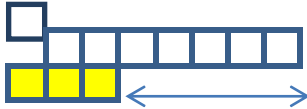

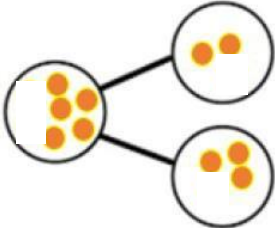

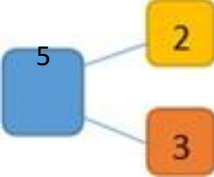


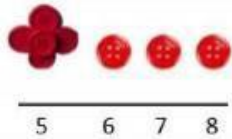


Mental Recall		Strategies		
<ul style="list-style-type: none"> <li>Know one more/ less than any number within 20</li> <li>Know bonds to - and within - 10</li> <li>Missing number - <math>6 + \square = 10</math></li> <li>Begin to use bonds to - and within - 20</li> <li>Family of facts - if <math>4 + 5 = 9</math>, <math>4 + 5 = 9</math>, <math>9 - 5 = 4</math> and <math>9 - 4 = 5</math> (link to the bar model)</li> <li>All doubles to 10</li> </ul>		<ul style="list-style-type: none"> <li><b>BIG ED</b> - put the biggest number in your head...count on</li> <li><b>Counting on/back</b></li> <li><b>Partition to 'Magic 10'</b> - e.g. <math>8 + 3 = 8 + 2 + 1</math></li> <li><b>Partition, double and adjust</b> - e.g. <math>7 + 8 = 7 + 7 + 1 = \text{double } 7 + 1...</math></li> <li><b>Finding the difference</b> - children should be shown that a bar model approach can help them to see the difference e.g.</li> </ul>		
		 <p>The difference between 8 and 3 is 5</p>		
Year Group objectives:	Concrete	Pictorial	Abstract	
	Addition			
<p>read, write and interpret mathematical statements involving addition (+), subtraction (-) and equals (=) signs</p> <p>represent and use number bonds and related subtraction facts within 20</p> <p>add and subtract one- digit and two-digit numbers to 20, including zero</p>	<p>Use numicon, ones cubes or other objects to add two numbers together as a group or in a bar.</p> 	 <p>Use pictures to add two numbers together as a group or in a bar.</p> 	$2 + 3 = 5$ $3 + 2 = 5$ $5 = 3 + 2$ $5 = 2 + 3$	 <p>Use the part-part-whole diagram as shown above to move into the abstract.</p>

Number bonds of 5, 6, 7, 8, 9 and 10

Counting

Start with the larger number on the bead string and then count on to the smaller number 1 by 1 to find the answer.



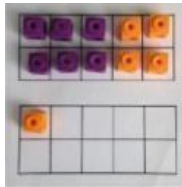
Use a number line to count on in ones.

Represents  $5 + 3$



$$5 + 3 = 8$$

Regrouping to make (Magic) 10

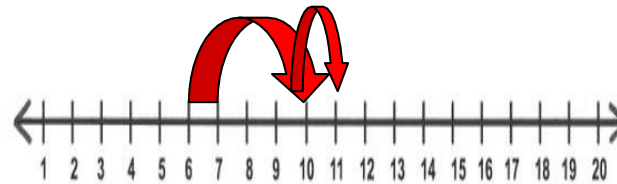
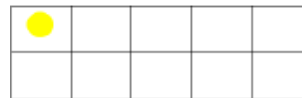


Start with the bigger number and use the smaller number to make 10.

