



Number, Place Value and Rounding

Key vocab: forwards, backwards, numerals, words, multiples, equal to, more than, less than, fewer, most, least, identify, represent, digit, calculate, odd, even, pattern, numbers up to 100

NC Objectives:

- Count to and across 10/20/100, forwards and backwards, beginning with 0 or 1, or from any given number.
- Count, read and write numbers to 10/20/100 in numerals.
- Read and write numbers from 1-10/20 in numerals and words.
- Identify and represent numbers using concrete objects and pictorial representations, including using a number line.

Concrete	Pictorial	Abstract																								
<p>Using objects:</p> <p>How many flowers are there altogether? Can you represent the flowers using ten frames and counters?</p> <p>How many straws are there? Bundle the straws into tens to make them easier to count.</p> <p>Which representation matches which group?</p> <div style="border: 1px solid black; padding: 5px; margin: 10px auto; width: fit-content;"> <p>Use different objects to show me... How many different ways can you show...?</p> </div> <p>Explain how you know.</p>	<p>Draw a picture to show me 13 Compare yours with a partner. What's the same? What's different?</p> <p>Complete the table.</p> <table border="1" style="width:100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th style="width:50%;">Numeral</th> <th style="width:50%;">Representation</th> </tr> </thead> <tbody> <tr> <td>17</td> <td></td> </tr> <tr> <td>13</td> <td></td> </tr> </tbody> </table>	Numeral	Representation	17		13		<ul style="list-style-type: none"> • Writing numbers in digits. • Writing numbers in words. • Matching digits to words. • Counting objects/pictures and writing the total amount in digits/words. • Completing missing number tracks in digits/words. <table border="1" style="width:100%; border-collapse: collapse; text-align: center; margin: 10px 0;"> <tr> <td style="width:10%;">10</td><td style="width:10%;"></td><td style="width:10%;">8</td><td style="width:10%;">7</td><td style="width:10%;">6</td><td style="width:10%;"></td><td style="width:10%;">3</td><td style="width:10%;">2</td><td style="width:10%;">1</td> </tr> </table> <table border="1" style="width:100%; border-collapse: collapse; text-align: center; margin: 10px 0;"> <tr> <td style="width:10%;">ten</td><td style="width:10%;">nine</td><td style="width:10%;">eight</td><td style="width:10%;"></td><td style="width:10%;">six</td><td style="width:10%;"></td><td style="width:10%;">four</td><td style="width:10%;">three</td><td style="width:10%;">two</td> </tr> </table>	10		8	7	6		3	2	1	ten	nine	eight		six		four	three	two
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Reasoning

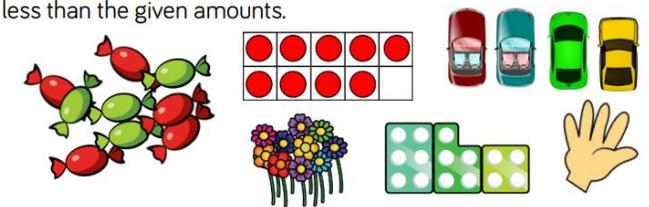
<p>Correct the mistake in each sequence.</p> <ul style="list-style-type: none"> • 34, 35, 36, 38, 39 • 98, 97, 96, 95, 93 • 78, 79, 18, 81, 82 <p style="text-align: center;">Circle the odd one out and explain why.</p> <table style="margin: 10px auto; text-align: center;"> <tr> <td>11</td><td>12</td><td>13</td><td>14</td> </tr> <tr> <td>15</td><td>61</td><td>17</td><td>18</td> </tr> </table>	11	12	13	14	15	61	17	18	<p>Mr Monaghan says,</p> <div style="border: 1px solid orange; border-radius: 15px; padding: 10px; width: fit-content; margin: 10px auto;"> <p>I am going to count to 20 I will start at 8</p> </div> <p>Teddy says,</p> <div style="border: 1px solid green; border-radius: 15px; padding: 10px; width: fit-content; margin: 10px auto;"> <p>I can make all the numbers from eleven to twenty using the digits 1 – 9</p> </div> <p>Will Mr Monaghan say 11? Explain how you know.</p> <p>Do you agree? Explain your answer.</p>	<p>Game</p> <p>Use two sets of number cards.</p> <p>1 set with numerals 1 – 20</p> <p>1 set with words 1 – 20</p> <p>Play in groups of 3 or 4</p> <p>Take it in turns to pick a numeral card and a word card. Say the number on each card out loud. If they match you win the pair, if they don't you put them back.</p> <p>Eva is counting from 38 to 24 </p> <p>Will she say the number 39? Will she say the number 29? Will she say the number 19?</p> <p>Explain how you know.</p>
11	12	13	14							
15	61	17	18							

