The principal focus of mathematics teaching in key stage 1 is to ensure that pupils develop confidence and mental fluency with whole numbers, counting and place value. This should involve working with numerals, words and the four operations, including with practical resources [for example, concrete objects and measuring tools].
At this stage, pupils should develop their ability to recognise, describe, draw, compare and sort different shapes and use the related vocabulary. Teaching should also involve using a range of measures to describe and compare different quantities such as length, mass, capacity/volume, time and money.
By the end of year 2, pupils should know the number bonds to 20 and be precise in using and understanding place value. An emphasis on practice at this early stage will aid fluency.
Pupils should read and spell mathematical vocabulary, at a level consistent with their increasing word reading and spelling knowledge at key stage 1.

Children at Raeburn Primary will be exposed to a mastery curriculum and within this will have many opportunities to develop and deepen their understanding of mathematical procedures and concepts. They will be exposed to a range of concrete, pictorial and abstract representations as well as intelligent practice to embed their learning. We want our children to be fluent mathematicians and to be able to recognise patterns and sequences within number so that they are prepared for the future. We contextualise our mathematics and include as many real world examples as possible to allow all children to access the curriculum.

Concrete resources we use include: rekenrek, tens frame, red and yellow counters, numicon, number lines, dienes, place value counters
Pictorial representations we use include: bar model, number line, part-part-whole model, place value chart, gattegno chart

Year 1 Objectives	Year 2 Objectives
● read, write and interpret mathematical statements involving addition (+), subtraction (–) and equals (=) signs ● represent and use number bonds and related subtraction facts within 20 ● add and subtract one-digit and two-digit numbers to 20, including zero ● solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as 7 = – 9. ● 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	● solve problems with addition and subtraction: ○ using concrete objects and pictorial representations, including those involving numbers, quantities and measures ○ applying their increasing knowledge of mental and written methods ● recall and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100 ● add and 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

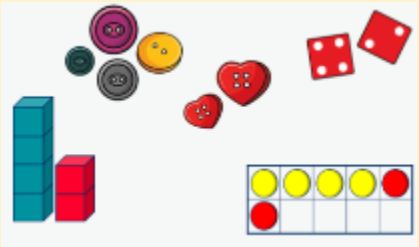
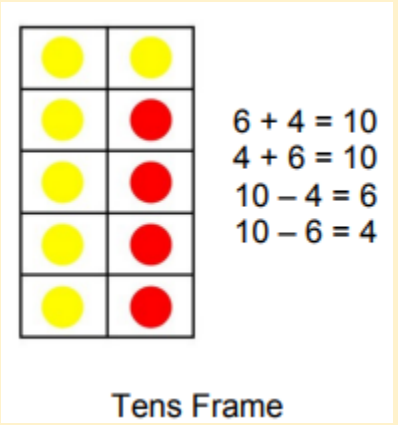
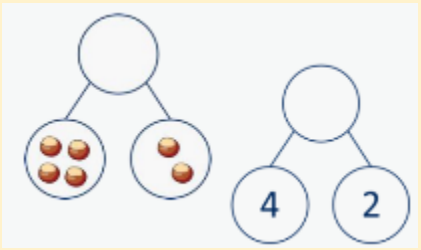
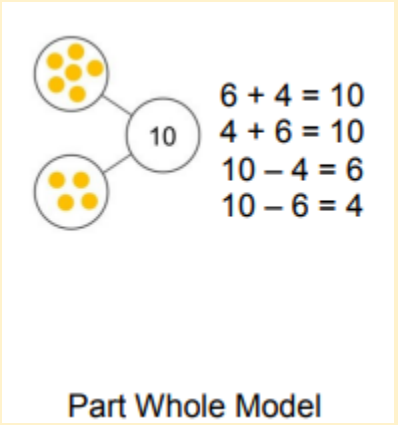
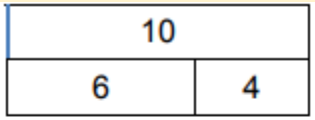
	• show that addition of two numbers can be done in any order (commutative) and subtraction of one number from another cannot • recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems. • recall and use multiplication 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.

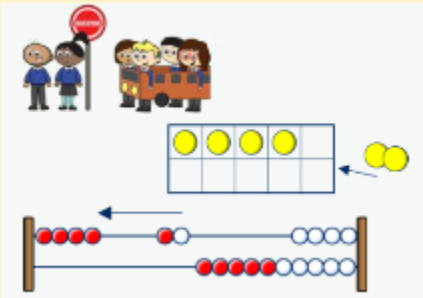
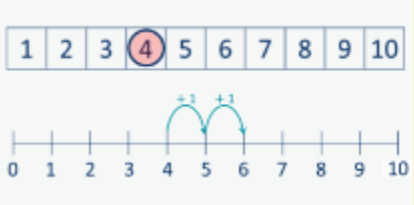
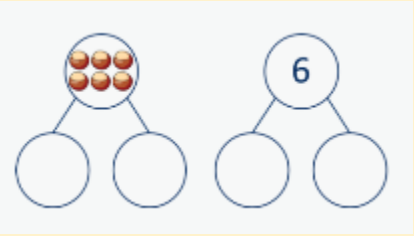
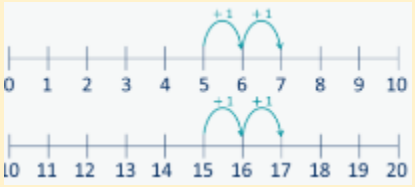
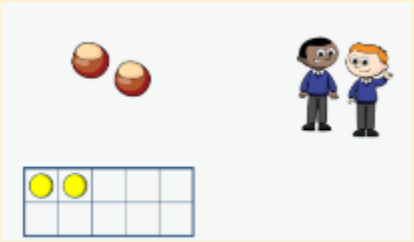
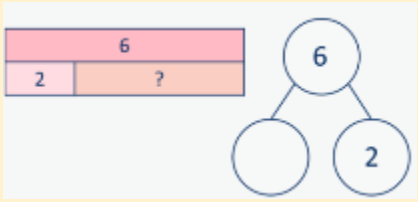
Year 1 small steps				**Year 2 small steps**			
Addition	**Subtraction**	**Multiplication**	**Division**	**Addition**	**Subtraction**	**Multiplication**	**Division**
5	**5**	**4**	**4**	**8**	**7**	**7**	**6**

