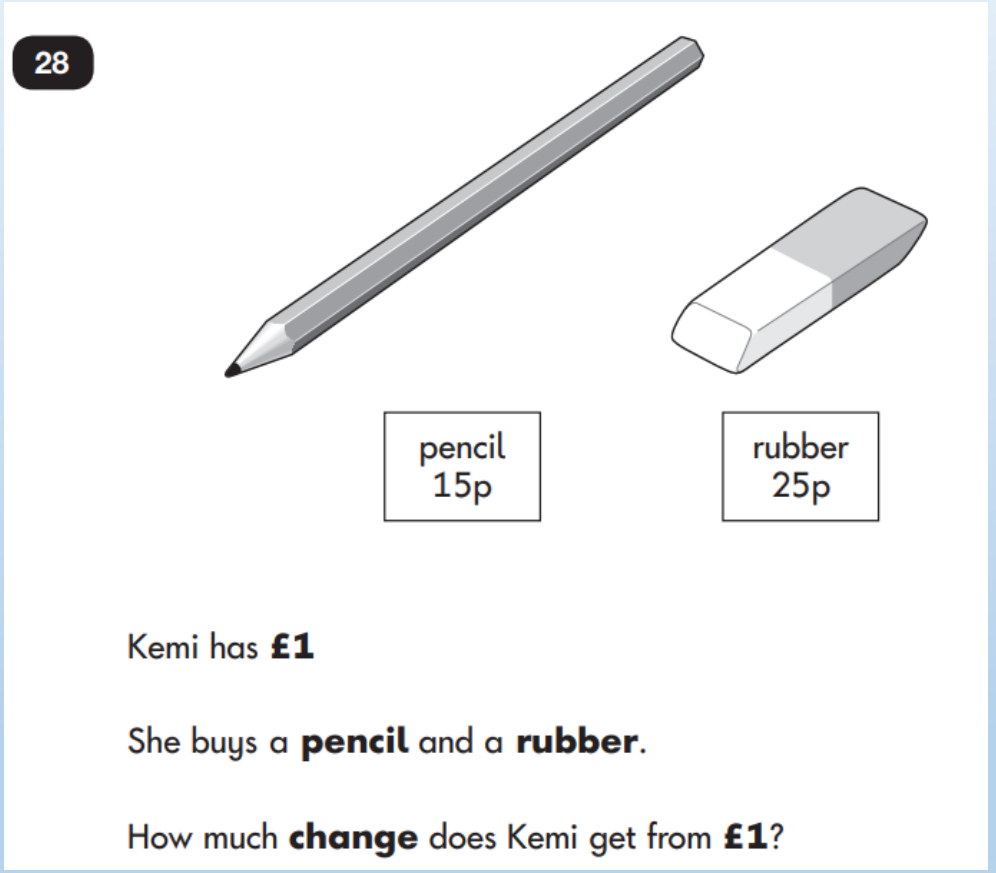


Workshop for parents

Key Stage 1 end of Year 2 expectations



2022 Year 2 arithmetic paper

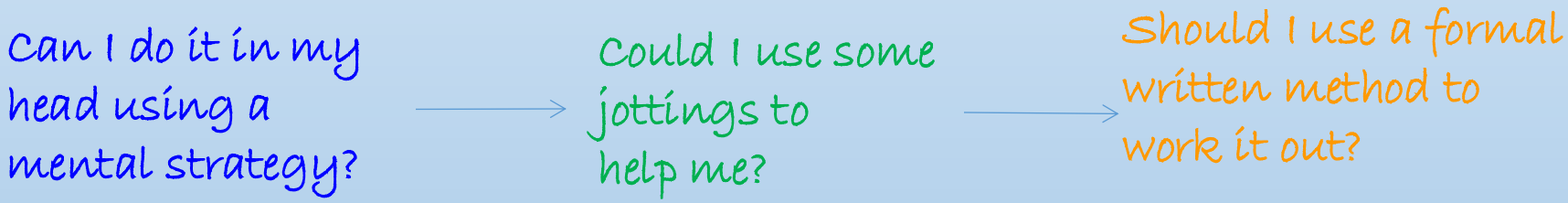


2022 Year 2 reasoning paper

By Key Stage 2

- Choosing a calculation method:

  Before pupils opt for a written method they should first consider these steps:



NCETM principles

- *Develop children's fluency with basic number facts*
- *Develop children's fluency in mental calculation*
- *Develop children's understanding of the = symbol*
- *Teach inequality alongside teaching equality*
- *Use empty box problems*
- *Use intelligent practice*
- *Expose mathematical structure and work systematically*
- *Move between the concrete, pictorial and the abstract (CPA)*
- *Contextualise the mathematics*

Potential issues

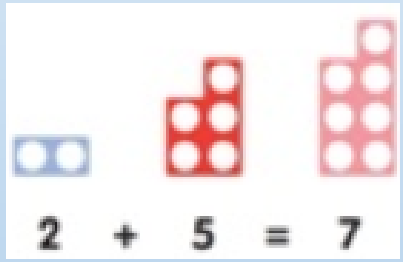
- Confidence (including parents!)
- Language
- Abstract
- Method without understanding
- Reading for reasoning

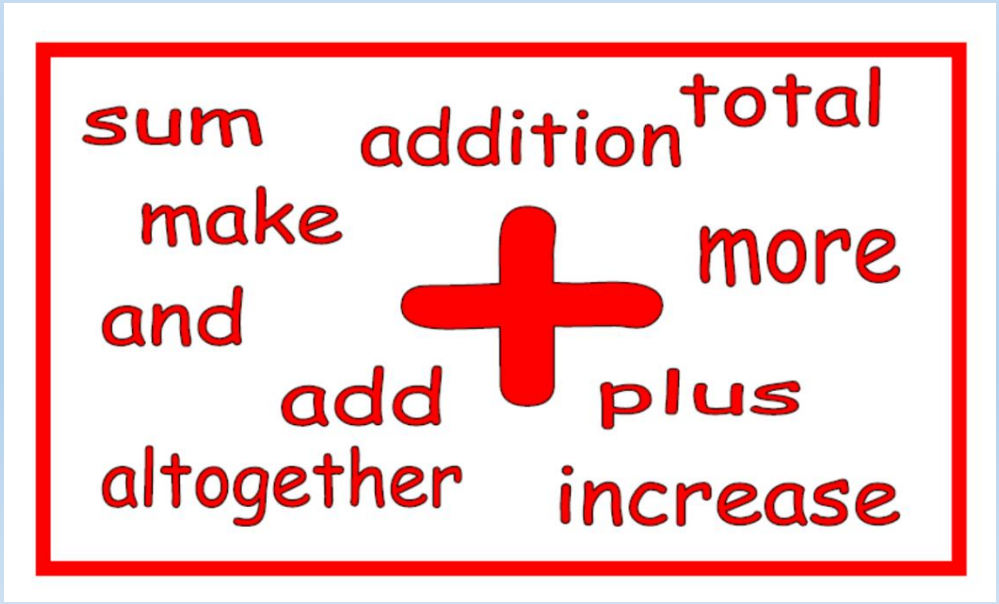
Addition

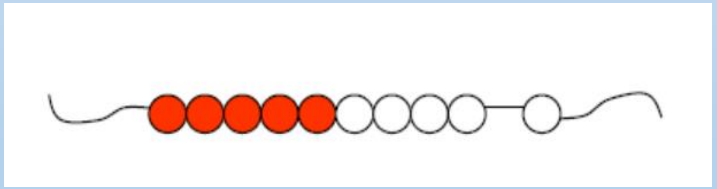
Concrete resources:

100 square
Number lines
Bead strings
Straws
Dienes
Place value cards
Place value dice
Place value counters
Numicon

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



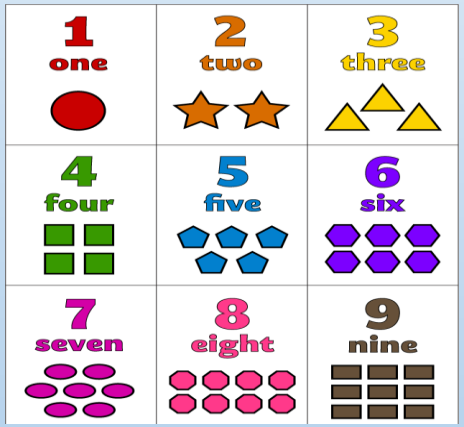




Addition: Reception

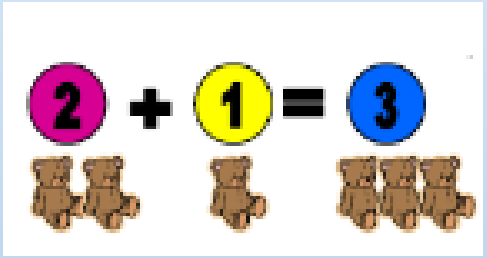
Early learning goals:
✓Count reliably with numbers from 1 to 20, place them in order.
✓Say which number is one more than a given number.
✓Using quantities and objects, they add two single-digit numbers and count on to find the answer.

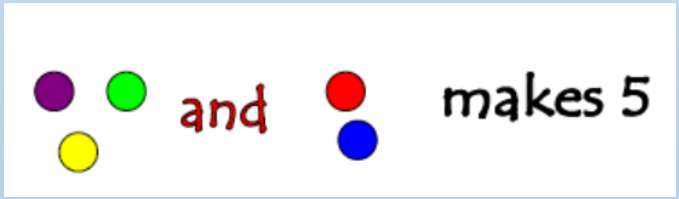
Recognise numbers up to 20 and understand the meaning of each number by recognising and knowing their clusters



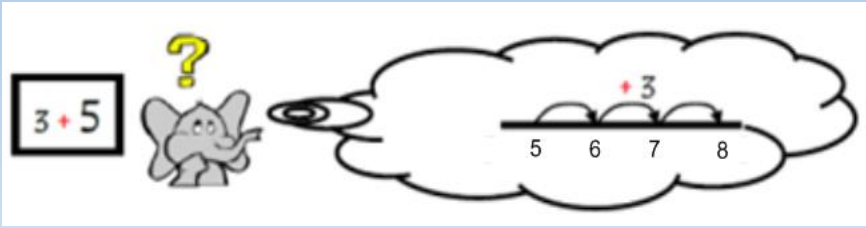
Count on in ones and say which number is one more than a given number using a number line or number track to 20.

Begin to relate addition to combining two groups of objects using practical resources, role play, stories and songs.





Know that counting on is a strategy for addition. Use numbered number lines to 20.



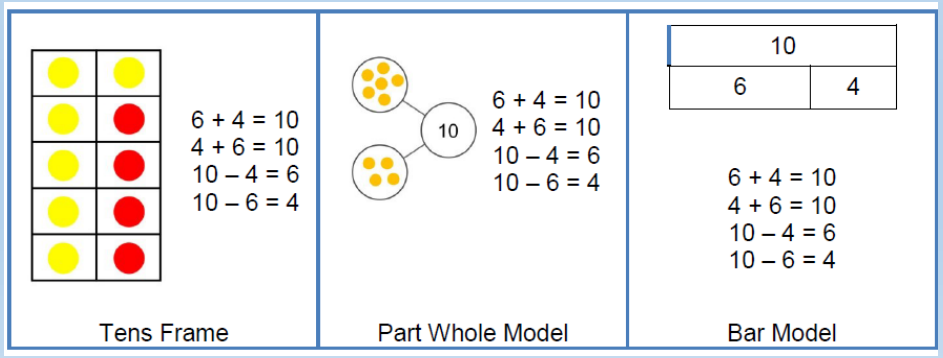
Addition: Year 1

Year 1 statutory requirements :

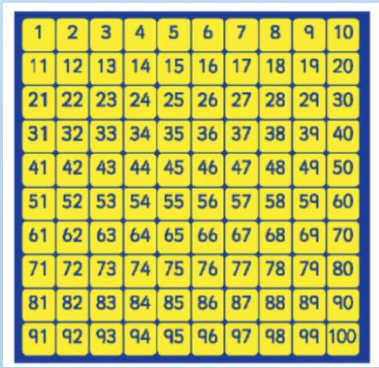
- ✓ Count to and across 100, forwards beginning with 0 or 1, or from any given number.
- ✓ Given a number, identify one more.
- ✓ Read, write and interpret mathematical statements involving addition (+), and equals (=) signs.
- ✓ Represent and use number bonds and related subtraction facts within 20
- ✓ Add one-digit and two-digit numbers to 20, including zero.
- ✓ Solve one-step problems that involve addition using concrete objects and pictorial representations, and missing number problems.

Identify and represent numbers using objects and pictorial representations (multiple representations)

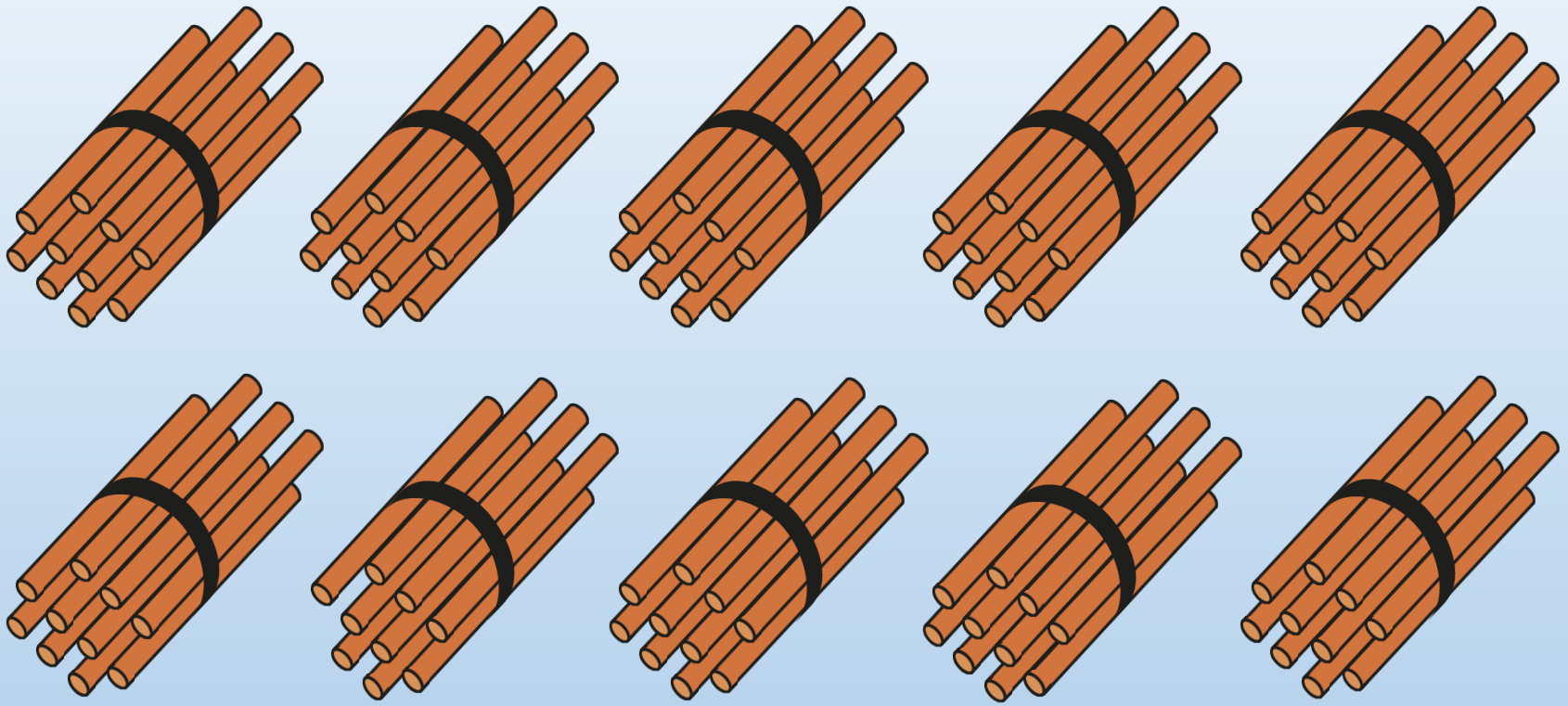
Memorise and reason with number bonds to 10 and 20 in several forms.