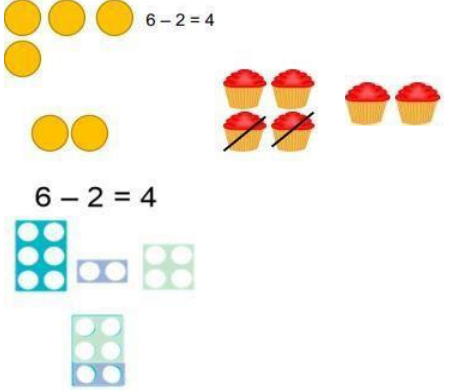
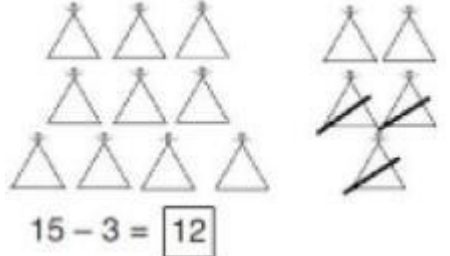
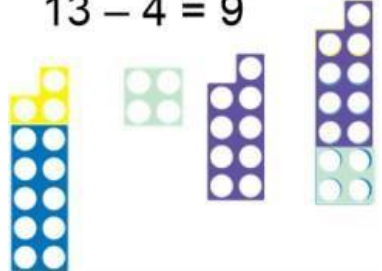
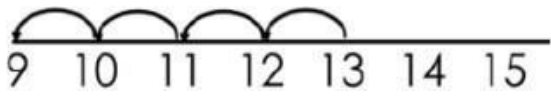


$$6 + 5 = 11$$

Use pictures, ten frames or a number line. Regroup or partition the smaller number to make 10. E.g.  $6 + 5 = 11$



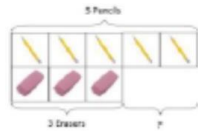
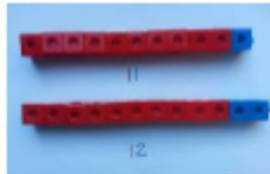
$$6 + 5 = 11$$

	Taking away ones	<p>Use physical objects, counters, cubes etc to show how objects can be taken away</p>  <p><math>6 - 2 = 4</math></p> <p><math>6 - 2 = 4</math></p>	<p style="text-align: center;"><b>Subtraction</b></p> <p>Cross out drawn objects to show what has been taken away.</p>  <p><math>15 - 3 = 12</math></p>	<p style="text-align: center;"><math>18 - 3 = 15</math></p> <p style="text-align: center;"><math>8 - 2 = 6</math></p>
	Counting back	<p>Make the larger number in your subtraction. Move the beads along your bead string as you count backwards in ones.</p> <p>Use counters and move them away from the group as you take them away counting backwards as you go.</p> <p><math>13 - 4 = 9</math></p> 	<p>Count back on a number line or number track</p> 	<p>Put 13 in your head, count back 4. What number are you at? Use your fingers to help.</p>

Find the difference

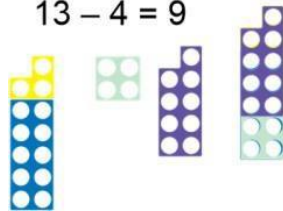
Compare amounts and objects to find the difference.

Use cubes to build towers or make bars to find the difference

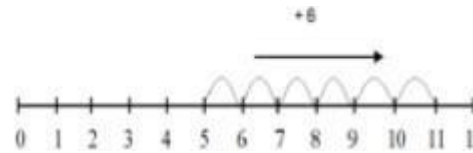


Use basic bar models with items to find the difference

$$13 - 4 = 9$$



Count on to find the difference.

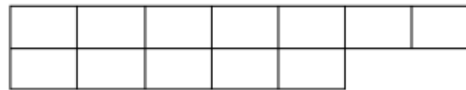


Find the difference between 6 and 10.

Draw bars to find the difference between 2 numbers:

Find the difference between 7 and 5.

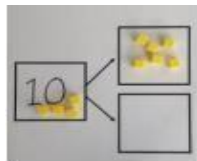
Use of the bar model



Hannah has 19 sandwiches, Helen has 7 sandwiches. Find the difference between the number of sandwiches.

Part-part-whole model

Link to addition- use the part-part-whole model to help explain the inverse between addition and subtraction.

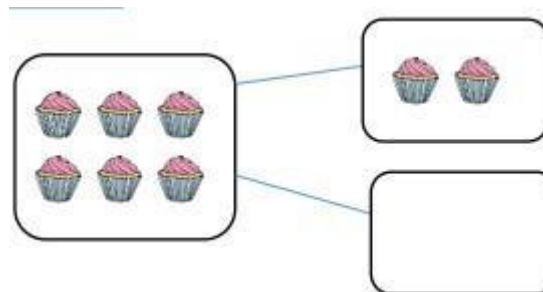


If 10 is the whole and 6 is one of the parts.