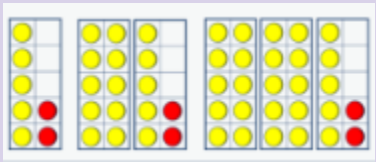
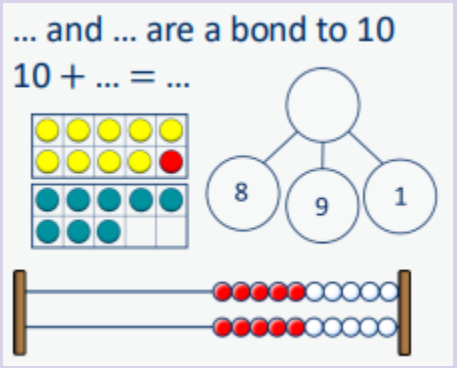
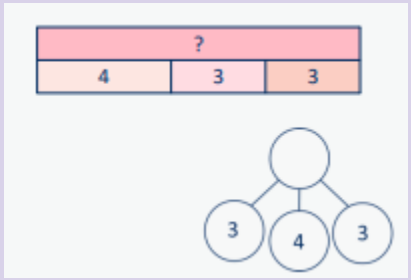
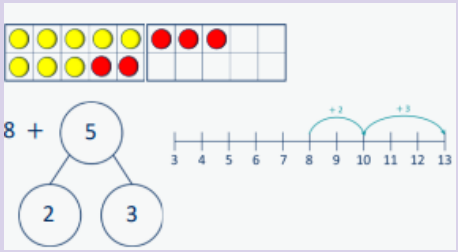
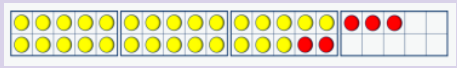
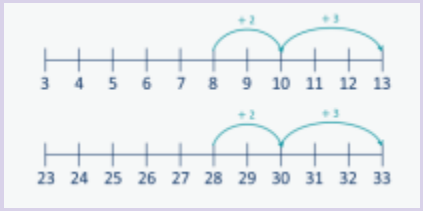
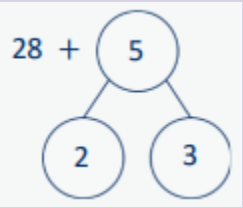
Addition

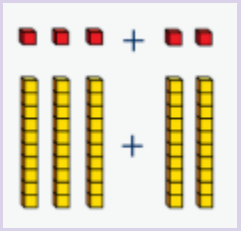
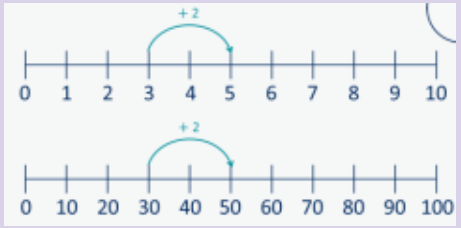
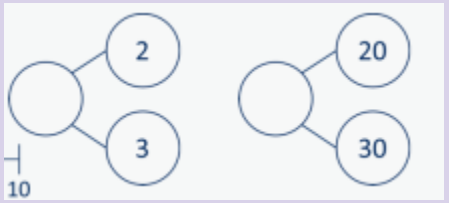
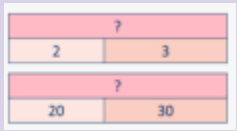
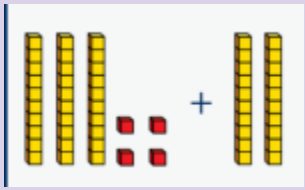
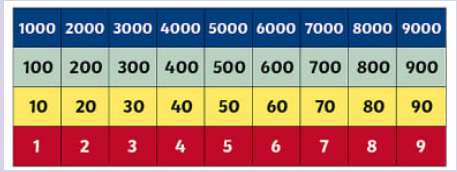
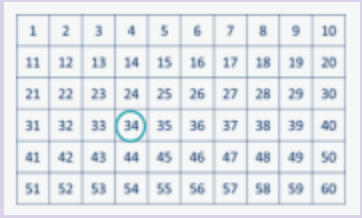
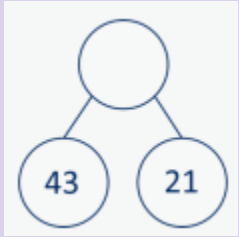
Key language:
whole, part, ones, ten, tens, number bond, add, addition, plus, total, altogether, subtract, subtraction, find the difference, take away, minus, less, more, group, equal, equals, is equal to, equal groups, addend, sum, commutative

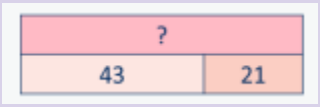
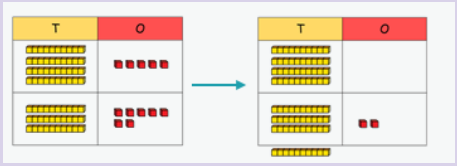
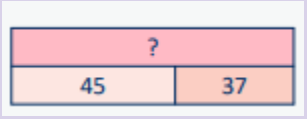
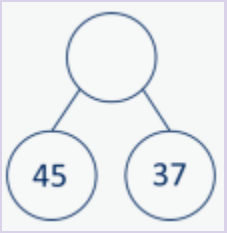
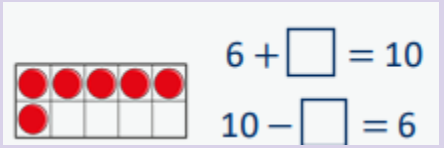
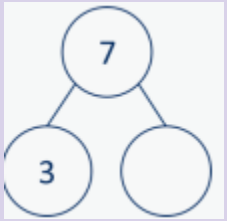
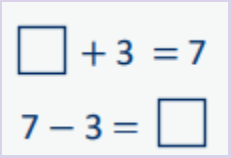
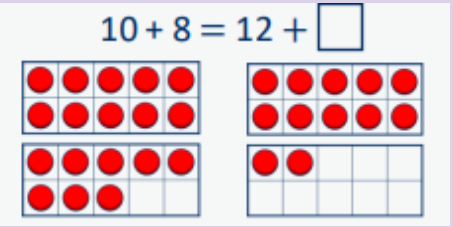
Addend plus addend equals the sum
addend + addend = sum

Progression of skills	Key representations		
Objective and strategy	**Concrete**	**Pictorial**	**Abstract**
Add together - Aggregation - 2 quantities are combined to find a total	There are ___ There are also ___ There are ___ in total/altogether The sum of both parts is ___   Tens Frame	___ is a part ___ is a part ___ is the whole   Part Whole Model	___ plus ___ is equal to ___ ___ is equal to ___ + ___ $4 + 2 = 6$ $2 + 4 = 6$ $6 = 4 + 2$ $6 = 2 + 4$  6 + 4 = 10 4 + 6 = 10 10 – 4 = 6 10 – 6 = 4 Bar Model
Add more	First … then … now …	I start at …	__ plus ___ is equal to ___

- Augmentation - A quantity is increased		I jump … places I land on … 	___ is equal to ___ + ___ $4+2=6$ $2+4=6$ $6=4+2$ $6=2+4$
Bonds within 10 - Number bonds for each number within 10 - Children will notice patterns across the numbers	___ is made of ___ and ___ ___ and ___ make ___ 	___ can be partitioned into ___ and ___ 	___ plus ___ is equal to ___ $6+0=6$ $5+1=6$ $4+2=6$ $3+3=6$ $2+4=6$ $1+5=6$ $0+6=6$
Related facts within 20 - Using prior knowledge, make links to known facts	I know that ___ and ___ = ___ So ___ and ___ = ___ 	___ more than ___ is ___ So ___ more than ___ is ___ 	What patterns do you notice? $5+2=7$ $15+2=17$ $7=5+2$ $17=15+2$
Missing Numbers - Using prior knowledge, make links to known facts - Identify the addend that is missing	How many more do you need to make ___ ? 	If ___ is the whole and ___ is a part, the other part must be ___ 	___ plus ___ is equal to ___ ___ + ___ = ____ $2+\square=6$ $6=2+\square$ 