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NC Objectives:

- Given a number to 10/20/100, identify 1 more and 1 less.

Concrete	Pictorial	Abstract																																																																																
<p>Make one more and one less than these numbers.</p> <div style="text-align: center;">  </div> <p>Use manipulatives and ask children to show one more and one less than the given amounts.</p> <div style="display: flex; justify-content: space-around;">  </div>	<p>Draw to complete.</p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;"> <p>One less</p>  </div> <div style="text-align: center;">  </div> <div style="text-align: center;"> <p>One more</p>  </div> </div> <div style="border: 1px solid gray; padding: 5px; margin: 10px 0; width: fit-content; margin-left: auto; margin-right: auto;"> <p>Draw one more than...</p> <p>Draw one less than...</p> </div> <p>Complete each box using a picture, a numeral and a word.</p> <div style="display: flex; flex-direction: column; align-items: center;"> <div style="display: flex; align-items: center; margin-bottom: 5px;">  <div style="text-align: center;"> <p>→ one more →</p> <input style="width: 60px; height: 20px; border: 1px solid blue;" type="text"/> </div> </div> <div style="display: flex; align-items: center; margin-bottom: 5px;"> <p style="margin-right: 10px;">3</p> <div style="text-align: center;"> <p>→ one more →</p> <input style="width: 60px; height: 20px; border: 1px solid blue;" type="text"/> </div> </div> <div style="display: flex; align-items: center;"> <p style="margin-right: 10px;">six</p> <div style="text-align: center;"> <p>→ one more →</p> <input style="width: 60px; height: 20px; border: 1px solid blue;" type="text"/> </div> </div> </div>	<p>Find one more and one less:</p> <div style="display: flex; justify-content: space-between; align-items: center;"> <table border="1" style="font-size: small; border-collapse: collapse;"> <tr><td>36</td><td>37</td><td style="border: 2px solid red;">38</td><td>39</td><td>40</td><td>41</td><td>42</td><td>43</td><td>44</td><td>45</td></tr> </table> <div style="margin-left: 20px;"> <p>One more than ___ is ___</p> <p>One less than ___ is ___</p> </div> </div> <div style="display: flex; justify-content: space-between; align-items: center; margin-top: 10px;"> <table border="1" style="font-size: x-small; border-collapse: collapse;"> <tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td></tr> <tr><td>11</td><td>12</td><td>13</td><td>14</td><td>15</td><td>16</td><td>17</td><td>18</td><td>19</td><td>20</td></tr> <tr><td>21</td><td>22</td><td>23</td><td>24</td><td>25</td><td>26</td><td>27</td><td>28</td><td>29</td><td>30</td></tr> <tr><td>31</td><td>32</td><td>33</td><td>34</td><td>35</td><td>36</td><td>37</td><td>38</td><td>39</td><td>40</td></tr> <tr><td style="border: 2px solid red;">41</td><td>42</td><td>43</td><td>44</td><td>45</td><td>46</td><td>47</td><td>48</td><td>49</td><td>50</td></tr> </table> <div style="margin-left: 20px;"> <p>One more than ___ is ___</p> <p>One less than ___ is ___</p> </div> </div> <div style="margin-top: 10px;"> <p>Complete the missing numbers.</p> <table border="1" style="font-size: small; border-collapse: collapse; text-align: center;"> <tr><td></td><td></td><td></td><td>37</td><td></td></tr> <tr><td></td><td>46</td><td>47</td><td></td><td></td></tr> <tr><td>55</td><td></td><td>57</td><td></td><td></td></tr> <tr><td>65</td><td></td><td></td><td></td><td></td></tr> </table> <div style="border: 1px solid gray; padding: 5px; margin-top: 10px; width: fit-content;"> <p>What comes next?</p> <p>10 + 1 = 11</p> <p>11 + 1 = 12</p> <p>12 + 1 = 13</p> </div> </div>	36	37	38	39	40	41	42	43	44	45	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				37			46	47			55		57			65				
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Using number cards 0 to 10, how many different ways can you complete the boxes below?