Count on in ones to and across 100 and find one more than a given number.



1NPV-1 Count forwards and backwards within 100



- Begin by using real straws to count and bundle together in groups of 10.

Seven, eight, nine, ten, eleven, twelve… twenty, twenty-one, twenty-two…

Seven, eight, nine, ten, one-ten, one-ten-one, one-ten-two… two-tens, two-tens-one, two-tens-two…

- Can you count in ones between 1 and 100, both forwards and backwards?
- Can you start your count from different numbers?
- Can you say the number of straws each time a bundle is tied up? Louder!
- Are you saying the ‘teen numbers’ clearly?
- Can you say the count in two ways?

1NPV-1 Count forwards and backwards within 100

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	42	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

- Can you count forwards and backwards between 1 and 100, starting in different places on the 100 square?
- Can you say the 'teen' part of these numbers a little louder? *Thir**teen**, four**teen**, fif**teen**…*
- Can you say the numbers which come after these numbers: 19…, 29…, 39…, 99…? Say them loudly and clearly: *twen**ty**, thir**ty**, for**ty**…*
- Can you say the numbers which come before these numbers: 30, 50, 70, 100?
- Where on the 100 square can you see the counting numbers which come before 21, 31, 41…?

Addition: Year 1

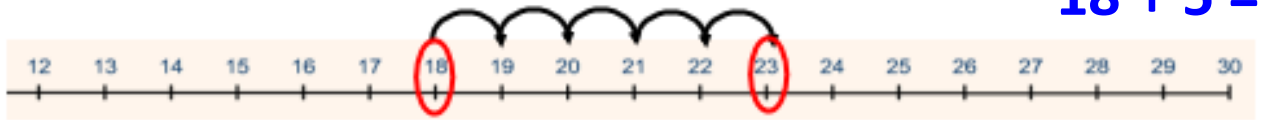
Use concrete resources and a number line to support the addition of numbers. Know and use strategy of finding the larger number, and counting on in ones from this number.

1 digit + 1 digit

7 + 5 = 12

Begin to use the + and = signs to write calculations in a number sentence.

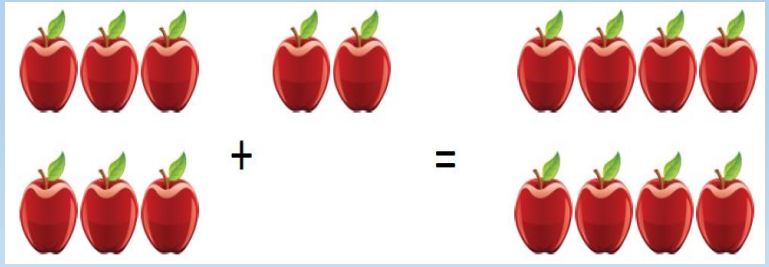
18 + 5 = 23



2 digit + 1 digit

Solve one-step problems using concrete objects and pictorial representations.

Tom picks 6 apples and Raj picks 2 apples. How many apples do they have altogether?



Addition: Year 2

Year 2 statutory requirements :

✓ Recall and use addition and subtraction facts to 20 fluently, and derive and use related facts to 100.

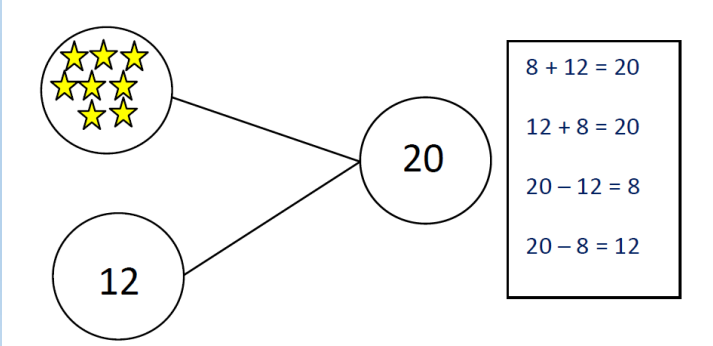
✓Recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems.

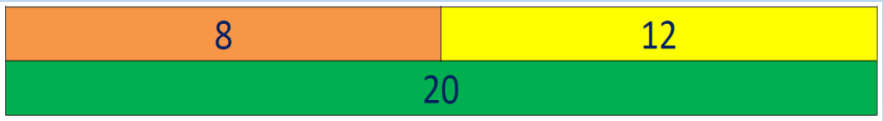
✓ Add numbers using concrete objects, pictorial representations, and mentally, including:

- a two-digit number and ones
- a two-digit number and tens
- two two-digit numbers
- adding three one-digit numbers.

✓ Solve problems with addition including those involving numbers, quantities and measures.

Memorise and reason with number facts to 20 in several forms.

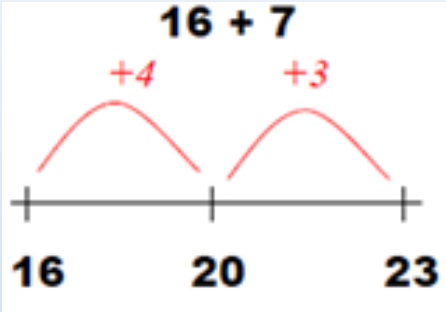




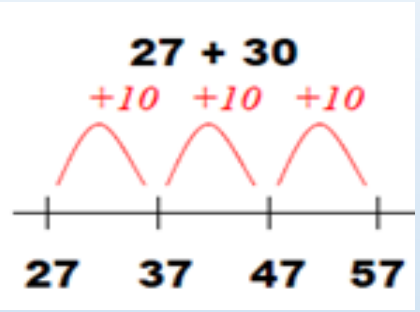
Partition two 2-digit numbers using a variety of models and images.

Addition: Year 2

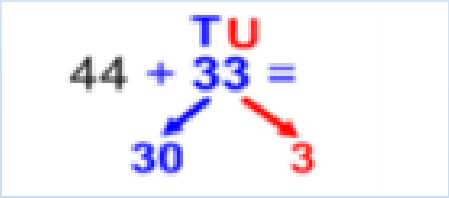
Add 2 digit number and ones

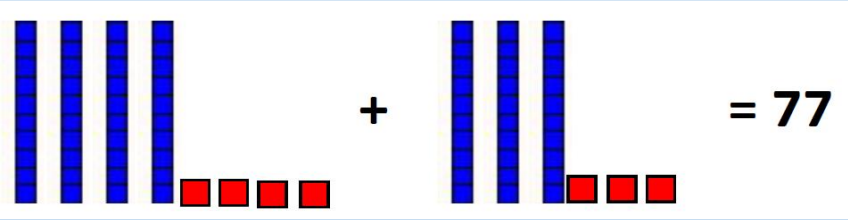


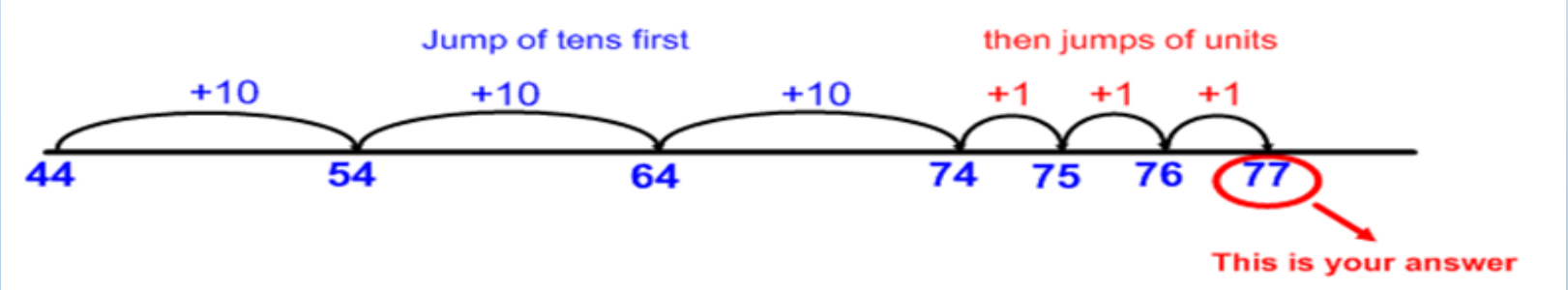
Add 2 digit number and tens



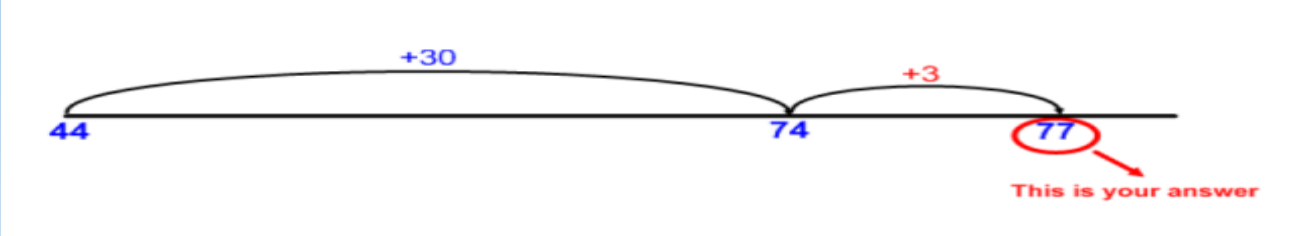
Use partitioning to add two 2-digit numbers using concrete resources and/or a numbered number line and then progressing to an empty number line.







As children gain confidence with adding on tens and ones, they should be taught to combine the jumps on an empty number line.



Addition: Year 3

Year 3 statutory requirements :

- Find 10 or 100 more than a given number.
- Recognise the place value of each digit in a three-digit number (hundreds, tens, ones).
- Add numbers with up to three digits, using formal written methods of columnar addition.

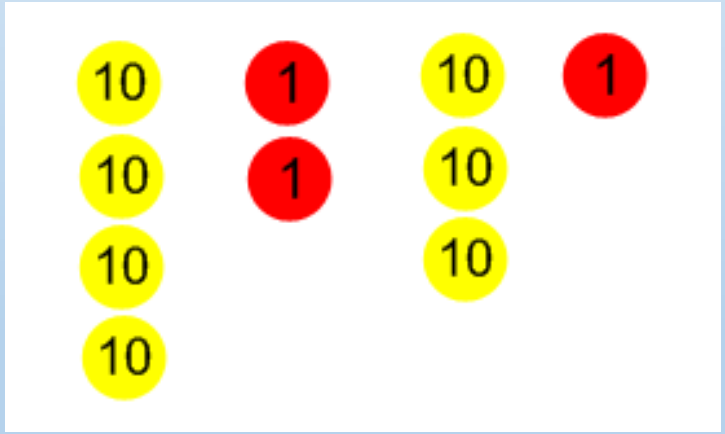
Use expanded column method with place value resources to support the conceptual understanding of adding numbers up to three digits ***with no carrying***.

42 + 31 = 73

40 + 2

30 + 1

70 + 3



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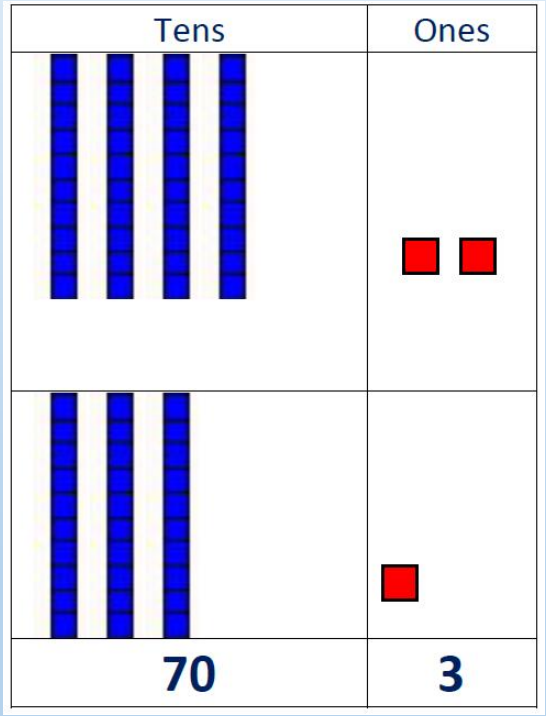


Addition: Year 3

Progress to using the expanded column method with place value resources to support the conceptual understanding of adding numbers up to three digits ***with carrying***.