Add ones to any number - Related facts - Using prior knowledge, make links to known facts.	I know that ___ and ___ = ___ So ___ and ___ = ___ 	___ more than ___ is ___ So ___ more than ___ is ___ 	What do you notice? Can you continue the pattern? $5 + 2 = 7$ $15 + 2 = 17$ $25 + 2 = 27...$
Add three 1 digit numbers - Addition can be done in any order - Using prior knowledge, make links to known facts.		Double ___ + ___ = ____ 	What do you notice? What addition is the easiest to calculate? $8 + 9 + 1 =$ $8 + 1 + 9 =$ $9 + 1 + 8 =$
Add across a ten - Make links to known facts within ten then bridge across and through 10.	___ can be partitioned into ___ and ___ 	I add ___ to get to ___ then I add ___  	 $8 + 5 = 13$ $28 + 5 = 33$
Add multiples of 10 - Make links to known facts within 10 and across 10 focusing on the tens place value	___ ones + ___ ones = ___ ones So ___ tens + ___ tens = ___ tens	What is the same? What is different?	$3 + 2 = 5$ $30 + 20 = 50$

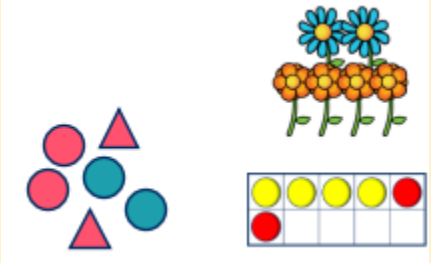
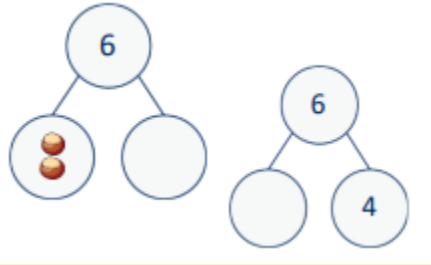
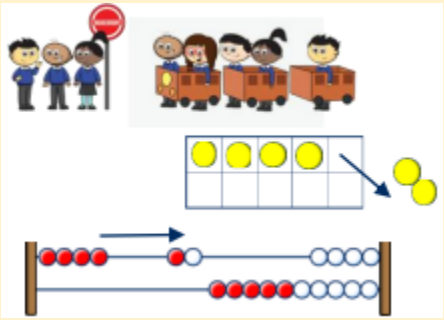
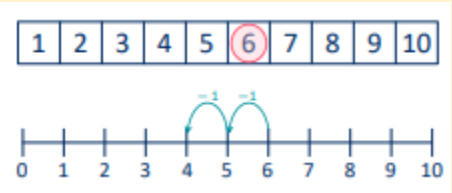
		  	
Add tens to any number - Use of 100 square - Use of gattegno chart	___ tens + ___ tens = ___ tens ___ tens and ___ ones = ___ 	To add ___ I need to add ___ ten times.  	I know that ___ and ___ make ___ So ___ and ___ = ___ 30 + 20 = 50 34 + 20 = 54
Add 2-digit numbers - Not crossing ten boundary - Lining up ones and tens in columns will support later written methods.	___ ones + ___ ones = ___ ones ___ tens + ___ tens = ___ tens		3 ones + 1 one = 4 ones 4 tens + 2 tens = 6 tens 6 tens + 4 ones = 64

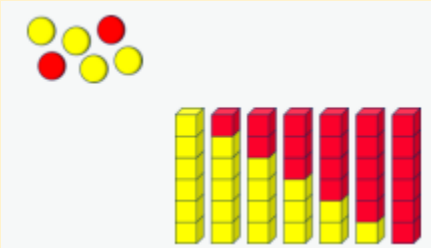
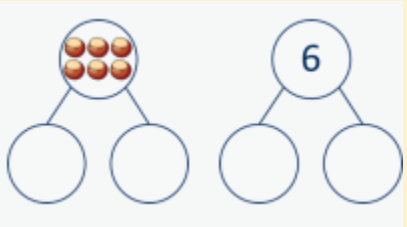
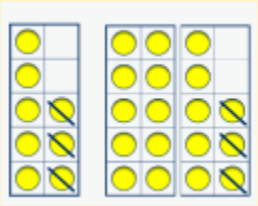
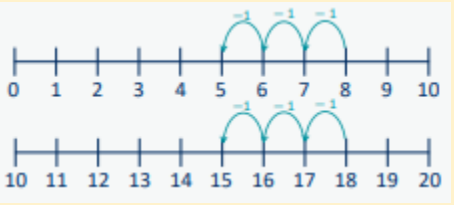
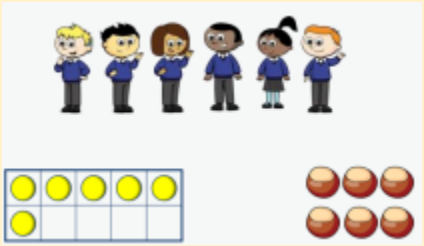
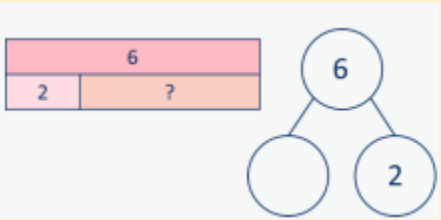
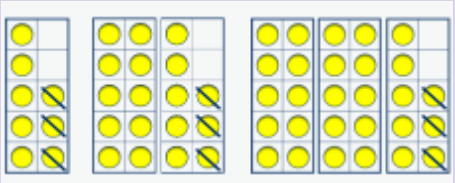
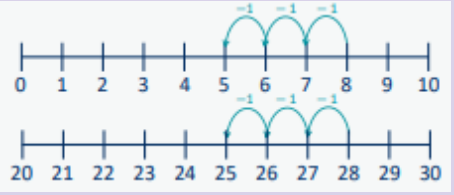
			
Add 2-digit numbers - Crossing the tens boundary - Lining up ones and tens in columns will support later written methods. - Begin to exchange one ten for ten ones.	There are ___ ones so I need to exchange ___ for __ tens and ___ ones There are ___ ones so I do not need to exchange. ___ one s = ___ tens and ___ ones 	 	5 ones + 7 ones = 12 ones 12 ones = 1 ten and 2 ones 4 tens + 3 tens + 1 ten = 8 tens 8 tens and 2 ones = 82
Missing numbers - Solve missing number problems - Use inverse methods to check answers - Use fact families	How many more do you need to make …? 	If ___ is the whole and ___ is a part, the other part must be ___  	___ can be partitioned into ___ and ___ 

Subtraction

Key language:
whole, part, ones, ten, tens, number bond, add, addition, plus, total, altogether, subtract, subtraction, find the difference, take away, minus, less, more, group, equal, equals, is equal to, equal groups, addend, sum, subtrahend, minuend

Minuend minus subtrahend equals the difference.
minuend - subtrahend = the difference

Progression of skills	Key representations		
Objective and strategy	**Concrete**	**Pictorial**	**Abstract**
Find a part - Link to number bonds and known facts	There are ___ in total. ___ are ___ How many are **not** ___? 	___ is the whole. ___ is a part. ___ is a part. 	___ subtract ___ is equal to ___ ___ is equal to ___ - ___ $6-2=4$ $6-4=2$ $4=6-2$ $2=6-4$
Take away - A quantity is decreased	First… then… now… 	I start at ___ I jump back ___ I land on ___ 	___ minus ___ is equal to ___ ___ is equal to ___ - ___ $6-2=4$ $6-4=2$ $4=6-2$ $2=6-4$
Bonds within 10 - Focus on subtraction facts - Encourage children to notice	___ is made of ___ and ___ ___ and ___ make ___	___ can be partitioned into ___ and ___	What patterns do you notice?