→ one more →

Always, sometimes, never...

When you find one more than a number, only the ones digit will change.

Convince me using some examples.

Mo says,

I am one year older than my sister.

My sister is one year older than my brother.

My brother is 7

How old is Mo?
Who is the oldest?
Explain why.

Teddy thinks of a number.



1 more than his number is 11

What is his number?
Prove it.

28263345
36433549

Rosie thinks of a number.



1 less than her number is 15

What is her number?
Prove it.

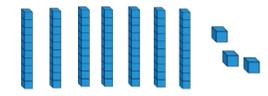
is one less than 27

34 is one less than

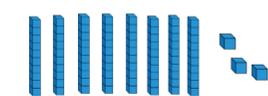
is one more than 44

50 is one more than

Dora started with this number.



I am going to find one more.



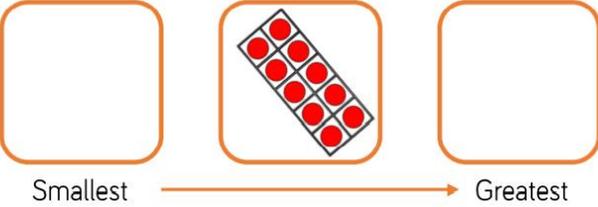
Has Dora shown the correct amount?
Explain how you know.

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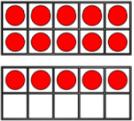
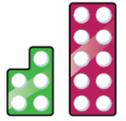
Key vocab: forwards, backwards, numerals, words, multiples, equal to, more than, less than, fewer, most, least, identify, represent, digit, calculate, odd, even, pattern, numbers up to 100

NC Objectives:

- Compare and order numbers 1-10/20, including ordinal numbers (1st, 2nd, 3rd ...).

Concrete	Pictorial	Abstract
<p>Grab a small handful of counters and put them in three piles. Order the piles from greatest to smallest.</p> <p>Create a tower using different coloured cubes. Describe the order of the colours using 'first', 'second' 'third' and 'last' etc. Can you give your partner accurate instructions so that they can create the same tower?</p> <div style="text-align: center;">  </div> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p>Use different types of objects, e.g., counters, Numicon, cars, multilink, to group together.</p> <p>Ask the children to compare and order the groups of objects.</p> </div>	<p>Order the groups of cars from greatest to smallest.</p> <p>Group 1 </p> <p>Group 2 </p> <p>Group 3 </p> <p>Draw counters in each box to make the increasing pattern correct.</p> <div style="text-align: center;">  </div>	<p>Order the number cards from smallest to greatest.</p> <div style="text-align: center; margin: 10px 0;">  </div> <ul style="list-style-type: none"> _____ is the greatest number. _____ is the smallest number. _____ is greater than _____ _____ is smaller than _____ <p>Circle the greatest number.</p> <ul style="list-style-type: none"> Twelve Twenty 8 17