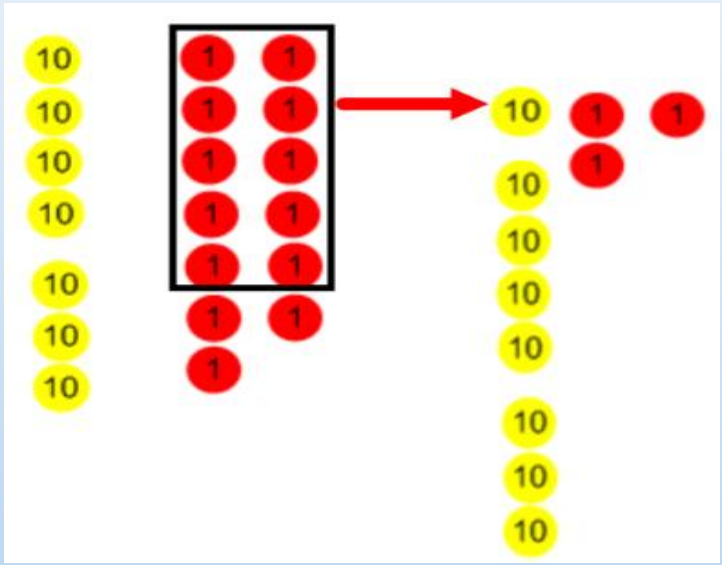
47 + 36 = 83

40 + 7

30 + 6

80 + 3

10



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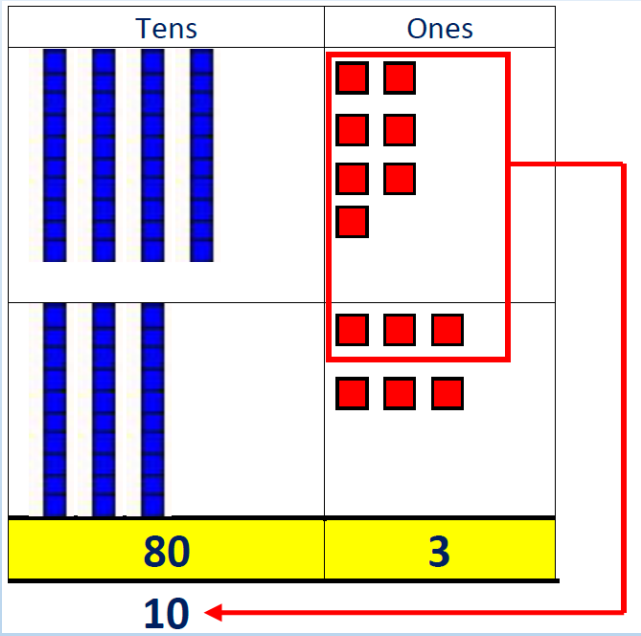


Extend to using the expanded column method to add three digit numbers + three digit numbers ***with carrying***.

367 + 185 = 552

300 + 60 + 7

100 + 80 + 5

500 + 50 + 2

100 10

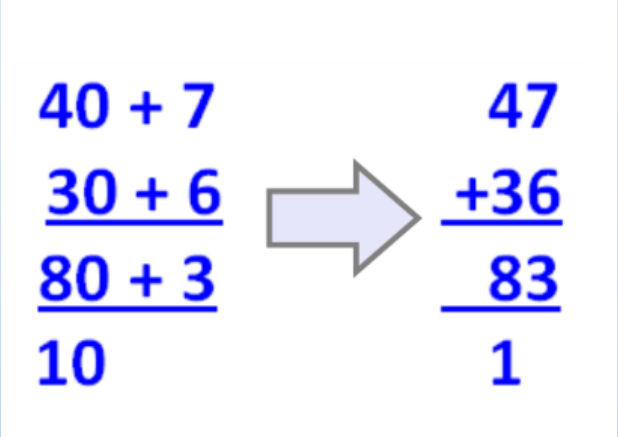
Note: The carried ten or carried hundred is just as important as any other number, therefore, it should be written as clear and as large as any other number, and placed at the **bottom** of the column in which it is to be added.

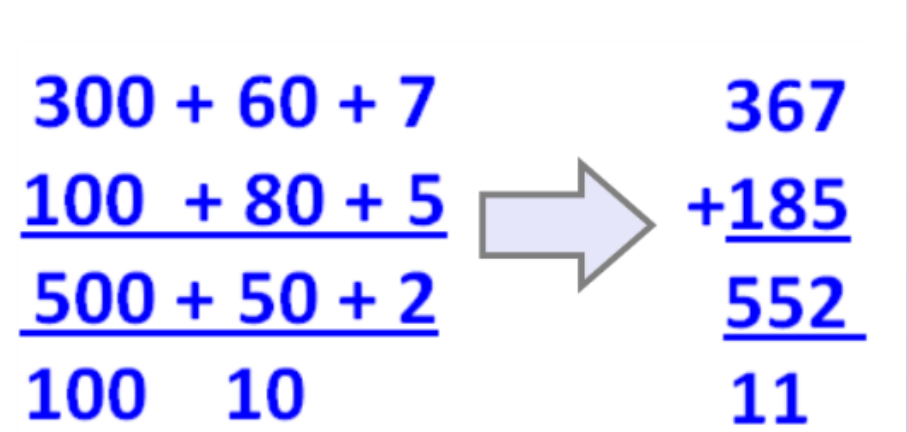
Addition: Year 4

Year 4 statutory requirements :

- Find 1000 more than a given number.
- Add numbers with up to 4 digits using the formal written methods of columnar addition where appropriate.
- Solve addition two-step problems in contexts, deciding which operations and methods to use and why,

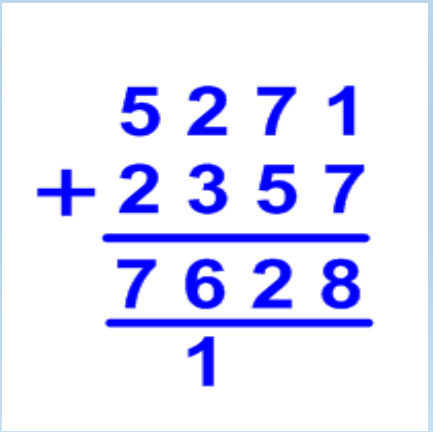
Build on learning from Year 3 and model how expanded method links to compact column addition method.





Note: The carried ten or carried hundred is just as important as any other number, therefore, it should be written as clear and as large as any other number, and placed at the **bottom** of the column in which it is to be added.

By the end of year 4, pupils should be adding numbers up to 4 digits using compact column addition method.



Addition: Year 5 & 6

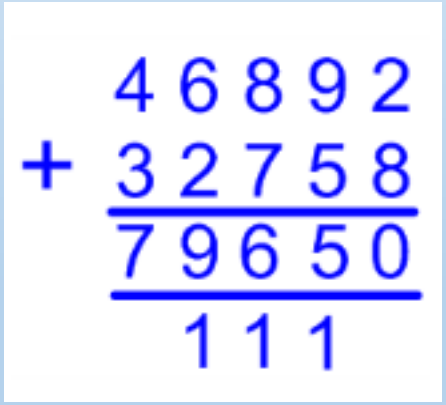
Year 5 statutory requirements :

- Add whole numbers with more than 4 digits using formal written methods of columnar addition.
- Add numbers mentally, with increasingly large numbers.
- Solve addition multi-step problems in contexts, deciding which operations and methods to use and why.
- Solve problems involving numbers up to three decimal places

Year 6 statutory requirements :

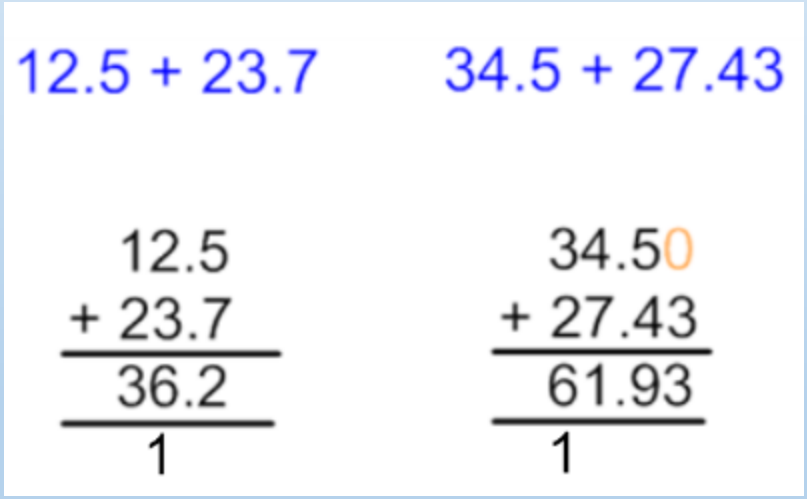
- Pupils are expected to solve more complex addition and subtraction problems

In year 5 and 6 pupils should be adding numbers using compact column addition method. **Note:** The carried ten, hundred, thousand is just as important as any other number, therefore, it should be written as clear and as large as any other number, and placed at the **bottom** of the column in which it is to be added.



When adding decimals, it is essential that the decimal point does not move and kept in line.

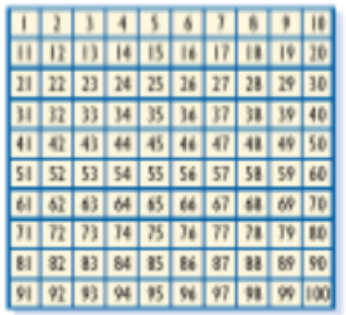
Where necessary, a zero should be added as a ***place holder***.

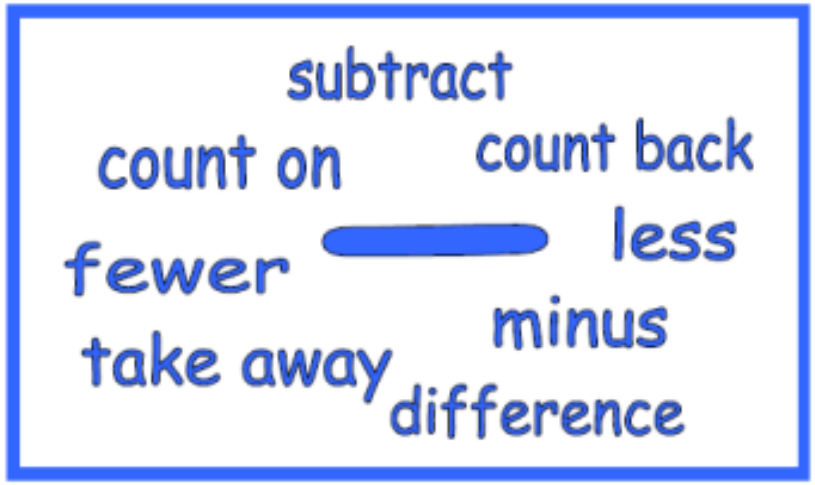


Subtraction

Concrete resources:

100 square
Number lines
Bead strings
Straws
Dienes
Counting stick
Place value dice
Place value cards
Place value counters



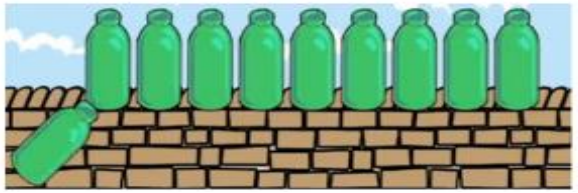


Subtraction: Reception

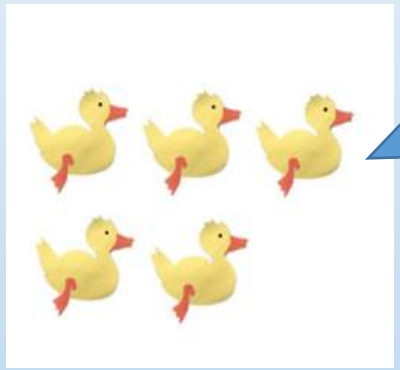
Early learning goals:
✓Say which number is one less than a given number.
✓Using quantities and objects, they subtract two single-digit numbers and count back to find the answer.

Say which number is one less than a given number using a number line or number track to 20.

Begin to count backwards in familiar contexts such as number rhymes or stories.

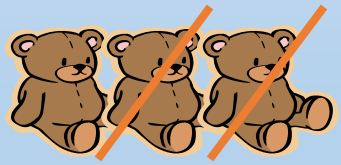


10 Green Bottles sitting on the wall ...

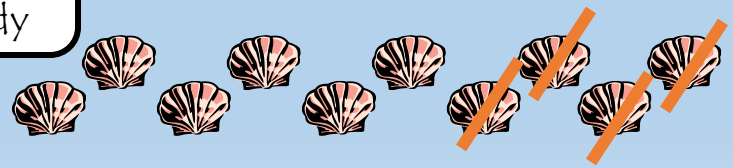


5 little ducks went swimming one day...

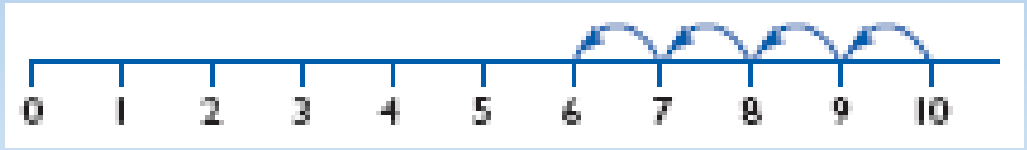
Begin to relate subtraction to 'taking away' using concrete objects and role play.



Three teddies take away two teddies leaves one teddy



If I take away four shells there are six left



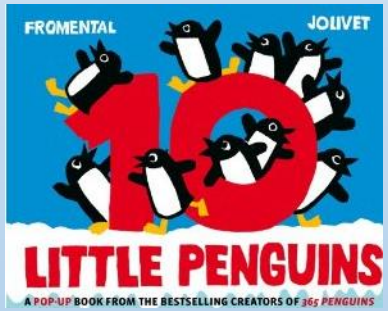
Count backwards along a number line to 'take away'

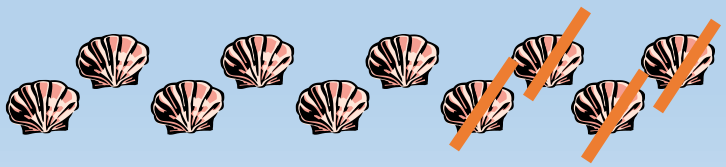
Subtraction: Year 1

Year 1 statutory requirements:

- ✓ Say which number is one less than a given number.
- ✓ Represent and use number bonds and related subtraction facts within 20.
- ✓ Read, write and interpret mathematical statements involving subtraction (-) and equals (=) signs.
- ✓ Subtract one-digit and two-digit numbers to 20, including zero.
- ✓ Solve one-step problems that involve subtraction using concrete objects and pictorial representations, and missing number problems.

Understand subtraction as take away. Use practical resources, pictorial representations, role play, stories and rhymes.