patterns.			$6-0=6$ $6-1=5$ $6-2=4$ $6-3=3$ $6-4=2$ $6-5=1$ $6-6=0$
Related facts within 20 - Make links to known facts and pattern recognition	I know that ___ minus ___ = ___ So ___ minus ___ = ___ 	___ less than ___ is ___ So ___ less than ___ is ___ 	What patterns do you notice? $8-3=5$ $18-3=15$ $5=8-3$ $15=18-3$
Missing numbers - Make links to known facts and pattern recognition	How many do you need to subtract to make … ? 	If ___ is the whole and ___ is a part, the other part must be ___ 	___ minus ___ is equal to ___ $6-\square=2$ $2=6-\square$ 
Subtract ones from any number - Make links to known facts and pattern recognition	I know that ___ minus ___ = ___ So ___ minus ___ = ___ 	___ less than ___ is ___ So ___ less than ___ is ___ 	What do you notice? Can you continue the pattern? $8-3=5$ $18-3=15$ $28-3=25\ldots$
Subtract across a 10	___ can be partitioned into ___ and	Make links with related facts	

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- Partition the number being subtracted to bridge through a ten.

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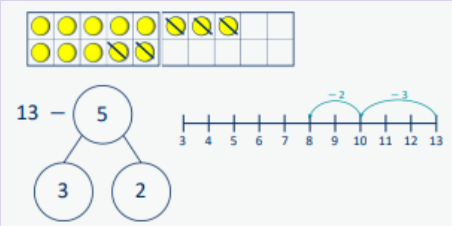
___



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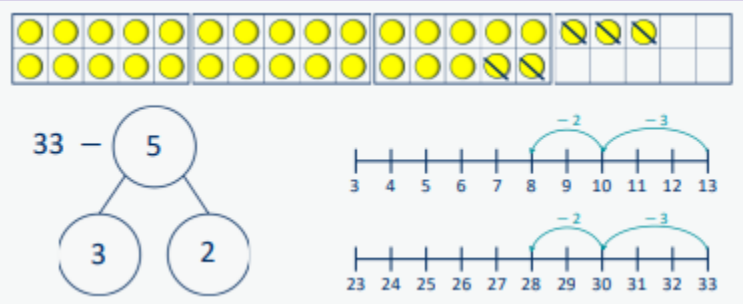

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Subtract multiples of 10

- Make links to known facts and pattern recognition

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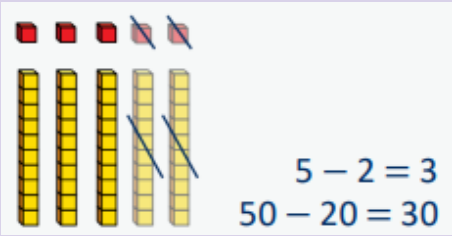
___ ones minus ___ ones equal ___ ones

So ___ tens minus ___ tens equal ___ tens



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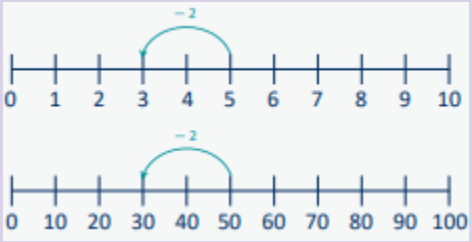
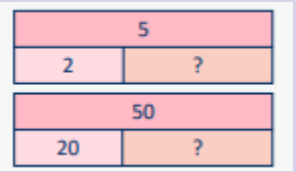
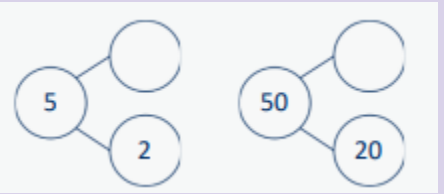
What is the same?

What is different?







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<td>

Subtract 10s from any number

- Make links to known facts and pattern recognition

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___ tens - ___ tens = ___ tens

___ tens and ___ ones = ___

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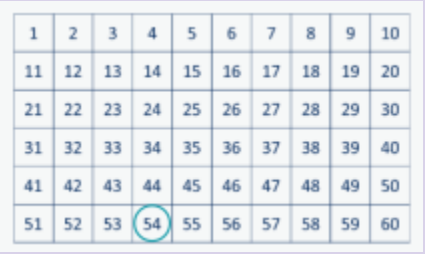
To subtract ___ il need to subtract 10 ___ times



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

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<td>

I know that ___ minus ___ = ___

So ___ minus ___ = ___

50 – 20 = 30

54 – 20 = 34

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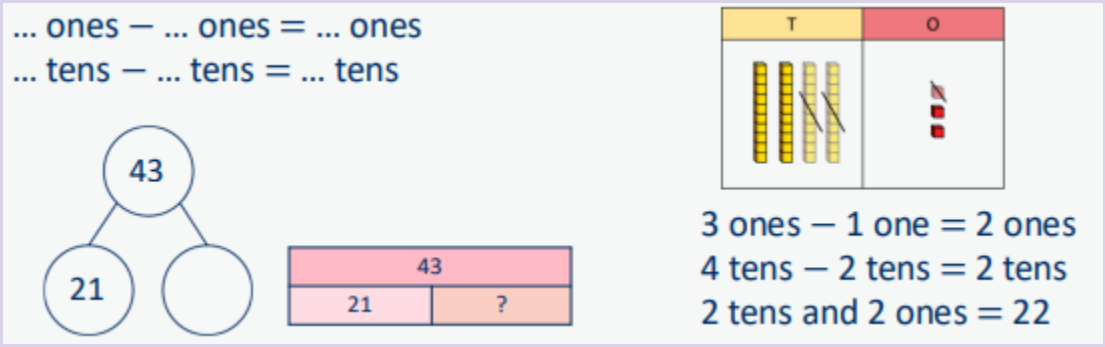
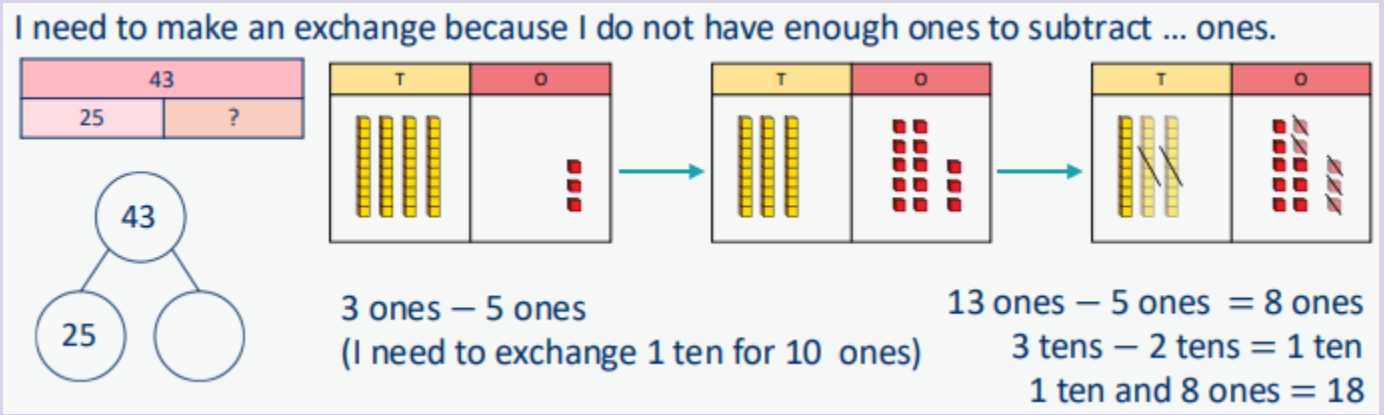
Subtract two 2-digit numbers
- Not across a ten