Reasoning

<p>Jack has 6 sunflowers. Rosie has more sunflowers than Jack. Amir has more sunflowers than Rosie.</p> <p>Who has the least amount of sunflowers?</p>	<p>Two children have used the instructions to make a pattern.</p> <div style="border: 1px solid orange; padding: 5px; margin: 5px 0;"> <p>There are four shapes.</p> <p>The first is a circle.</p> <p>The last is a square.</p> <p>The other two shapes are a triangle and a rectangle.</p> </div> <p>Here are their patterns.</p> <p>Amir ○ △ □ □</p> <p>Dora ○ □ △ □</p> <p>Who is correct?</p>	<p>Tommy, Teddy and Alex take part in a race.</p> <p>The results are:</p> <div style="text-align: center;">  </div> <p>Fill in the blanks:</p> <p>Tommy finished behind _____.</p> <p>Teddy finished in front of _____.</p> <p>Alex finished in front of _____ but behind _____.</p>	<p>Dora has three jars of sweets.</p> <div style="text-align: center;">  </div> <p>A = 12 B = ____ C = 17</p> <p>She says:</p> <div style="border: 1px solid blue; border-radius: 15px; padding: 10px; display: inline-block;"> <p>A has the least sweets. C has the most sweets.</p> </div> <p>How many sweets could be in B?</p>
<p>Which image is the odd one out? Why?</p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="border: 1px solid black; padding: 5px;">  </div> <div style="border: 1px solid black; padding: 5px;">  </div> </div> <hr/> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="border: 1px solid black; padding: 5px;">  </div> <div style="border: 1px solid black; padding: 5px;">  </div> </div>			

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NC Objectives:

- Begin to recognise place value in numbers up to 20.

Concrete

- Use Base 10/Dienes to make different 2-digit numbers.
- Use different equipment to show 2-digit numbers, including place value counters, Numicon, multilink, number beads.



Edit numbers so they are 1-20

Fill in the ten frames with counters to show 14 and complete the sentence.



14 has ____ ten and ____ ones.

Pictorial

- Use lines and crosses to show different 2-digit numbers.

Use the part-whole model to complete the sentences.

My number is ____

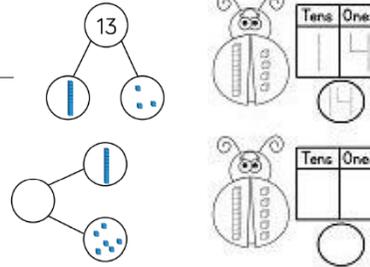
One part is ____, the other part is ____

The whole is ____

My number is ____

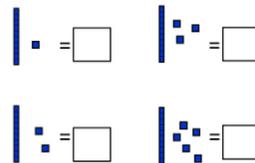
It has ____ tens and ____ ones.

The whole is ____



Write down the number in the number frames.

		=	_____
		=	_____
		=	_____
		=	_____
		=	_____



Abstract

14	__ tens __ ones	__ + __ = __
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15 = 10 + 5	10 + 2 = 12
11 = 10 + __	10 + 5 = __
13 = 10 + __	10 + 0 = __
17 = 10 + __	10 + 3 = __

Example:

13 =	Tens	Units
	1	3

Your turn:

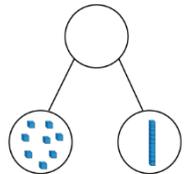
16 =	Tens	Units
20 =	Tens	Units
9 =	Tens	Units
18 =	Tens	Units

11		1	10 + 1 = 11	eleven
12		2	10 + 2 =	
13			10 +	
14				
15				
16				

12	Colour the units digit
11	Colour the tens digit

Reasoning

Alex makes a part-whole model.



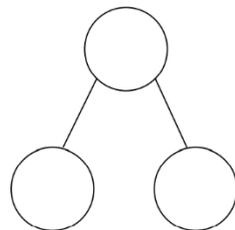
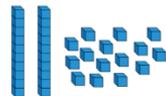
She says:



Explain her mistake.