What is the other part?

$$10 - 6 =$$

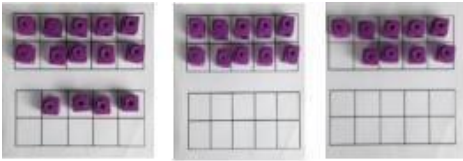
Use a pictorial representation of objects to show the part-part-whole model.



Move to using numbers within the part-part-whole model.

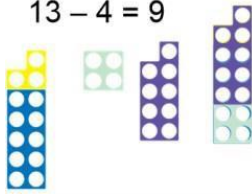
Make 10

$14 - 9 =$



Make 14 on the ten frame. Take away the four first to make 10 and then takeaway one more so you have taken away 5. You are left with the answer of 9.

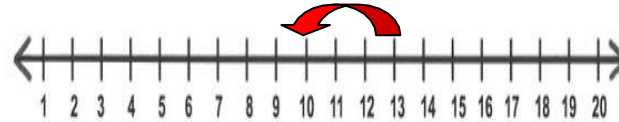
$13 - 4 = 9$



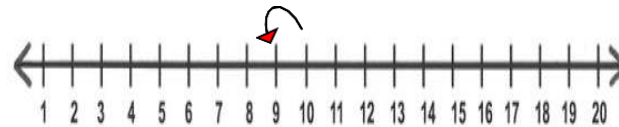
Make 13 with the numicon. Place the 4 plate on top and see what you have got left. Use the 9 plate to check.

$13 - 4 =$

Begin by jumping back 3 to 10



Jump back 1 to 9



$13 - 4 = 13 - 3 - 1$



### Mental Recall

- Know odd and even numbers to 20
- Know doubles of numbers within 20 - e.g. double 9 = 18
- Know halves of numbers within 20 - e.g. half of 14 is 7

### Strategies

- **Count on / back in ones** - from 0 to 100 / from 100 to 0
- **Count on / back in twos, fives and tens** - use of real objects and support children in looking for patterns when counting
- **Use the pattern of last digits** - e.g. when counting in twos, the last digit is even / when counting in 5s, the last digit is a 5 or a 0 / when counting in 10s, the last digit is a 0
- **Sharing** - find half of a group by sharing

Year Group objectives:

### Concrete

### Pictorial

### Abstract

#### Multiplication

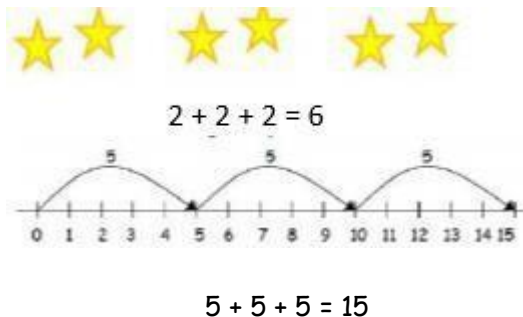
Count, read and write numbers to 100 in numerals; count in multiples of twos, fives and tens.  
 Double numbers to 20.  
 Solve one step problems by calculating the answer using concrete objects, pictorial representations and arrays with the support of the teacher.

Repeated addition



Use different objects to add equal groups

There are 3 plates. Each plate has 2 star biscuits on. How many biscuits are there?



Write addition sentences to describe objects and pictures.

2 + 2 + 2 = 6



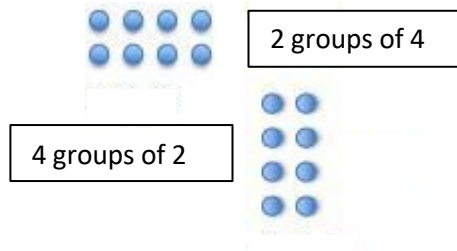
3 lots of 2 = 6

Arrays - showing commutative multiplication

Create arrays using counters/cubes to show multiplication sentences.