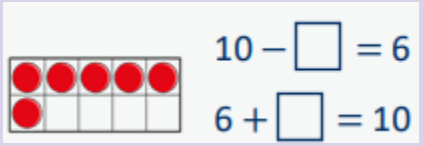


Subtract two 2-digit numbers
- Across a ten
- Begin to exchange 1 ten for 10 ones

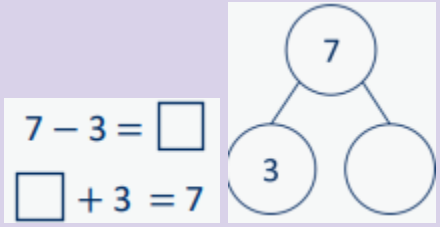


Missing numbers
- Solve missing number problems and use inverse operation to check

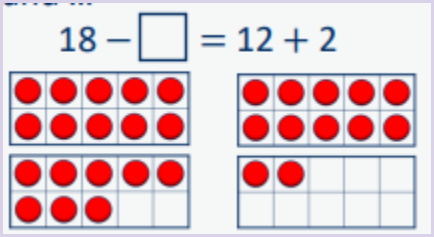
How many do you need to subtract to make ___ ?



If ___ is a whole and ___ is a part, then ___ is the other part.



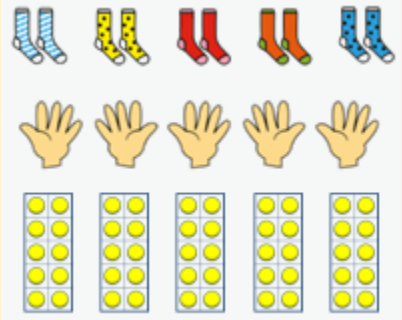
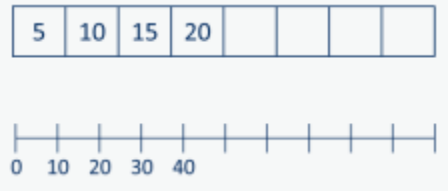
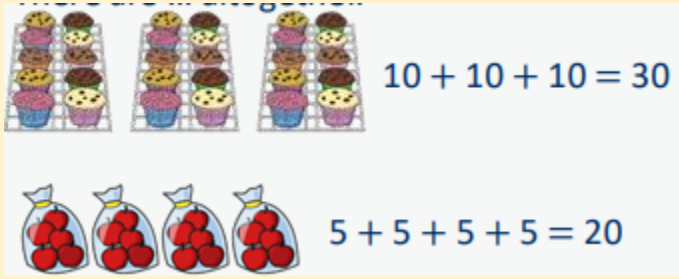
___ can be partitioned into ___ and ___



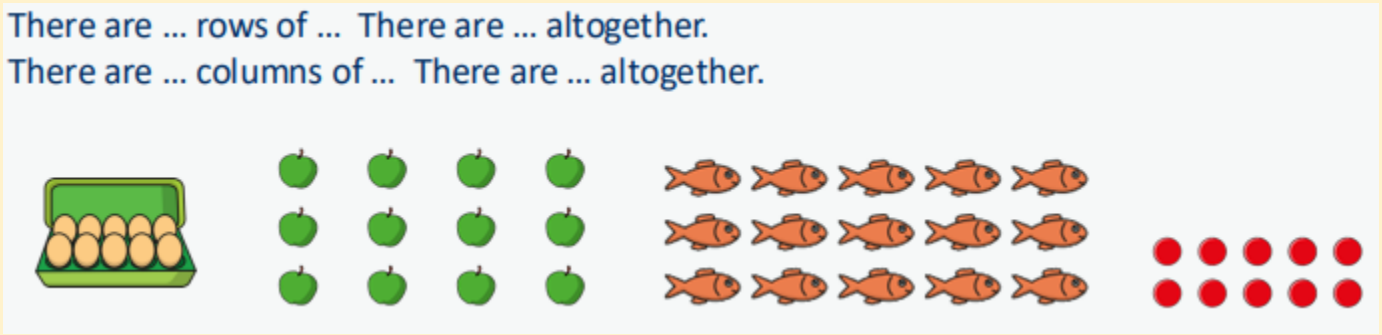
Multiplication

Key language:
Factor, multiply, times by, group, repeated addition, multiplicative, equal, multiple, times table, commutative, equal groups, altogether, odd, even, column, row

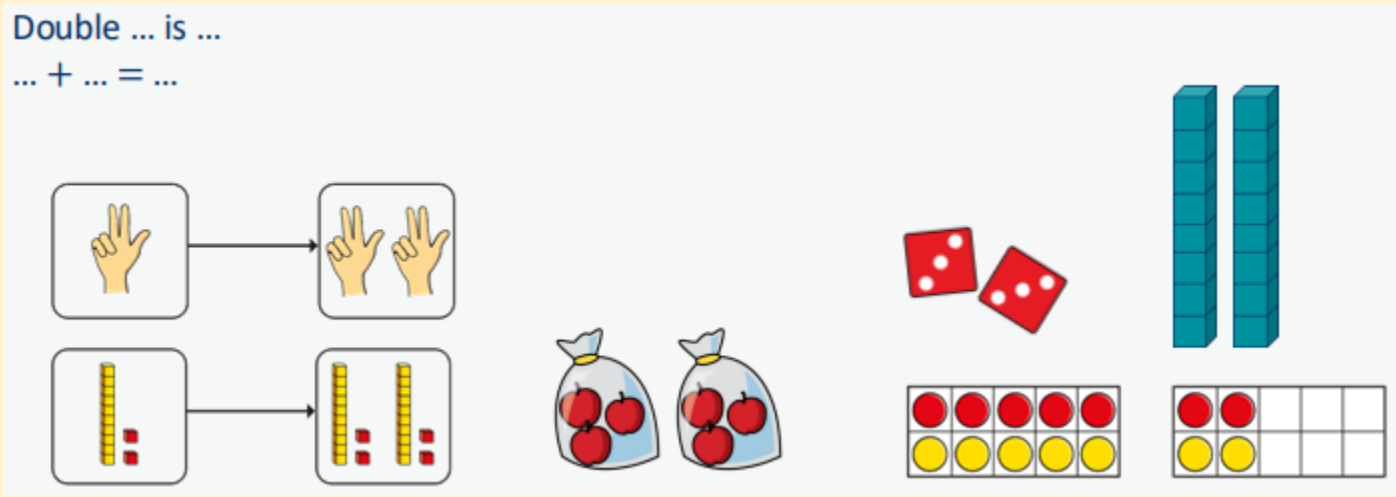
Factor multiplied by factor equals the product
Factor x factor = product