What is her number?

How many ways can you complete the part-whole model to show numbers up to 20, using the Base 10 equipment – you do not have to use it all.

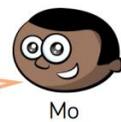


Use Base 10 to make a number.

The number has 5 tens and fewer than 8 ones

How many possible numbers are there?

I have 9 ones.



I only have 1 ten so your number is bigger than mine.

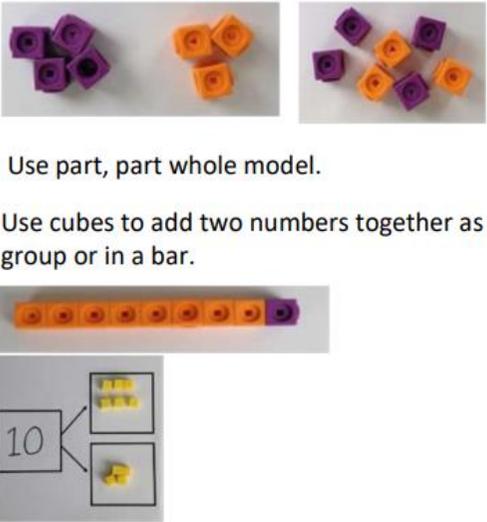
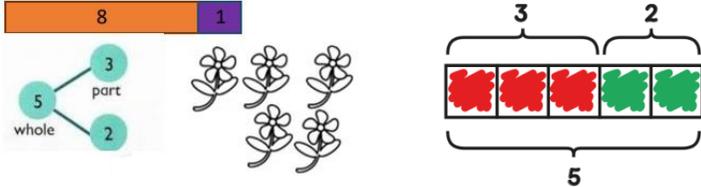
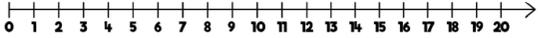
Is Jack correct? Prove it.

Addition and Subtraction

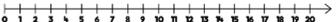
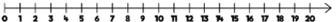
Key vocab: one step problem, concrete object, pictorial representation, missing number problem, read, write, interpret, equals (=), signs, one-digit, two-digit, ones, mental, mentally, altogether, total, difference between, more than, less than, put together

NC Objectives:

- Read, write, and interpret mathematical statements involving + - = signs.
- Add 1-digit numbers to 10, including zero.
- Add 1-digit and 2-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.

Concrete	Pictorial	Abstract
 <p>Use part, part whole model.</p> <p>Use cubes 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>  <p>Eva has 13 prize tokens. She wins 5 more. How many prize tokens does Eva have now?</p>  <p>Mo starts at 9 and counts on 6. $9 + 6 = \square$. Show his calculation on the number line.</p> 	<ul style="list-style-type: none"> • $12 + 7 =$ • $5 + 13 =$ • $14 + 0 =$ <p>Use the number cards to make 4 addition sentences.</p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="border: 1px solid black; border-radius: 10px; width: 30px; height: 30px; display: flex; align-items: center; justify-content: center; font-size: 24px;">4</div> <div style="border: 1px solid black; border-radius: 10px; width: 30px; height: 30px; display: flex; align-items: center; justify-content: center; font-size: 24px;">7</div> <div style="border: 1px solid black; border-radius: 10px; width: 30px; height: 30px; display: flex; align-items: center; justify-content: center; font-size: 24px;">3</div> </div> <p>There are 3 aeroplanes at the airport. 5 more aeroplanes land. How many aeroplanes are there now?</p>  <p>Now there are ___ aeroplanes altogether.</p> <p>How could we represent this as a number sentence?</p> <p>Is it true that? Is it true that $3+4 = 4 + 3$?</p>