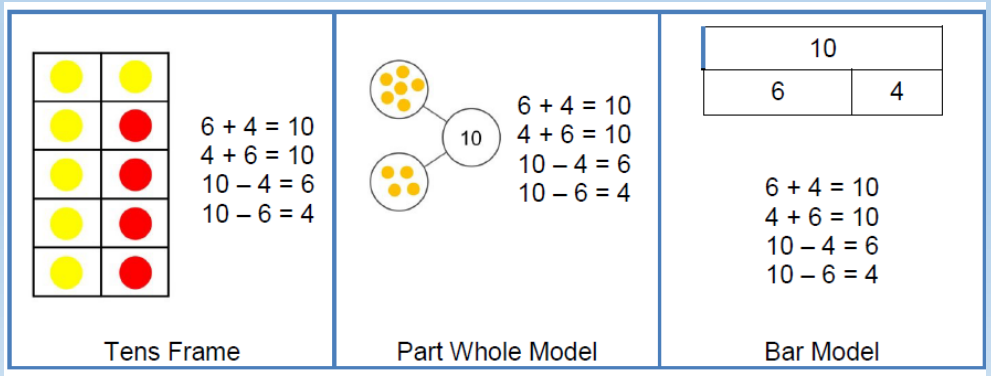




Use number bonds and related subtraction facts within 20.

16 – ☐ = 10

20 – ☐ = 15

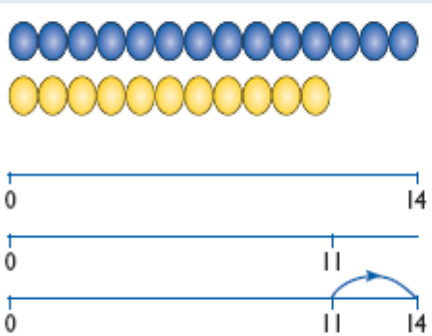


Count back in ones and find one less than a given number.

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

Subtraction: Year 1

Counting on should only be used when the language used is 'find the difference', 'difference between' and 'distance between'.

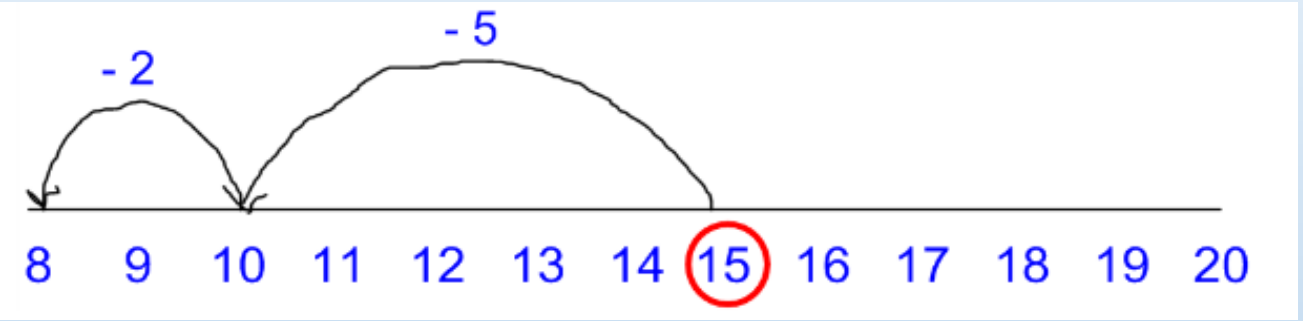


The difference between 11 and 14 is 3.

14 – 11 = 3

11 + ☐ = 14

Use number line to support the subtraction of numbers. Know and use strategy of **counting back** to subtract one-digit and two-digit numbers to 20.



15 – 7 = 8

Solve one-step problems using concrete objects and pictorial representations.

Dan has 12 football stickers.

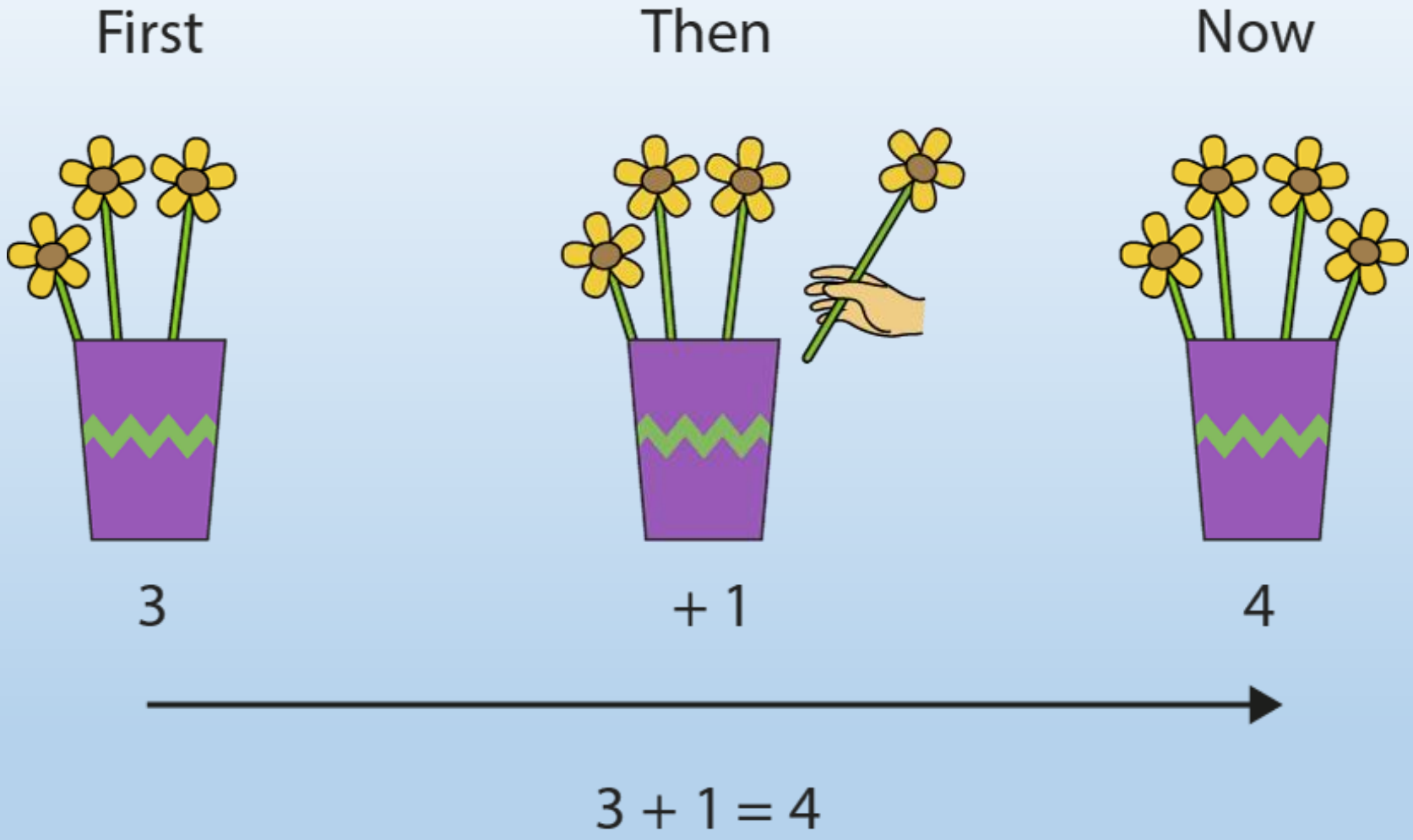
He gives 4 to Ben.

How many stickers does he have left?

12 - 4 = 8

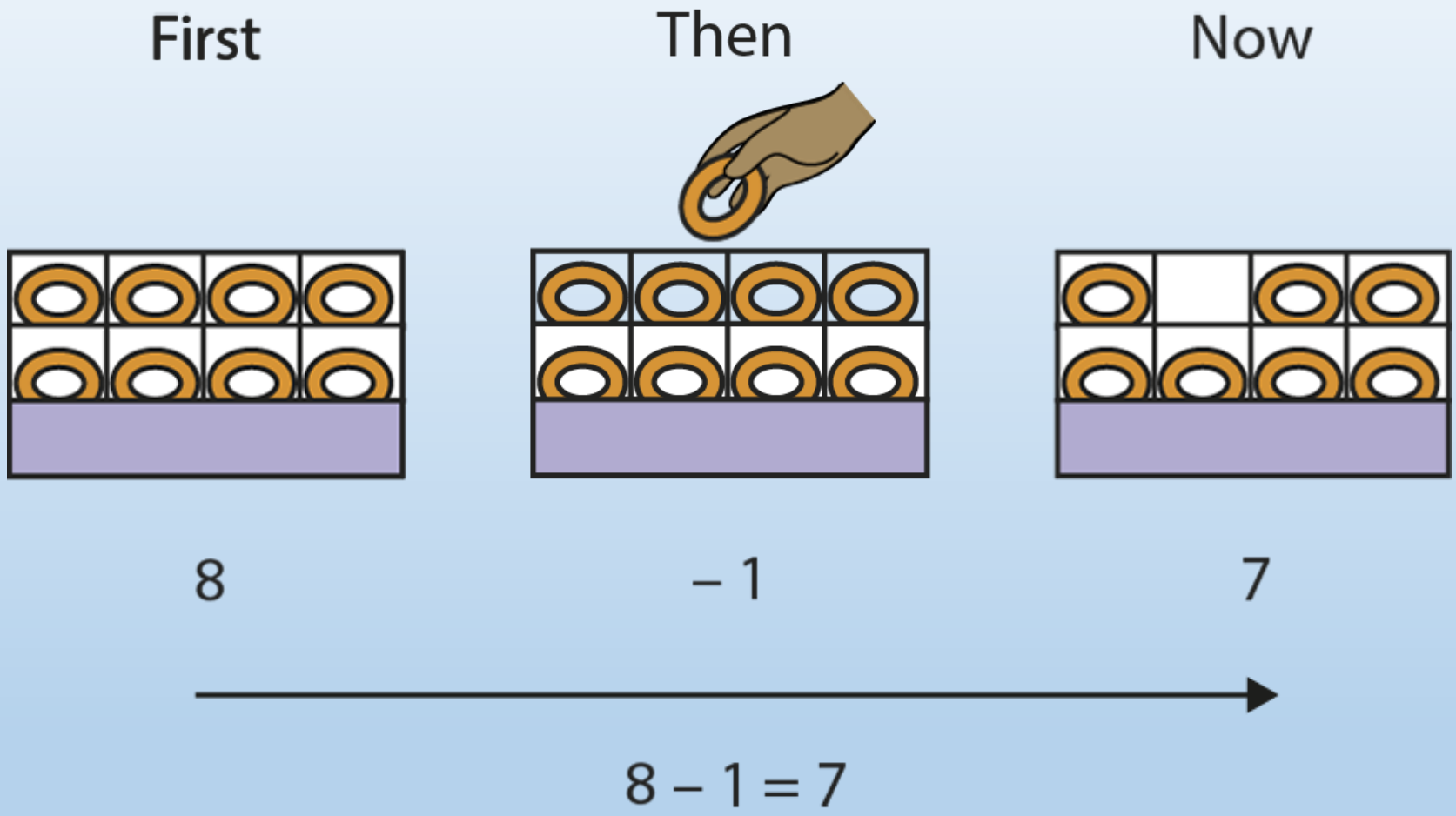
Begin to use the - and = signs to write calculations in a number sentence.

1NF-1 Fluently add and subtract within 10 – adding and subtracting 1, difference of 1



I know that one more than 3 is 4, so I know that 3 plus 1 is 4.

1NF-1 Fluently add and subtract within 10 – adding and subtracting 1, difference of 1



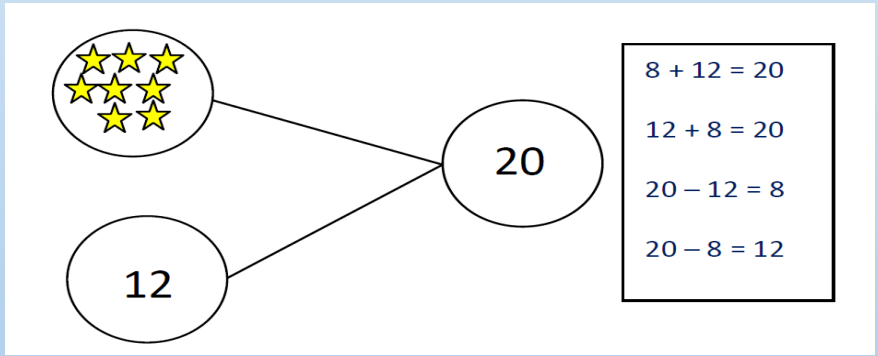
I know that one less than 8 is 7, so I know that 8 minus 1 is 7.

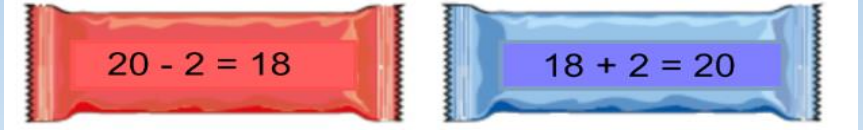
Subtraction: Year 2

Year 2 statutory requirements:

- Recall and use subtraction facts to 20 fluently, and derive and use related facts to 100.
- Recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems.
- Subtract numbers using concrete objects, pictorial representations, and mentally, including:
  - a two-digit number and ones
  - a two-digit number and tens
  - two two-digit numbers
  - adding three one-digit numbers.

Memorise and reason with number facts to 20 in several forms.

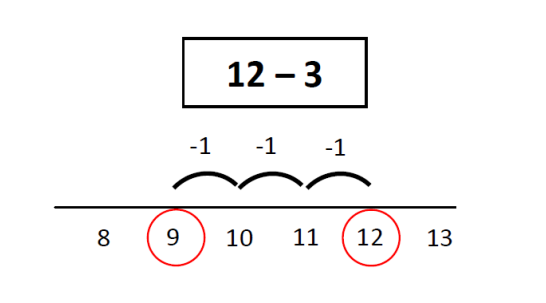




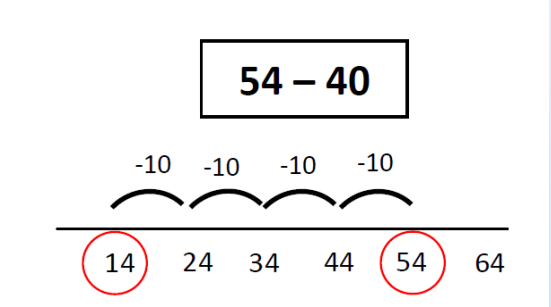
Partition two 2-digit numbers using a variety of models and images.