Progression of skills	Key representations		
Objective and strategy	**Concrete**	**Pictorial**	**Abstract**
Count in 2s, 5s and 10s. - Begin by counting objects that naturally come in 2s, 5s, and 10s - E.g. pairs of socks/fingers	There are ___ equal groups of ___ There are ___ altogether 	Continue to colour in ___s What do you notice?  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	Complete the number line by counting in ___s  5 10 15 20 0 10 20 30 40
Add equal groups - Repeated addition - Children should be able to write a repeated addition to represent equal groups - Draw pictures or use objects to represent repeated addition	There are ___ equal groups of ___ There are ___ altogether  $10 + 10 + 10 = 30$ $5 + 5 + 5 + 5 = 20$		What is the same? What is different? $2 + 2 + 2 =$ $5 + 5 + 5 =$ $10 + 10 + 10 =$,

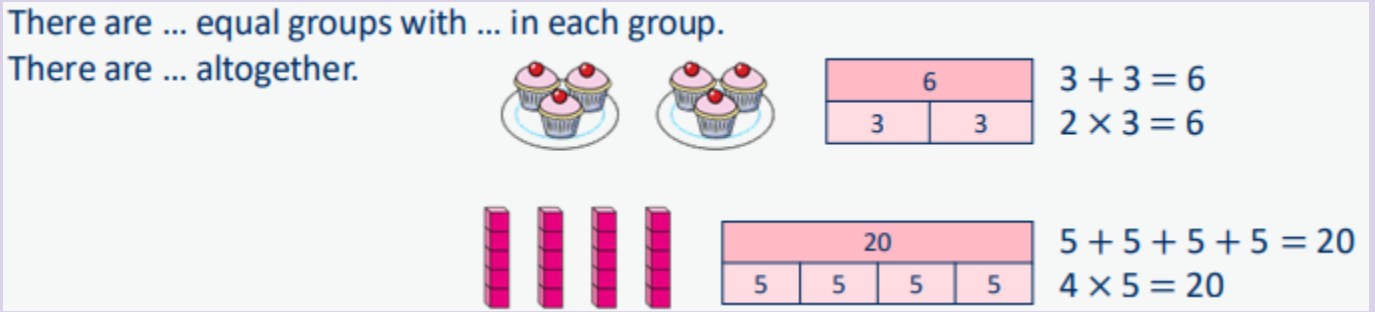
Make arrays
- Using their knowledge of adding equal groups, arrange objects in columns and rows.



Make doubles
- Children begin to understand that doubles are two equal groups
- Explore doubles beyond 20 using base 10.



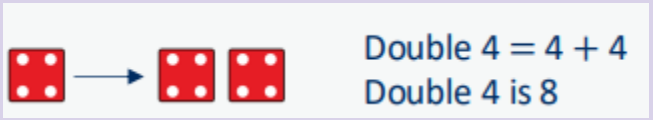
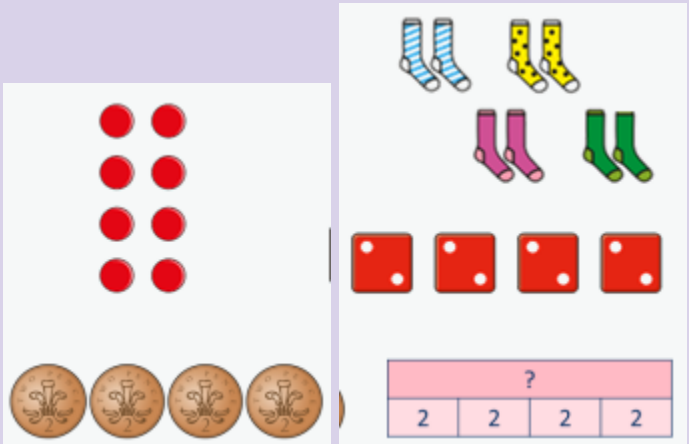
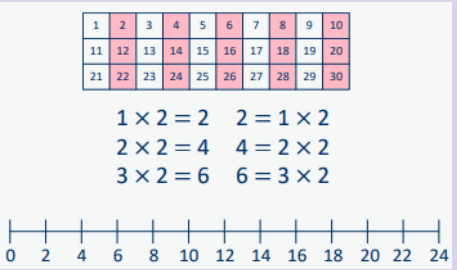
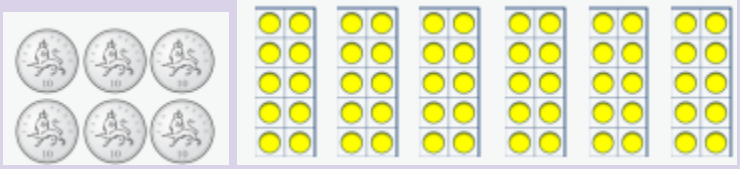
Link repeated addition and multiplication
- Children to make the link between repeated addition and multiplication
- Introduce the multiply symbol

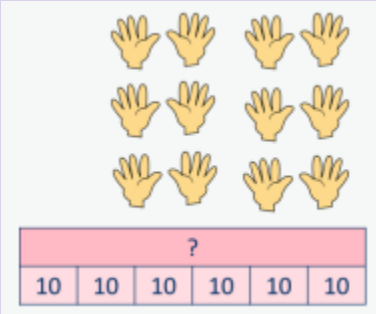
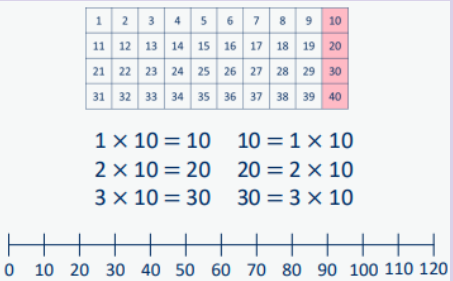
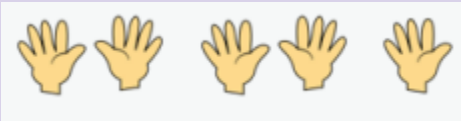
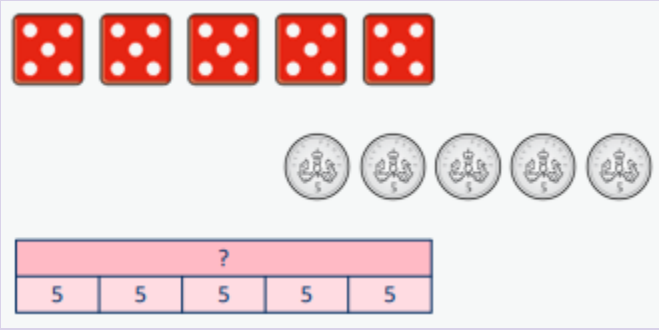
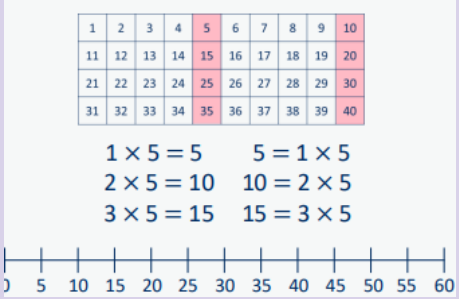
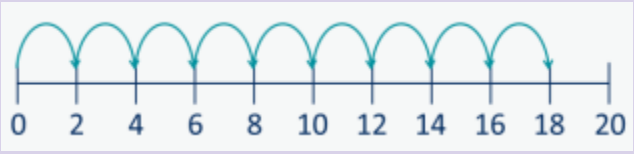
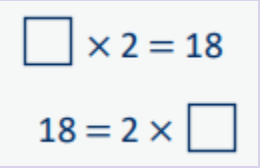