Reasoning

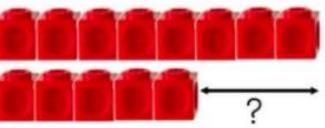
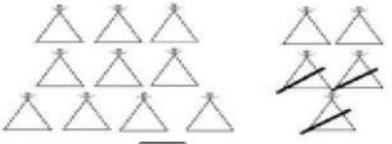
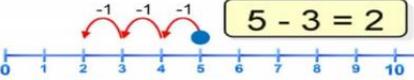
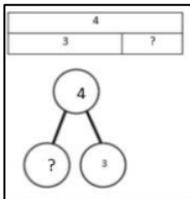
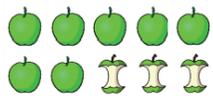
<p>• Missing number problems.</p> <p>Using the numbers 0 - 9, how many ways can you fill in the boxes to make the calculation correct? You can only use each number once.</p> <div style="text-align: center; margin-top: 20px;"> <div style="border: 1px solid black; width: 30px; height: 30px; display: inline-block;"></div> + <div style="border: 1px solid black; width: 30px; height: 30px; display: inline-block;"></div> = <div style="border: 1px solid black; width: 30px; height: 30px; display: inline-block;"></div> </div>	<p>Mo and Jack are working out $11 + 7$</p> <p>Mo says,</p> <div style="border: 1px solid black; border-radius: 15px; background-color: #f080f0; padding: 5px; display: inline-block; margin: 5px 0;">11, 12, 13, 14, 15, 16, 17</div>	<p>Ron starts at 9 and adds on 5 Alex starts at 5 and adds on 9 Show their calculations on the number lines.</p> <p>What do you notice? Does this always happen?</p> <p>Which method do you like best? Why?</p>  	<p>Teddy and Eva are adding together 7 and 8 using a number line.</p> <p>Teddy shows it this way:</p>  <p>Eva shows it this way:</p>  <p>Who is correct? Explain your answer.</p>
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Addition and Subtraction

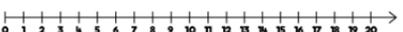
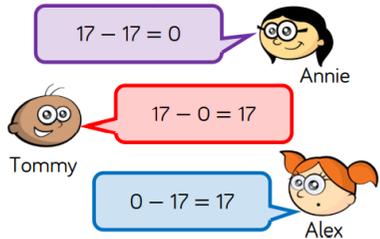
Key vocab: one step problem, concrete object, pictorial representation, missing number problem, read, write, interpret, equals (=), signs, one-digit, two-digit, ones, mental, mentally, altogether, total, difference between, more than, less than, put together

NC Objectives:

- Read, write, and interpret mathematical statements involving + - = signs.
- Subtract 1-digit numbers from 10, including zero.
- Subtract 1-digit and 2-digit numbers from 20, including zero.
- Solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems.

Concrete	Pictorial	Abstract
<div style="display: flex; justify-content: space-around;">  </div> <p>Move objects away from the group, counting backwards.</p>  <p>Move the beads along the bead string as you count backwards.</p> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p>Finding the difference (using cubes, Numicon or Cuisenaire rods, other objects can also be used).</p> <p>Calculate the difference between 8 and 5.</p>  </div>	<p>Cross out drawn objects to show what has been taken away.</p>  <p style="text-align: center;">$15 - 3 = \boxed{12}$</p> <div style="display: flex; justify-content: space-around; align-items: center;">  <div style="border: 1px solid black; padding: 5px;"> $5 - 3 = 2$ </div> </div> <p>Count back in ones using a number line.</p>  <p>Complete the sentences to create a story and draw a part-whole model.</p> <div style="display: flex; align-items: center;">  <div style="margin-left: 20px;"> <p>At first there were ___ apples.</p> <p>Then ___ were eaten.</p> <p>Now there are ___ apples.</p> </div> </div>	<p>Fact families (mixed addition/subtraction)</p> <p>Which four number sentences link these numbers? 12, 15, 3</p> <div style="display: flex; justify-content: space-between;"> <div style="border: 1px solid black; padding: 5px;"> $4 - 3 =$ <div style="border: 1px dashed black; width: 30px; height: 30px; display: flex; align-items: center; justify-content: center;"> $= 4 - 3$ </div> </div> <div style="text-align: right;"> $11 - 5 =$ $16 - 8 =$ $12 - 6 =$ $13 - 2 =$ $7 - 7 =$ $15 - 5 =$ $17 - 3 =$ $19 - 6 =$ $20 - 1 =$ $14 - 4 =$ </div> </div> <p>20 - ? = 7 20 - 12 = 10 - 4 =</p> <p>Put 15 in your head. Count back 8. What number are you on now?</p>