Subtraction: Year 2

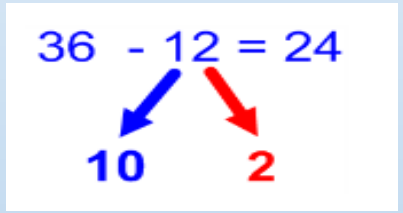
Subtract 2 digit and ones

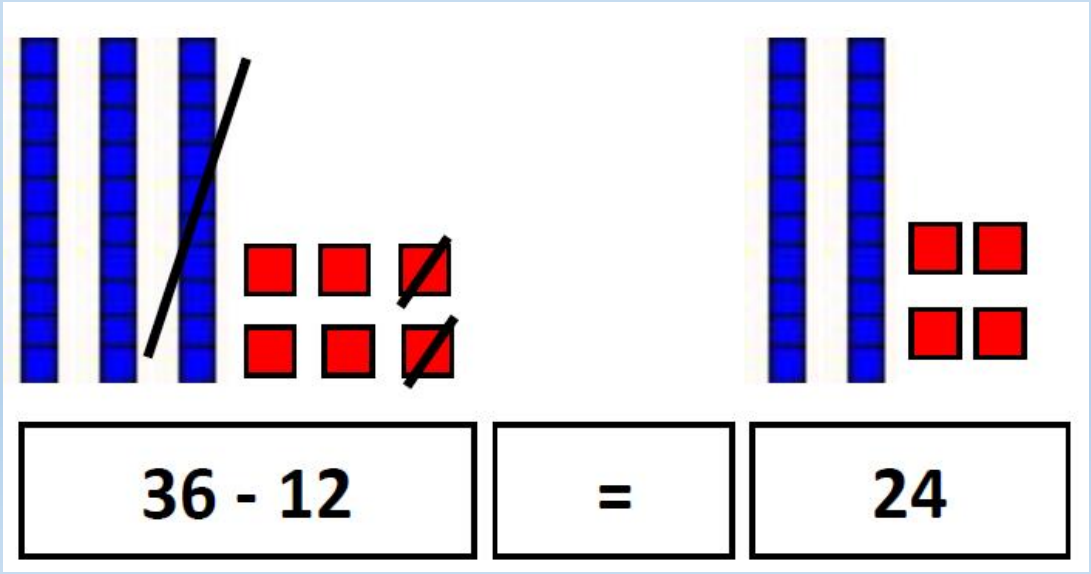


Subtract 2 digit and tens

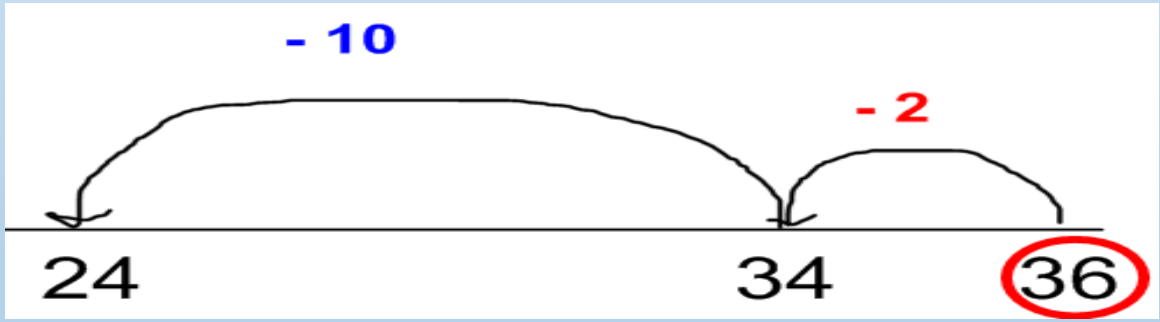


Use partitioning to subtract two 2-digit numbers using concrete resources and/or a numbered number line and then progressing to an empty number line.





OR



Subtraction: Year 3

Year 3 statutory requirement:

- Find 10 or 100 less than a given number.
- Recognise the place value of each digit in a three-digit number (hundreds, tens, ones).
- Subtract numbers with up to three digits, using formal written methods of column subtraction.
- Subtract numbers mentally, including:
  - A three-digit number and ones
  - A three-digit number and tens
  - A three-digit number and hundreds.

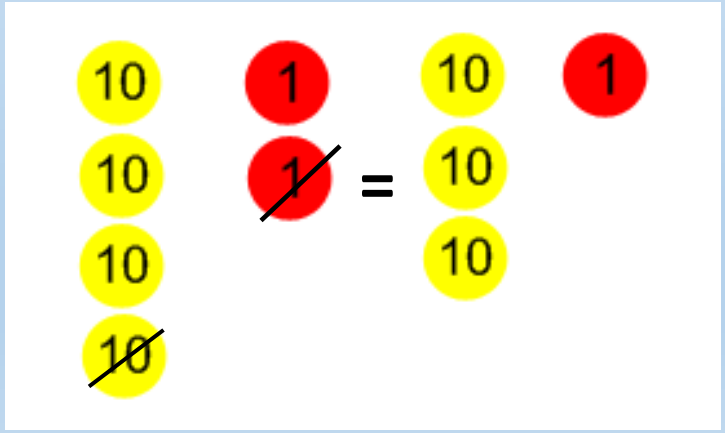
Use expanded column method with place value resources to support the conceptual understanding of subtracting numbers with up to three digits ***with no exchanging.***

42 - 11 = 31

40 + 2

- 10 + 1

30 + 1



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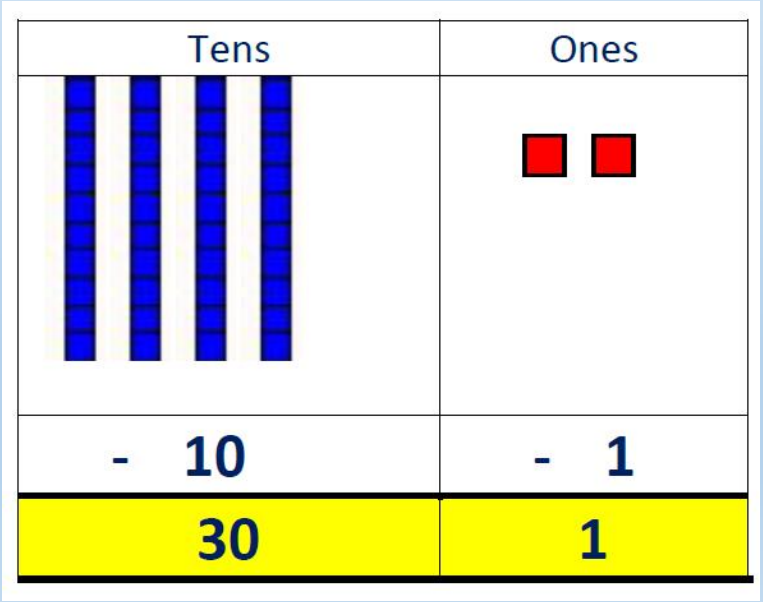
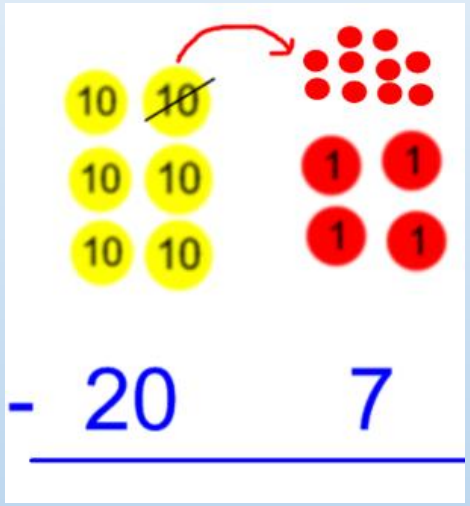


Subtraction: Year 3

Progress to using the expanded column method with place value resources to support the conceptual understanding of subtracting numbers with up to three digits ***with exchanging tens and/or hundreds***.

74 - 27 = 47

$$
\begin{array}{rrr}
 & 60 & + 14 \\
 & \cancel{70} & + \cancel{4} \\
- & 20 & + 7 \\
\hline
 & 40 & + 7
\end{array}
$$



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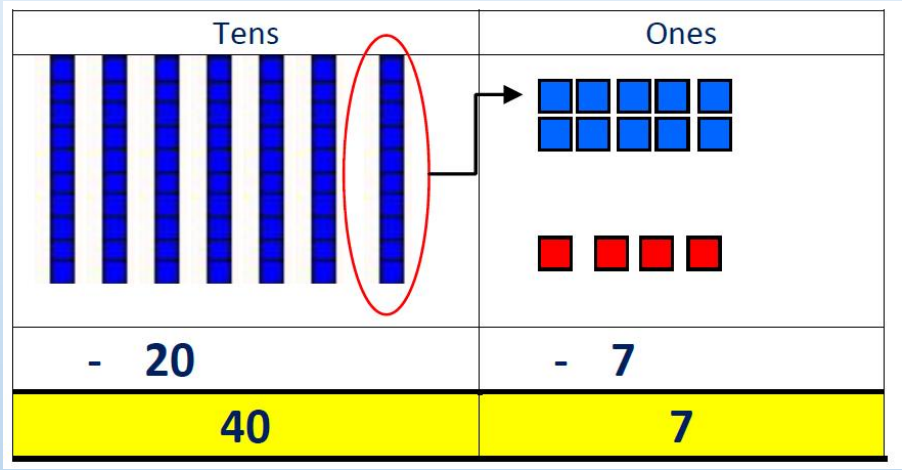


In this example to subtract 7 ones from 4 ones we need to **exchange** a ten for ten ones. We now can subtract 7 ones from 14 ones.

Extend to using the expanded column method to subtract three digit numbers from three digit numbers.

537 – 254 = 283

$$
\begin{array}{rrrr}
 & 400 & + 130 & \\
 & \cancel{500} & + \cancel{30} & + 7 \\
- & 200 & + 50 & + 4 \\
\hline
 & 200 & + 80 & + 3
\end{array}
$$

Note: The exchanged ten or hundred is just as important as any other number, therefore, it should be written as clear and as large as any other number, and placed at the **top** of the column which has been adjusted.

Subtraction: Year 4

Year 4 statutory requirements:

- Find 1000 less than a given number.
- Subtract numbers with up to four digits, using formal written methods of columnar subtraction where appropriate.
- Solve subtraction two-step problems in contexts, deciding which operations and methods to use and why.

Build on learning from Year 3 and model how expanded method links to compact column subtraction method.

$$\begin{array}{rrrr} 60 & + & 14 \\ \cancel{70} & + & \cancel{4} \\ -\ 20 & + & 7 \\ \hline 40 & + & 7 \end{array}$$

$$\begin{array}{r} 6\,{}^{1}\!\cancel{7}\,4 \\ -\ 2\,7 \\ \hline 4\,7 \end{array}$$

$$\begin{array}{rrrr} 400 & + & 130 & \\ \cancel{500} & + & \cancel{30} & + 7 \\ -\ 200 & + & 50 & + 4 \\ \hline 200 & + & 80 & + 3 \end{array}$$

$$\begin{array}{r} 4\,\cancel{5}\,{}^{1}\!\cancel{3}\,7 \\ -\ 2\,5\,4 \\ \hline 2\,8\,3 \end{array}$$

By the end of year 4, pupils should be subtracting numbers up to 4 digits using compact column subtraction method.

$$\begin{array}{r} 7\,8\,\cancel{4}\,{}^{1}\!2 \\ -\ 1\,8\,2\,9 \\ \hline 6\,0\,1\,3 \end{array}$$

Note: The exchanged ten or hundred is just as important as any other number, therefore, it should be written as clear and as large as any other number, and placed at the **top** of the column which has been adjusted.

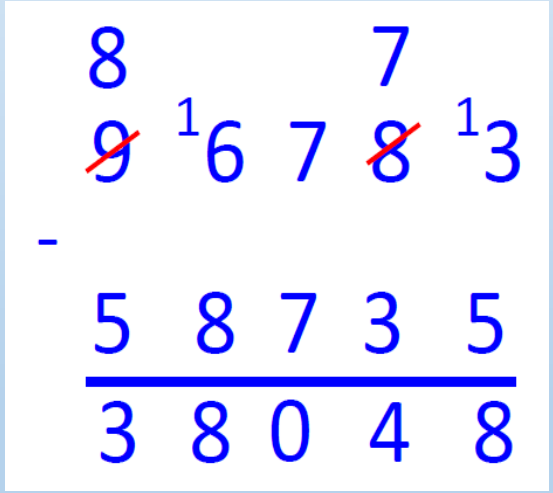
Subtraction: Year 5 & 6

Year 5 statutory requirements :

- Subtract whole numbers with more than 4 digits using formal written methods of columnar subtraction.
- Subtract numbers mentally, with increasingly large numbers.
- Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why.
- Solve problems involving numbers up to three decimal places.

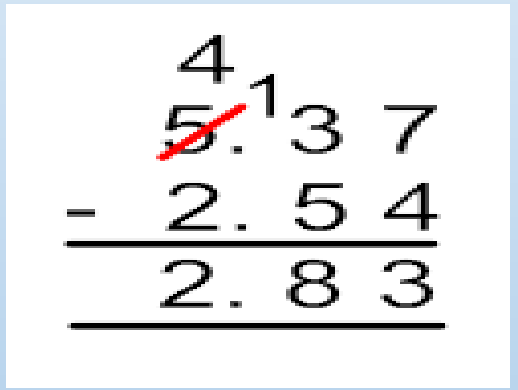
Year 6 statutory requirements: pupils are expected to solve more complex addition and subtraction problems

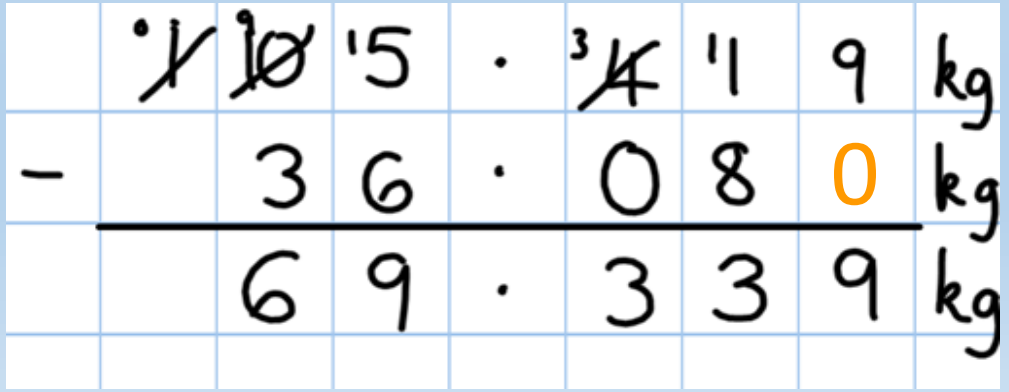
In year 5 and 6 pupils should be subtracting numbers using compact column subtraction method. **Note:** The exchanged ten or hundred is just as important as any other number. Therefore, it should be written as clear and as large as any other number, and placed at the **top** of the column which has been adjusted.