Use arrays
- Children begin to see that multiplication is commutative

There are ___ rows with ___ in each row
There are ___ columns with ___ in each column

I can see … x … and … x …

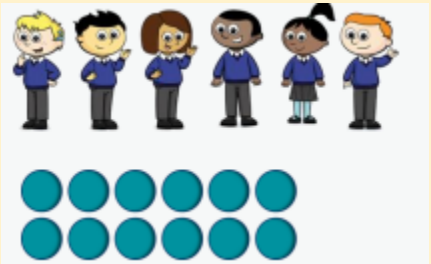
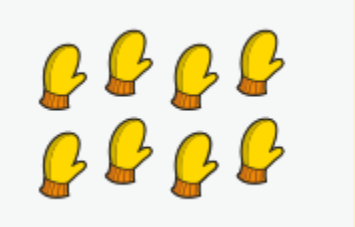
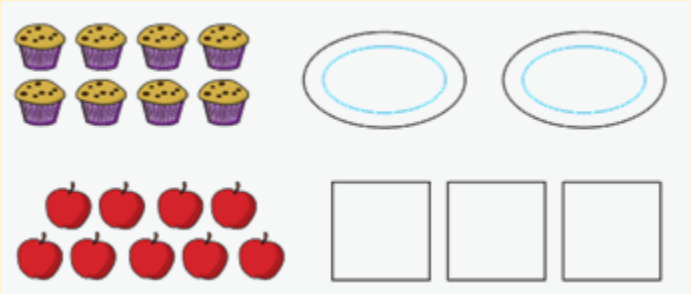
		$3 \times 5 = 15$ $5 \times 3 = 15$ $3 \times 5 = 5 \times 3$
Double - Make links to known facts and pattern recognition	Double ___ is ___ 	Double ___ is ___ So double ___ is ___ 
The 2 times table - Encourage daily counting in multiples both forwards and backwards. - Notice that all multiples of 2 are even	___ lots of 2 = ___ ___ x 2 = ___ 	___ times 2 is equal to ___ 
The 10 times table - Encourage daily counting in multiples both forwards and backwards. - Notice the pattern in the numbers	___ lots of 10 = ___ ___ x 10 = ___ 	___ times 10 is equal to ___

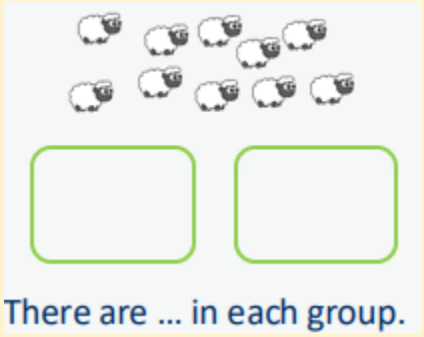
		
The 5 times table - Encourage daily counting in multiples both forwards and backwards. - Notice the pattern in the numbers	___ lots of 5 = ___ ___ x 5 = ___  	___ times 5 is equal to ___ 
Missing numbers - Make links to known facts	___ is equal to ___ groups of ___ 18 socks, how many pairs?  	___ times ___ is equal to ___ 

Division

Key language:
Factor, multiply, times by, group, repeated addition, multiplicative, equal, multiple, times table, commutative, equal groups, altogether, odd, even, column, row, divide, share, share equally, dividend, divisor, quotient, unit fraction, non-unit fraction, double, half, quarter, third

Dividend divided by divisor equals the quotient
Dividend ÷ Divisor = quotient

Progression of skills	Key representations		
Objective and strategy	**Concrete**	**Pictorial**	**Abstract**
Make equal groups - grouping - Encourage children to physically move objects into equal groups - Circle equal groups when using pictures	There are ___ altogether How many equal groups of ___ can you make? 	Circle groups of 2 There are ___ groups of 2 	Take ___ cubes Make equal groups There are ___ groups of ___ 
Make equal groups - sharing - Encourage children to check the objects have been shared fairly and each group is the same (equal)	___ have been shared equally between… There are ___ on/in each ___ 		Take ___ cubes Share them between … ___ shared between ___ is ___ 
Find a half - Practical opportunities to	To find half, I need to share into 2 equal groups.	Half of ___ is ___	If ___ is the whole, what is a half? If ___ is half, what is the whole?

<table>
<tr>
<td>share quantities into 2 groups
- Progress to circling half of the objects in a picture
- Find half from a total
- Find the total from a half</td>
<td> 
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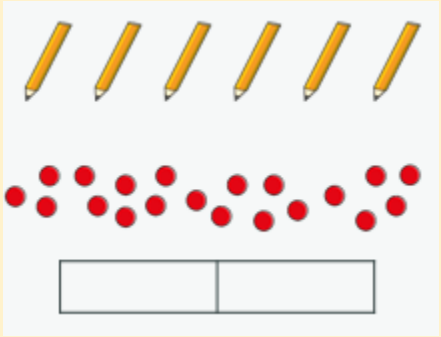
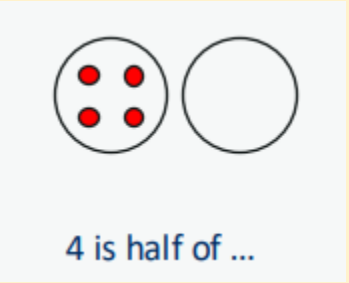
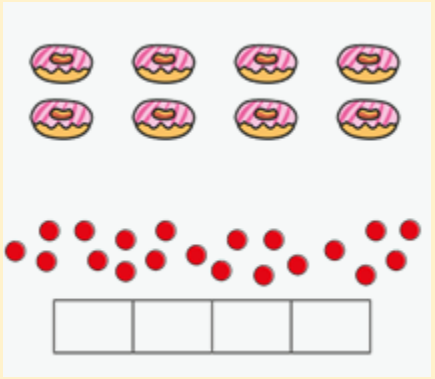
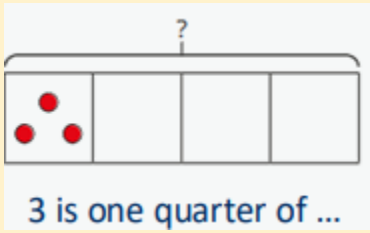
<td>  </td>
<td> 
</td>
</tr>
<tr>
<td>Find a quarter
- Practical opportunities to share quantities into 4 groups
- Progress to circling quarter of the objects in a picture
- Find a quarter from a total
- Find the total from a quarter</td>
<td>To find a quarter, I need to share into 4 equal groups.
 