Reasoning

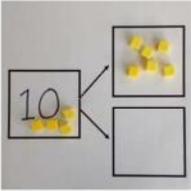
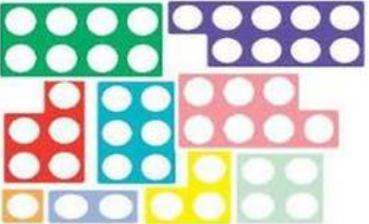
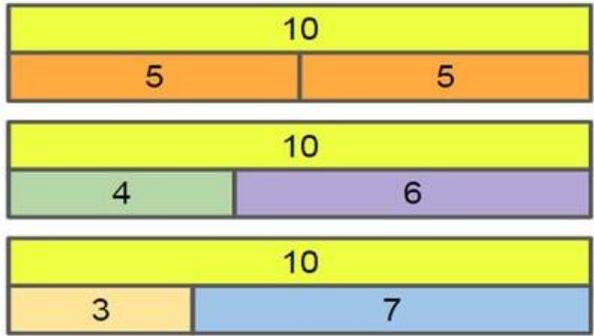
<p>• Missing number problems.</p> <p>How many ways can you get an answer of 0?</p> <div style="text-align: center; margin: 10px 0;"> <div style="border: 1px solid black; width: 30px; height: 30px; display: inline-block;"></div> - <div style="border: 1px solid black; width: 30px; height: 30px; display: inline-block;"></div> = 0 </div> <p>What is the rule?</p>	<p>How many ways can you complete this number sentence? Use the number line to help you.</p> <div style="text-align: center; margin: 10px 0;">  </div> <div style="text-align: center; margin: 10px 0;"> <div style="border: 1px dashed black; width: 40px; height: 40px; display: inline-block;"></div> - <div style="border: 1px dashed black; width: 40px; height: 40px; display: inline-block;"></div> = 11 </div>	<p>Some cakes have been eaten.</p> <p>There are 2 cakes left.</p> <div style="text-align: center; margin: 10px 0;">  </div> <p>How many cakes could there have been, and how many could have been eaten to be left with 2?</p> <p>Explain your reasons.</p>	<p>Annie, Tommy and Alex are working out which calculation is represented below.</p> <div style="display: flex; justify-content: space-around; align-items: center;"> <table border="1" style="font-size: 8px;"> <thead> <tr> <th>First</th> <th>Then</th> <th>Now</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td></td> </tr> </tbody> </table> <div style="text-align: center;">  </div> </div> <div style="display: flex; justify-content: space-around; margin-top: 10px;"> <div style="border: 1px solid purple; border-radius: 15px; padding: 5px; background-color: #e0e0ff;"> $17 - 17 = 0$ </div> <div style="border: 1px solid red; border-radius: 15px; padding: 5px; background-color: #ffe0e0;"> $17 - 0 = 17$ </div> <div style="border: 1px solid blue; border-radius: 15px; padding: 5px; background-color: #e0e0ff;"> $0 - 17 = 17$ </div> </div> <p style="text-align: center; font-size: 10px;">Can you work out who is correct? Explain why.</p>	First	Then	Now			
First	Then	Now							

Addition and Subtraction

Key vocab: one step problem, concrete object, pictorial representation, missing number problem, read, write, interpret, equals (=), signs, one-digit, two-digit, ones, mental, mentally, altogether, total, difference between, more than, less than, put together

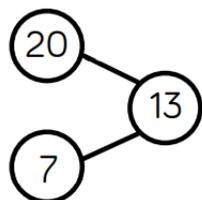
NC Objectives:

- Represent and use number bonds and related subtraction facts within 10/20.