Draw arrays in different rotations to find **commutative** multiplication sentences.

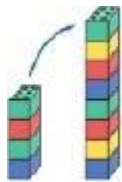


Use an array to write multiplication sentences and reinforce repeated addition.



$$5 + 5 + 5 = 15$$
$$3 + 3 + 3 + 3 + 3 = 15$$
$$5 \text{ groups of } 3 = 15$$
$$3 \text{ lots of } 5 = 15$$

Double



Double 4 is 8



Double 3 is 6

Use practical activities to show how to double a number.

Draw pictures to show how to double a number.

Double 4 is 8



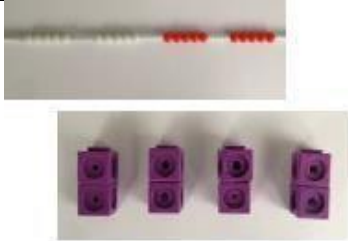
'Ping-pong' tennis game

The adults says a number and the children have to reply with the double:

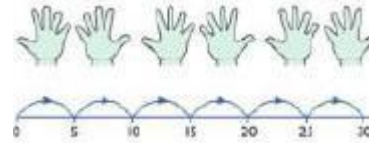
Adult: 4  
Children: 8

Adult: 7  
Children: 14

Count in multiples



Count in multiples supported by concrete objects in equal groups.



Use a number line or pictures to continue support in counting in multiples.

Count in multiples of a number aloud.

Write sequences with multiples of numbers.

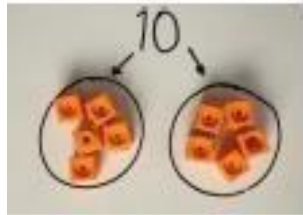
2, 4, 6, 8, 10

5, 10, 15, 20, 25, 30



Sharing

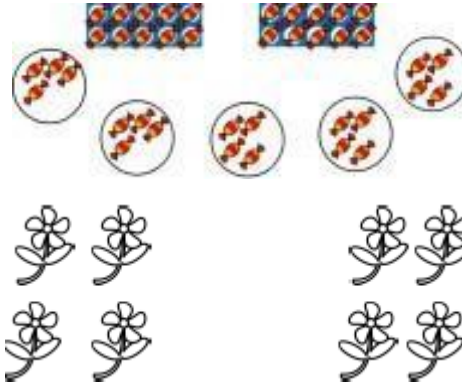
I have 10 cubes, can you share them equally in 2 groups?



'One for you...one for me...one for you...one for me...'




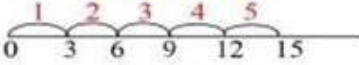


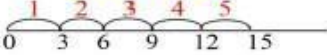
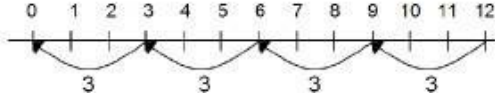
Division

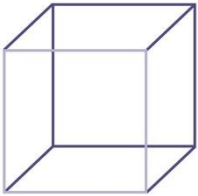
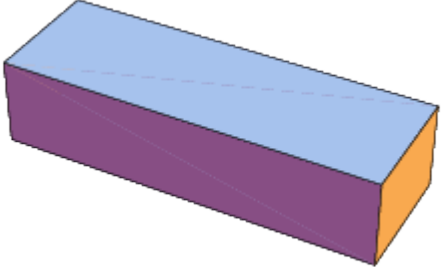

Children use pictures or shapes to share quantities.

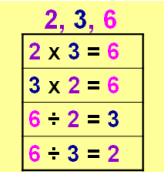
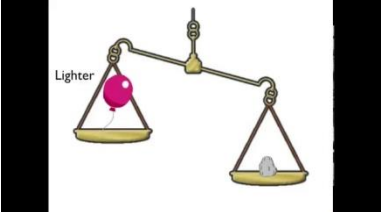



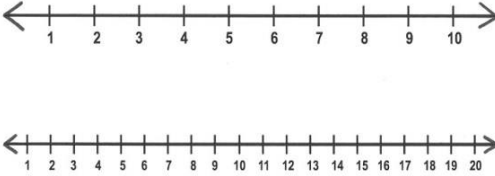
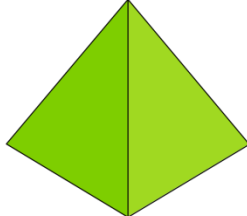
8 shared between 2 people

Share 9 buns between three people.