When subtracting decimals, it is essential that the decimal point does not move and kept in line.

Where necessary, a zero should be added as a ***place holder***.



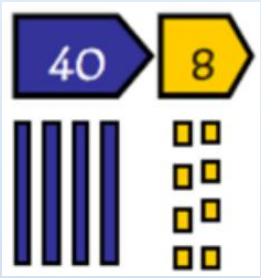


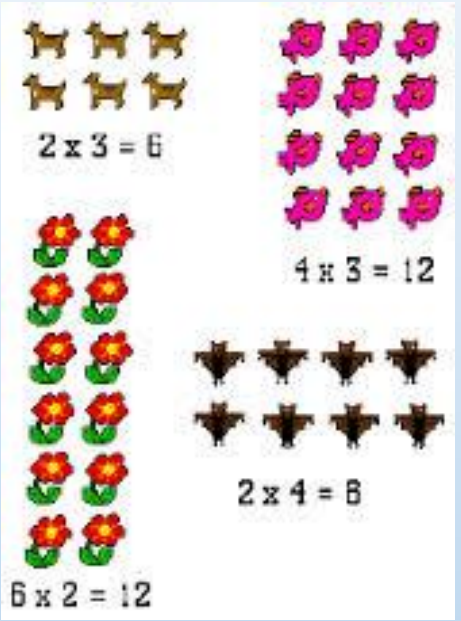
Multiplication

Concrete resources

Place value counters
Dienes
Place value charts
Arrays
Multiplication squares
100 square
Number lines
Blank number lines
Counting stick

1	2	3	4	5	6	7	8	9	10
2	4	6	8	10	12	14	16	18	20
3	6	9	12	15	18	21	24	27	30
4	8	12	16	20	24	28	32	36	40
5	10	15	20	25	30	35	40	45	50
6	12	18	24	30	36	42	48	54	60
7	14	21	28	35	42	49	56	63	70
8	16	24	32	40	48	56	64	72	80
9	18	27	36	45	54	63	72	81	90
10	20	30	40	50	60	70	80	90	100



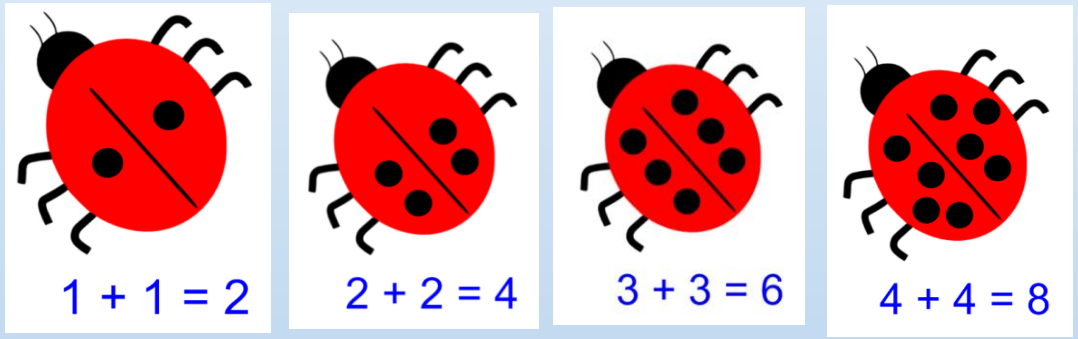


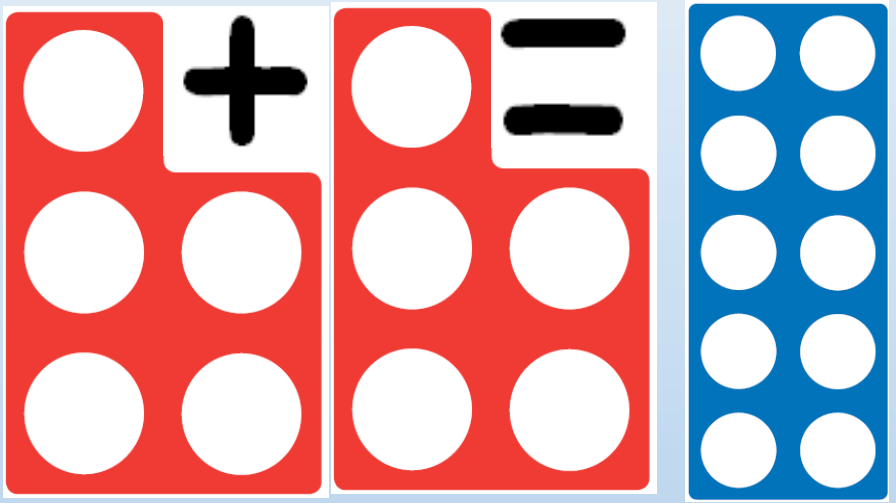
multiplication product
once, twice, three times
double groups of
repeated addition lots of
array, row, column multiply
times multiple

Multiplication: Reception

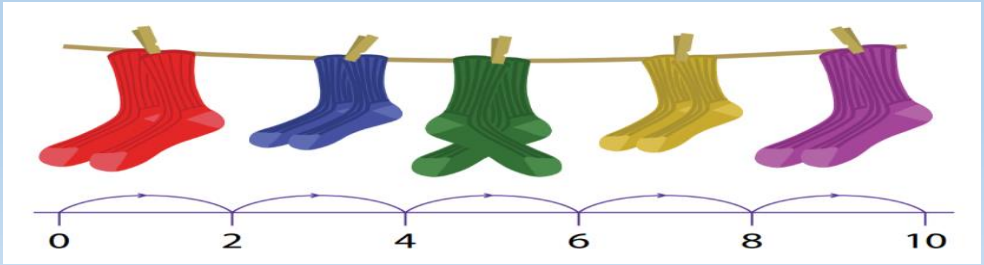
Early learning goal statutory requirement:
✓They solve problems, including doubling, halving and sharing.

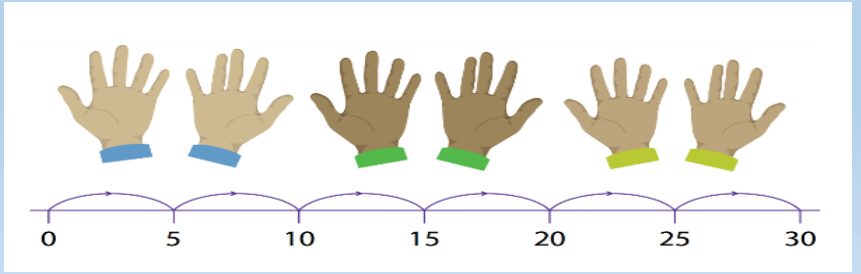
Use pictorial representations and concrete resources to double numbers to 10.





Use concrete sources, role play, stories and songs to begin counting in twos, fives and tens.

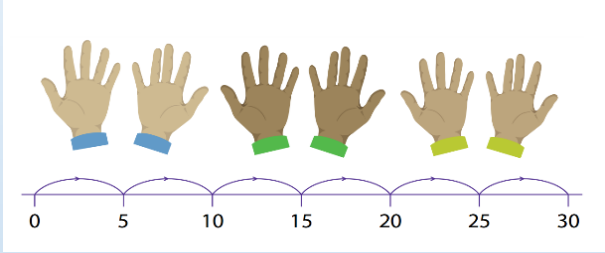


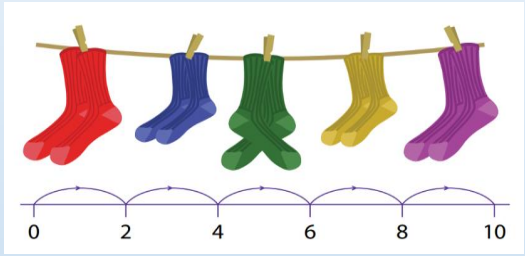


Multiplication: Year 1

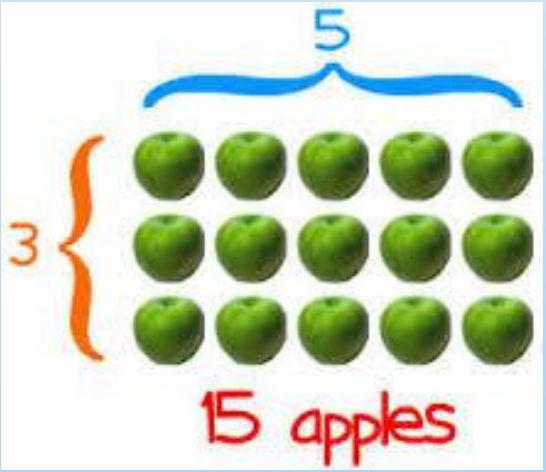
Year 1statutory requirement:
✓Solve one-step problems involving multiplication by calculating the answer using concrete objects, pictorial representations and arrays with the support of the teacher.

Count in twos, fives and tens using practical resources, role play, stories and songs.

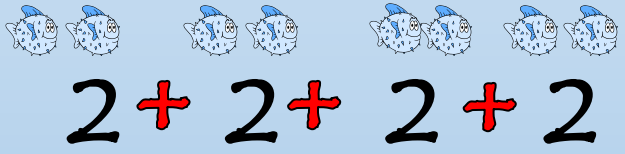




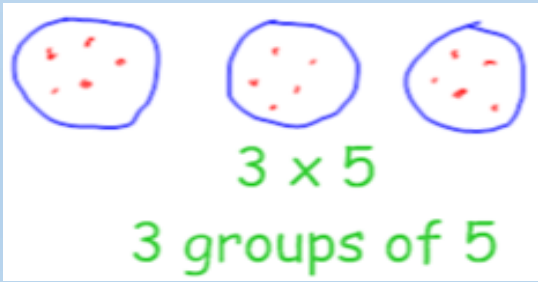
Use arrays



Understand multiplication as repeated addition – use concrete objects to support understanding.



Use pictorial representations



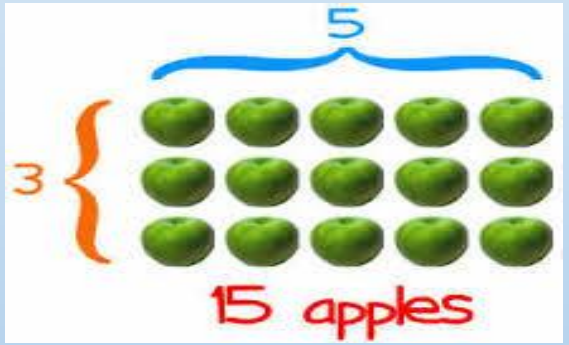
Multiplication: Year 2

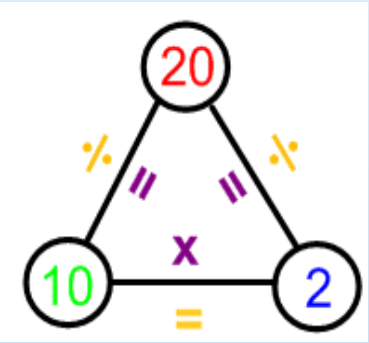
Year 2 statutory requirement:
✓Recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers.
✓Calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication (×), division (÷) and equals (=) signs.
✓Show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot.
✓Solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts.

Further develop understanding multiplication as repeated addition.

Use pictorial representations

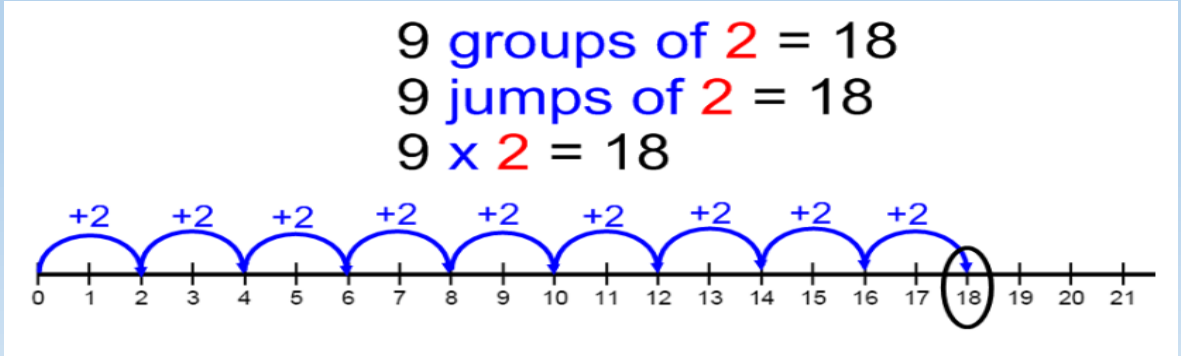
Use arrays



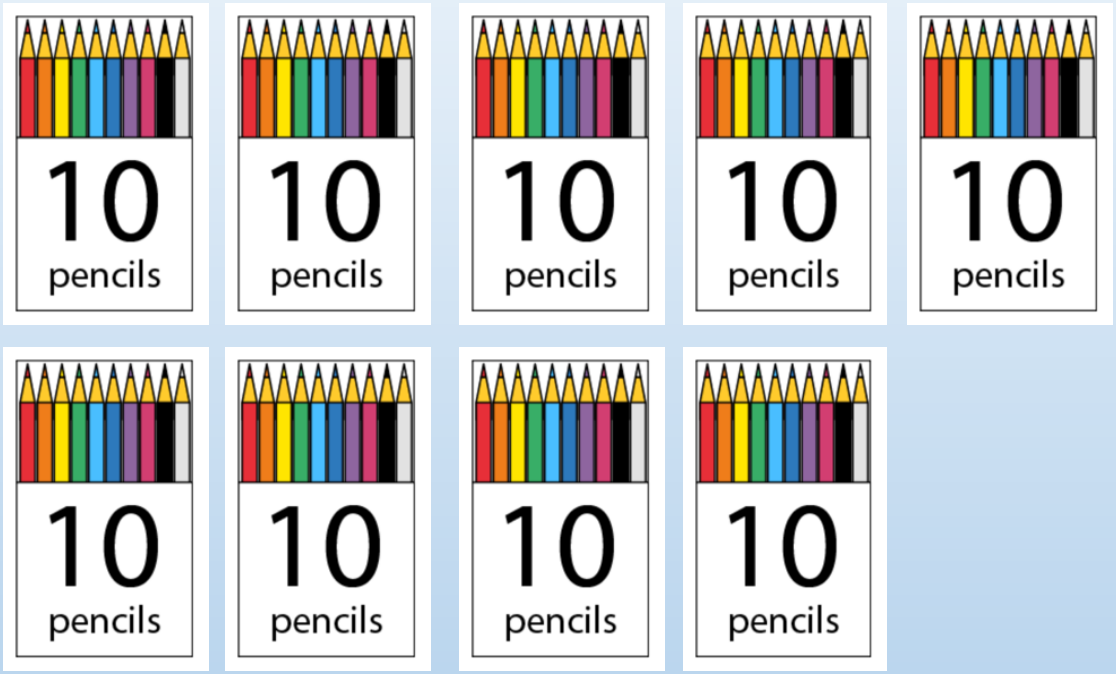


Recall multiplication and division facts for 2, 5, 10

Model and bridge link from repeated addition to solving multiplication problems using a number line.