</td>
<td>A quarter of ___ is ___
  </td>
<td>If ___ is the whole, what is a quarter?
If ___ is a quarter, what is the whole?
 
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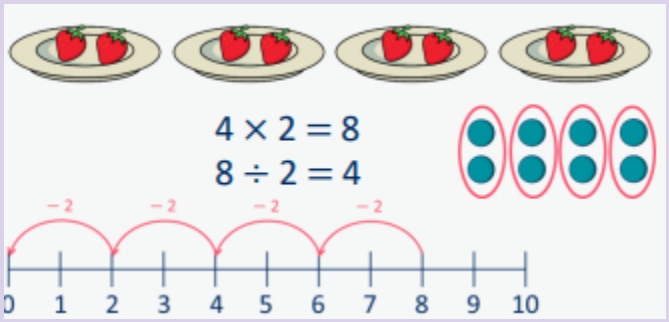
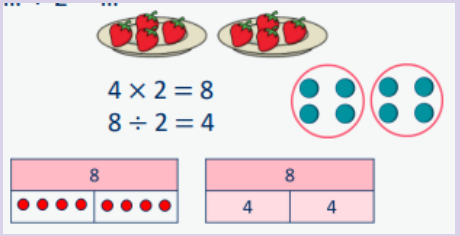
</tr>
<tr>
<td>Divide by 2
- Compare grouping and sharing structures of division
- Make links with times table facts and halving.</td>
<td colspan="2">There are ___ equal groups of 2
___ ÷ 2 = ___
 
</td>
<td>___ shared equally between 2 is ___ and ____
Half of ___ is ___
___ ÷ 2 = ___
 
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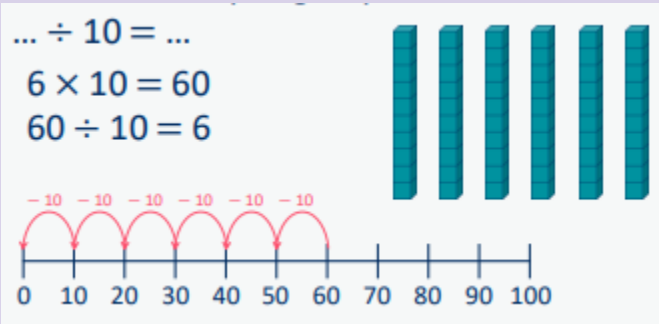
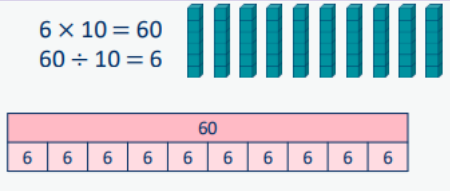
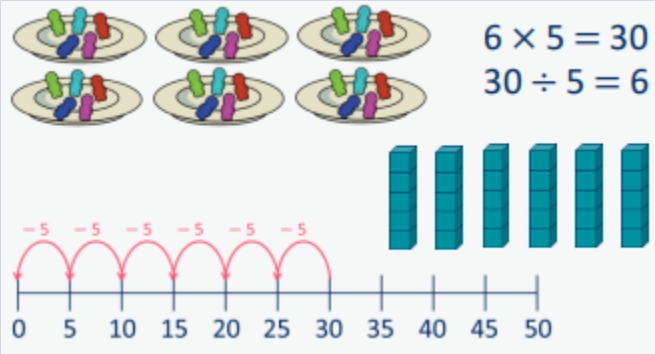
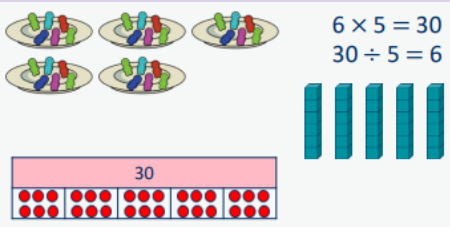
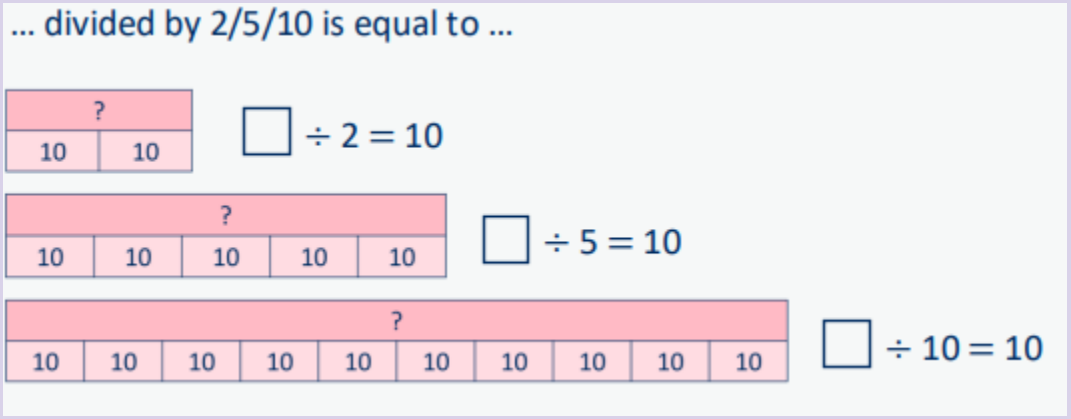
</table>

Divide by 10 - Compare grouping and sharing structures of division - Make links with times table facts.	There are ___ equal groups of 10 ___ ÷ 10 = ___ 	___ shared equally between 10 is ___ and _____ ___ ÷ 10 = ___ 
Divide by 5 - Compare grouping and sharing structures of division - Make links with times table facts.	There are ___ equal groups of 5 ___ ÷ 5 = ___ 	___ shared equally between 5 is ___ and _____ ___ ÷ 5 = ___ 

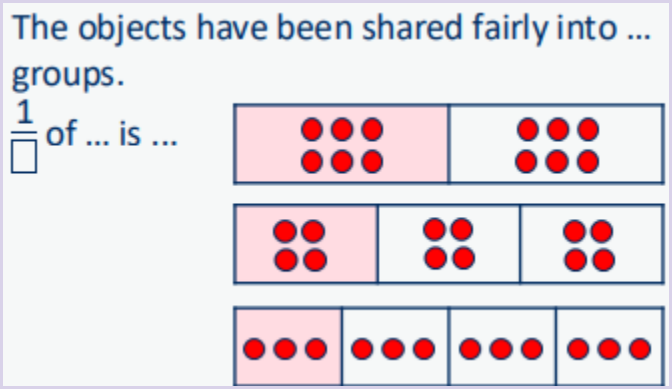
Missing numbers

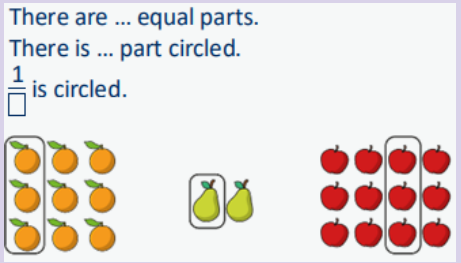
- Use bar models to show link between multiplication and division



Unit fractions

- Focus on finding ½ ¼ and ⅓
- Bar models to show link between division and finding a fraction





Non-unit fractions

- Focus on finding 2/4 and ¾
- Prompt children to notice that 2/4 = ½