	Grouping	<p>Divide quantities into equal groups. Use cubes, counters, objects or place value counters to aid understanding.</p>     <p>15 shared between 3 gives 5</p>	   <p>15 shared between 3 gives 5</p> <p>Use a number line to show jumps in groups. The number of jumps equals the number of groups.</p> 	<p>There are 20 grapes. There are 4 children. How many grapes do they each get?</p>
<b>Vocabulary</b>		<b>Definition</b>		<b>Representation</b>
<p>Add, more, plus, make, sum, total, altogether</p>		<p>Addition</p>		$7 + 8 = 15$
<p>Count in 2s, 5s, 10s</p>		<p>0,2,4,6,8,10...</p> <p>0,5,10,15,20...</p> <p>0,10,20,30,40,50...</p>		

<p><b>Cube</b></p>	<p>A 6 sided 3D shape like a dice.</p>	
<p><b>Cuboid</b></p>	<p>A longer 6 sided 3D shape like a shoe box.</p>	
<p><b>Double</b></p>	<p>Two lots of the same number added together or a number multiplied by 2.</p>	<p>6 X 2 = 6 + 6 =</p> <p>2 X 4 = 4 + 4 =</p>
<p><b>Even</b></p>	<p>Numbers ending in 0,2,4,6,8.</p>	<p>34 98 256</p>
<p><b>Heavy, heavier, heaviest</b></p>	<p>Weight/mass of objects - a book is heavy, a chair is heavier, a table is heaviest.</p>	

<p><b>Inverse</b></p>	<p><b>Opposite operations - is the inverse of +</b></p> <p><b>x is the inverse of ÷</b></p>	 <table border="1" data-bbox="1727 201 1890 373"> <tr><td>2, 3, 6</td></tr> <tr><td>2 x 3 = 6</td></tr> <tr><td>3 x 2 = 6</td></tr> <tr><td>6 ÷ 2 = 3</td></tr> <tr><td>6 ÷ 3 = 2</td></tr> </table>	2, 3, 6	2 x 3 = 6	3 x 2 = 6	6 ÷ 2 = 3	6 ÷ 3 = 2
2, 3, 6							
2 x 3 = 6							
3 x 2 = 6							
6 ÷ 2 = 3							
6 ÷ 3 = 2							
<p><b>Light, lighter, lightest</b></p>	<p><b>Weight/mass of objects - a book is light, a phone is lighter, a pencil is lightest</b></p>						
<p><b>Lots of/groups of</b></p>	<p><b>Multiplication</b></p>	<p>There are two equal groups of 3.</p>  <p><math>2 \times 3 = 6</math></p>					
<p><b>Number bonds</b></p>	<p><b>Pairs of numbers which add up to a specific number.</b></p>	<p><b>Number bonds to 10</b></p> <p>0 + 10 = 10</p> <p>1 + 9 = 10</p> <p>2 + 8 = 10</p> <p>3 + 7 = 10</p> <p>4 + 6 = 10</p> <p>5 + 5 = 10</p> <p>6 + 4 = 10</p> <p>7 + 3 = 10</p> <p>8 + 2 = 10</p> <p>9 + 1 = 10</p> <p>10 + 0 = 10</p>					

<b>Number line</b>	<b>A visual representation of numbers along a line - similar to a ruler.</b>	
<b>Odd</b>	<b>Numbers ending in 1,3,5,7,9.</b>	<p style="text-align: center;">23   65   981</p>
<b>Pyramid</b>	<b>A 3D shape with a flat base and triangular faces which meet at a point.</b>	
<b>Ten more/less</b>	<b>10 more or less than a given number up to 100.</b>	<p style="text-align: center;"> <math>7 + 10 = 17</math>  <math>16 - 10 = 6</math> </p>