2MD-1 Multiplication as repeated addition

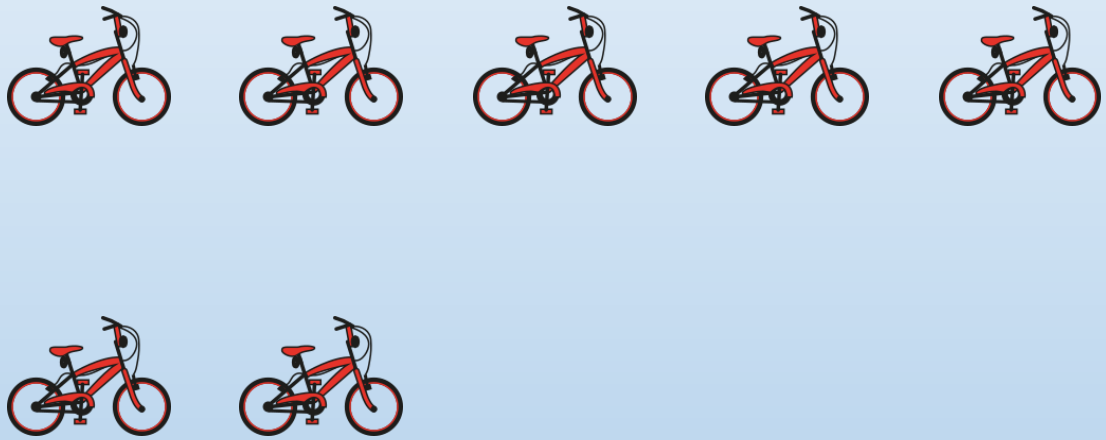


- Can you say what the expression to match the picture should be?
- What multiple do we need to skip count in to find out *how many pencils* there are *altogether?*
- If we skip count in multiples of 10, how many 10s will we need to count?
- So, 10, 20, 30, 40, 50, 60, 70, 80, 90… there are **90** pencils altogether.

9 × 10 ____

The 9 represents the number of groups.
The 10 represents the number of pencils in each group.
The 90 represents the total number of pencils.

2MD-1 Multiplication as repeated addition



7×2 ____

- What expression can we write to match the picture?
- Can you tell me what multiple we need to skip count in to find out how many wheels there are *altogether* on the bikes?
- How many twos will you need to count?
- So, 7 times 2 is equal to ____.
- Can you say what each number in the equation means?

Multiplication: Year 3

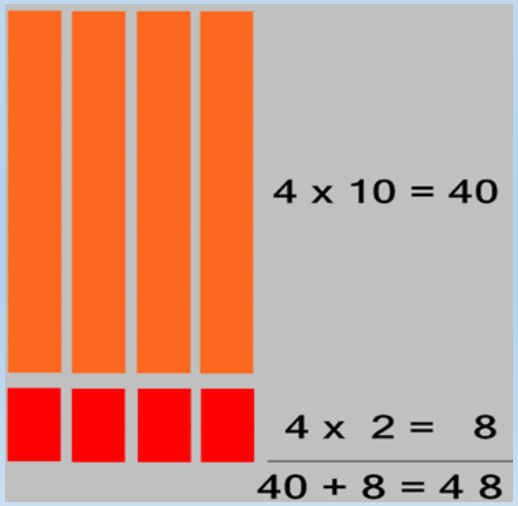
Year 3 statutory requirements:
- ✓Recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables.
- ✓Write and calculate mathematical statements for multiplication using the multiplication tables that they know, including for two-digit numbers times one-digit numbers, using mental and progressing to formal written methods.
- ✓Solve problems, including missing number problems, involving multiplication including positive integer scaling problems and correspondence problems in which n objects are connected to m objects.

Develop recall of multiplication facts (alongside inverse of the corresponding division facts).

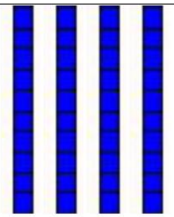
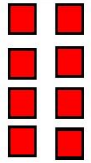
x	3	4	8
5			
6			
4			

x	4	?	?
?	8	6	10
6	24	18	30
?	32	24	40

12 x 4 = 48



Use concrete resources to develop conceptual understanding of the compact method introduced in Year 4.

x	10	2
4		

OR

x	10	2
4	**40**	**8**

$$\begin{array}{r} 10 + 2 \\ \times \quad 4 \\ \hline 8 \\ 40 \\ \hline 48 \end{array}$$


5cm


?cm

The yellow ribbon is 4 times as long as the red ribbon. What is it's length?

Multiplication: Year 4

Year 4 statutory requirement:

✓ Recall multiplication and division facts for multiplication tables up to 12 × 12

✓Use place value, known and derived facts to multiply and divide mentally, including: multiply two-digit and three-digit numbers by a one-digit number using formal written layout.

✓Solve problems involving multiplying and adding, including using the distributive law to multiply two digit numbers by one digit, integer scaling problems and harder correspondence problems such as n objects are connected to m objects.

X	1	2	3	4	5	6	7	8	9	10	11	12
1	1	2	3	4	5	6	7	8	9	10	11	12
2	2	4	6	8	10	12	14	16	18	20	22	24
3	3	6	9	12	15	18	21	24	27	30	33	36
4	4	8	12	16	20	24	28	32	36	40	44	48
5	5	10	15	20	25	30	35	40	45	50	55	60
6	6	12	18	24	30	36	42	48	54	60	66	72
7	7	14	21	28	35	42	49	56	63	70	77	84
8	8	16	24	32	40	48	56	64	72	80	88	96
9	9	18	27	36	45	54	63	72	81	90	99	108
10	10	20	30	40	50	60	70	80	90	100	110	120
11	11	22	33	44	55	66	77	88	99	110	121	132
12	12	24	36	48	60	72	84	96	108	120	132	144

Develop recall of multiplication facts (alongside the inverse of the corresponding division facts).

Build on learning from Year 3 and model how grid method and/or expanded method links to compact short multiplication.

x	30	6
4	10 10 10 10 10 10 10 10 10 10 10 10	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1

30 + 6
× 4
24
+ 120
144

$\overset{2}{3}6 \times 4 = 144$

2 eggs
150g flour
180g sugar

Use knowledge of times tables to solve scaling problems.

Susie wants to bake 12 cupcakes people.
The ingredients given are for four cupcakes.
How much flour will she need?

Cupcakes	Flour
4	150g
12	900g

x3

x3

Multiplication: Year 5

Year 5 statutory requirements:
✓Multiply numbers up to 4 digits by a one- or two-digit number using a formal written method, including long multiplication for two-digit numbers.
✓Multiply and divide whole numbers and those involving decimals by 10, 100 and 1000

Build on learning from Year 4 and use concrete resources if needed to multiply numbers up to 4 digits by **one digit** using compact short multiplication.

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

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

Reinforce the connection between the grid method to multiply numbers up to 4 digits by **two digit** using long multiplication.

Th	H	T	O
	2	3	4
×		3	2
	4	6	8
$_{1}7$	$_{1}0$	2	0
7	4	8	8

To multiply by 10, 100, 1000 children should use place value charts to show that the digit moves a column (s) to the left .The value of the digit is increasing by 10, 100 or 1000 times.

X 10

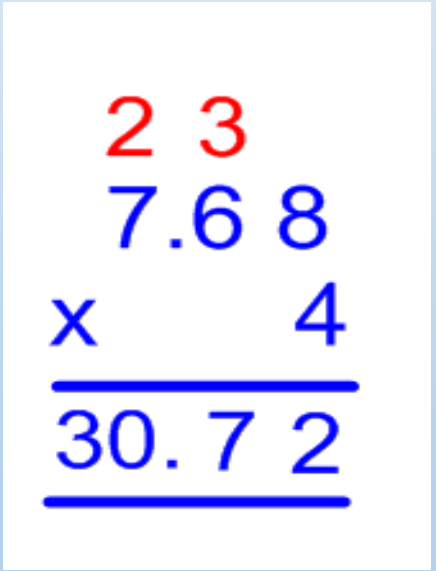
Multiplication: Year 6

Year 6 statutory requirements:
✓ Multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication.
✓Multiply one-digit numbers with up to two decimal places by whole numbers.

Build on learning from Year 5 multiplying numbers using compact short multiplication and long division.

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		

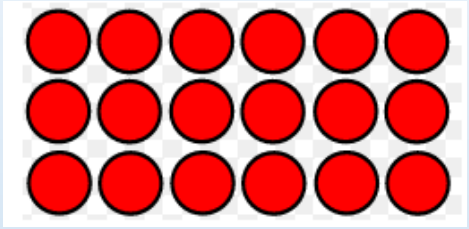
Use compact short multiplication to multiply decimal number by whole number.

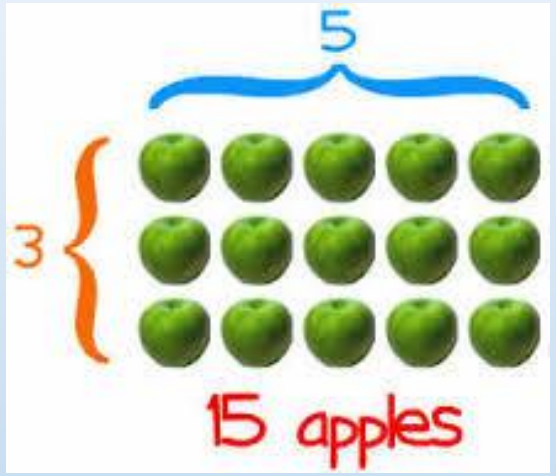


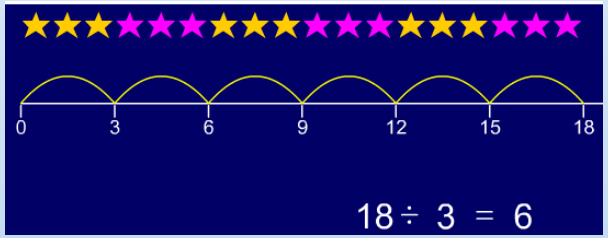
Division

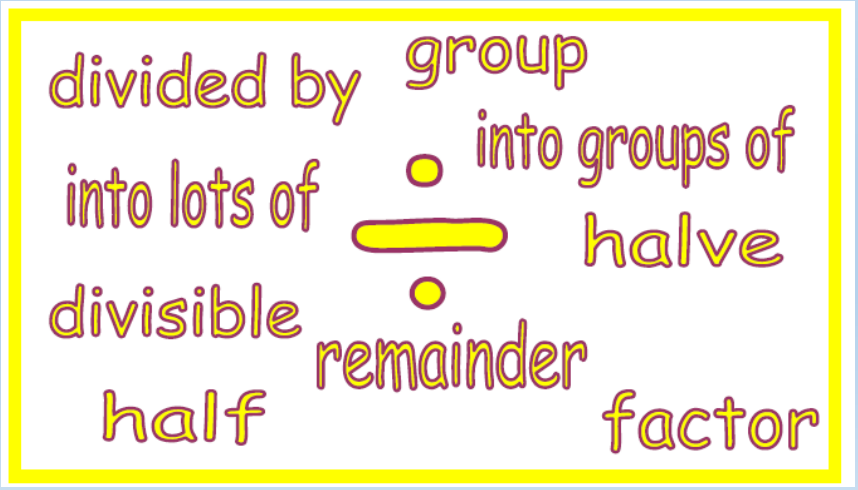
Concrete resources:

Arrays
Multiplication squares
100 square
Number lines
Blank number lines
Counting stick
Place value apparatus





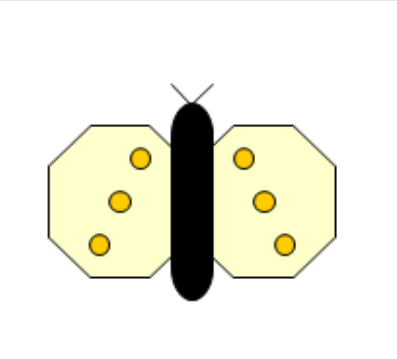


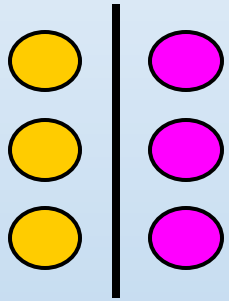


Division: Reception

Early learning goal statutory requirement:
✓They solve problems, including halving and sharing.

Use pictorial representations and concrete resources to halve numbers to 10.





Begin to share quantities using practical resources, role play, stories and songs.

Role play example:
It is the end of the party and the final two teddies are waiting for their party bags. Provide empty party bags and a small collection of items such as gifts, balloons and slices of cake. Ask the children to share the objects between the two bags.

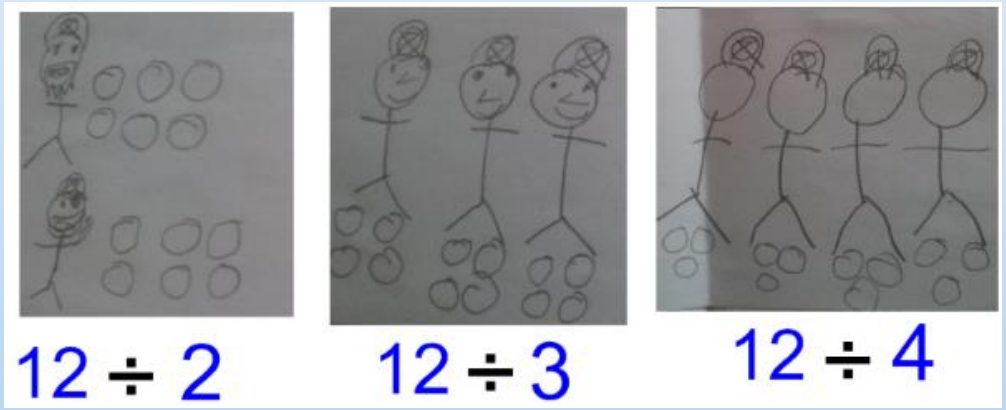
Division: Year 1

Year 1 statutory requirement:

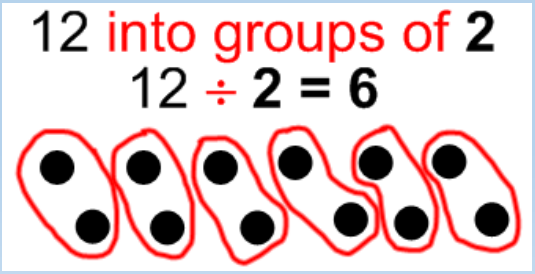
- solve one-step problems involving multiplication and division, by calculating the answer using concrete objects, pictorial representations and arrays with the support of the teacher.

Understand division as **sharing** using concrete resources.

Pictorial representation of sharing **12 gold coins** between 2, 3 and 4 pirates!



Begin to understand division as **grouping** using concrete resources.



Division: Year 2

Year 2 statutory requirement:

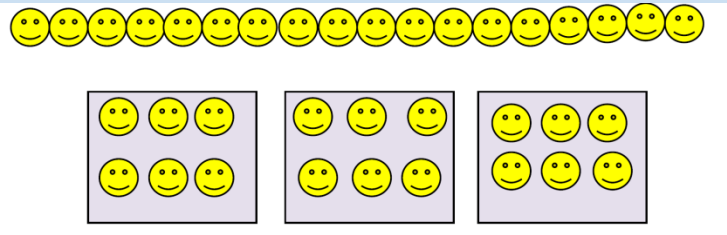
✓Recall and use division facts for 2, 5 and 10 multiplication tables.

✓Calculate mathematical statements for multiplication and division within the multiplication tables and write then using the multiplication (x), division ( ) and equals (=) signs.

✓Solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts.

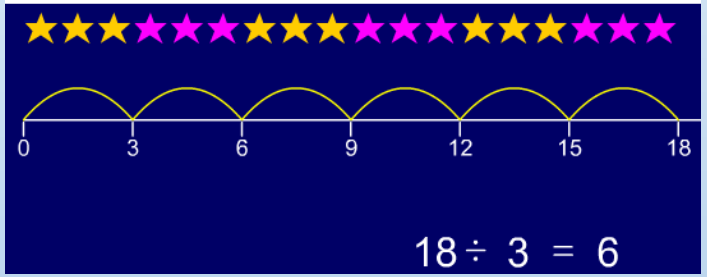
✓***Find 1/3; 1/4; 2/4; ¾ of a length, shape, set of objects or quantity***

Further develop understanding of difference between **sharing and grouping** using concrete resources.



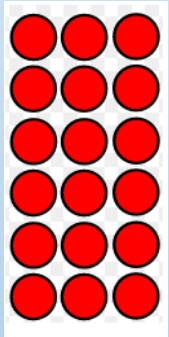
18 smiley faces shared between 3 classes.

Model division as grouping on a number line (ITP 'Grouping')



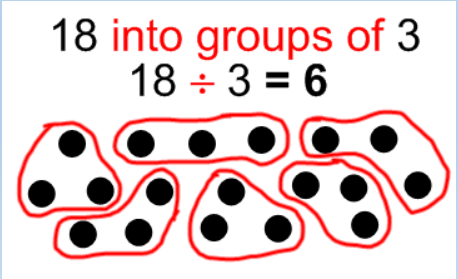
Reinforce division

through the use of arrays.

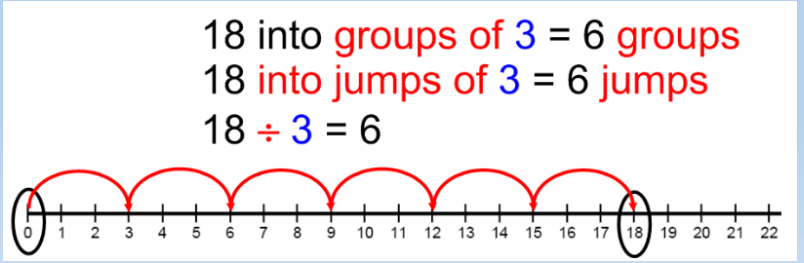


18 ÷3 = 6

18 ÷6 = 3



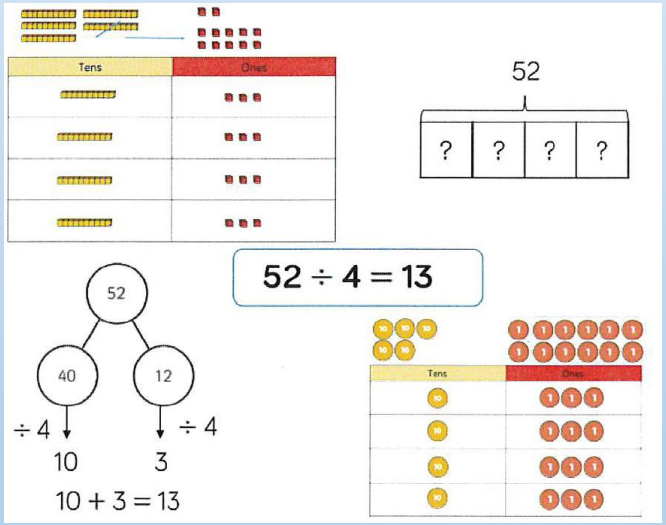
Children use numbered number lines to divide using grouping.

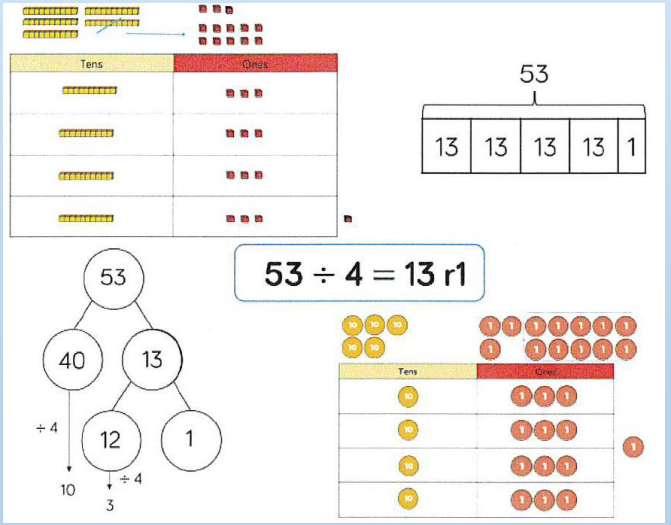


Remember to develop connections between fractions and division and rephrase this calculation as 1/3 of 18 is the same as 18 ÷ 3 = 6.

Division: Year 3 & 4

Year 3 statutory requirement:
✓Recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables
✓Write and calculate mathematical statements for division using the multiplication tables that they know, including for two-digit numbers times one-digit numbers, using mental and progressing to formal written methods
✓ Solve problems, including missing number problems, involving division including positive integer scaling problems and correspondence problems in which n objects are connected to m objects.
Year 4 statutory requirement: Note - there isn't a statutory objective for division. However, Y4 statutory multiplication objectives are to (1) recall multiplication and division facts for multiplication tables up to 12 × 12 and (2) multiply two-digit and three-digit numbers by a one-digit number using formal written layout so we will build on the connections between multiplication and division.





Remember to develop connections between fractions and division and rephrase these calculations as 1/3 of 96; ¼ of 72, ¼ of 872 and 1/5 of 185. Note: Year 3 fraction objective - *Recognise, find and write fractions of a discrete set of objects: unit fractions and non-unit fractions with small denominators;* Year 4 fraction objective: *solve problems involving increasingly harder fractions to calculate quantities, and fractions to divide quantities, including non-unit fractions where the answer is a whole number.*

Division: Year 5

Year 5 statutory requirement:
✓ divide numbers up to 4 digits by a one-digit number using the formal written method of short division and interpret remainders appropriately for the context.

Further secure pupils' understanding of compact short division.

$218 \div 8 =$

$$\begin{array}{r} 2\;\,7\;\text{r}\;2 \\ 8\,\big)\,\overline{2\,{}^{2}1\,{}^{5}8} \end{array}$$

Extend to expressing results in different ways according to the context, including with remainders as fractions, as decimals or by rounding. For example:

- Whole number remainder = 27 r 2
- Fraction remainder = $27\frac{2}{8} = 27\frac{1}{4}$
- Decimal remainder = $27\frac{1}{4} = 27\frac{25}{100} = 27.25$

Division: Year 6

Year 6 statutory requirement:
✓ divide numbers up to 4 digits by a two-digit whole number using the formal written method of long division, and interpret remainders as whole number remainders, fractions, or by rounding, as appropriate for the context

Continue to use compact short division to divide numbers up to 4 digits by a 1-digit whole number.

$218 \div 8 =$

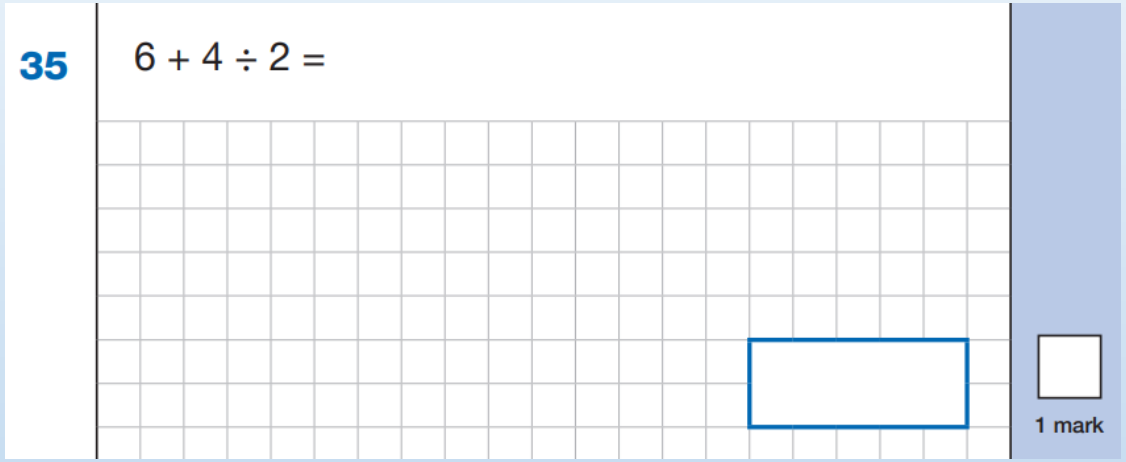
```
     2 7 r 2
8 | 2 ²1 ⁵8
```

- Whole number remainder = 27 r 2
- Fraction remainder = $27\frac{2}{8} = 27\frac{1}{4}$
- Decimal remainder = $27\frac{1}{4} = 27\frac{25}{100} = 27.25$

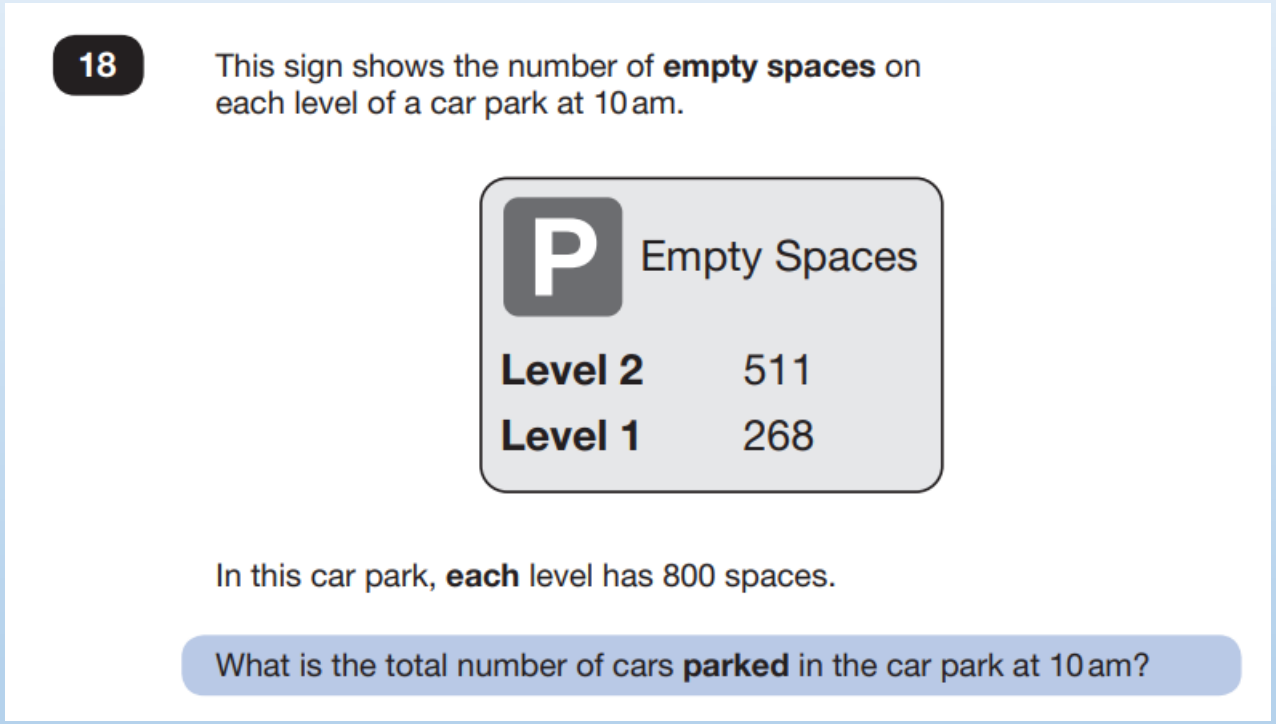
Use long division to divide numbers up to 4 digits by a 2-digit whole number.

```
       0  2  4 r 1 2
2 4 |  5  8  8
    -  4  8
       1  0  8
    -     9  6
          1  2
```

2022 End of Key Stage 2 (Year 6)



Arithmetic paper



Reasoning paper

Helping at home

- Count anything and everything (in age appropriate steps forwards and backwards)
- Times tables (Rockstars, songs, games) little and often and include corresponding division facts
- Board games
- Dice games
- Be positive about maths!
- Money/shopping
- Telling the time
- Reading timetables
- Measure – cooking, weighing etc.