Concrete	Pictorial	Abstract
<div style="display: flex; justify-content: space-between;"> <div style="width: 45%;">  <p>Here are 5 cubes.</p>  <p>Break them apart in different ways to find all the number bonds to 5 One has been done for you.</p>  <p>$5 = 3 + 2$</p> </div> <div style="width: 50%;"> <p>Use Numicon to show how you can make number bonds to 10.</p>  </div> </div>	<p>Draw a bar to represent number bonds to 10/20:</p> 	<p>Continue the pattern</p> <p>$10 + 8 = 18$ $11 + 7 = 18$</p> <p>Can you make up a similar pattern for the number 17? How would this pattern look if it included subtraction?</p> <p>Write number bonds to 10/20 in a logical order.</p>

Reasoning

 Jack represents a number bond to 20 in the part whole model.



Can you spot his mistake?

True or false?

There are double the amount of numbers bonds to 20 than there are number bonds to 10

Prove it – can you use a systematic approach?

Always, Sometimes, Never

Number bonds to 10 have two different numbers added together.

Dora has 10 p to spend.



Which two items could she buy?
 How many different ways can she do it?

Tommy needs to colour in **all** of the boxes using two different colours.

One box of each colour has been done for him.



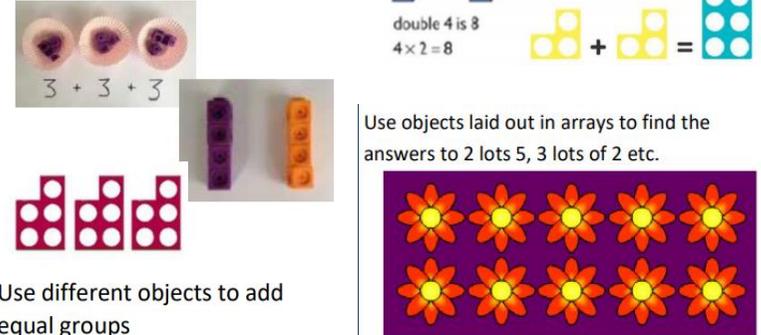
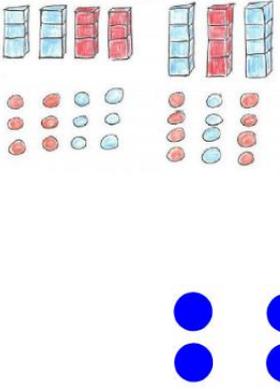
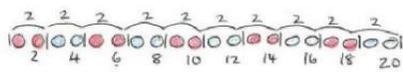
How many different ways can he colour the boxes?

Multiplication and Division

Key vocab: multiples, twos, fives, tens, number, multiply, divide, multiplication, division, one-step problem, answer, concrete object, pictorial representation, arrays, count, equals, write

NC Objectives:

- Count in multiples, including 2s, 5s and 10s.
- Solve one-step problems involving **multiplication**, by calculating the answer using concrete objects, pictorial representations, and arrays, with the support of the teacher.

Concrete	Pictorial	Abstract
<div style="display: flex; justify-content: space-between;"> <div style="width: 45%;">  <p>Use practical activities using manipulatives including cubes and Numicon to demonstrate doubling</p> <p>Use manipulatives to create equal groups.</p> <p>$\square \times \square = 8$</p> <p>double 4 is 8 $4 \times 2 = 8$</p> <p>Use objects laid out in arrays to find the answers to 2 lots 5, 3 lots of 2 etc.</p> </div> <div style="width: 45%;">  <p>Use different objects to add equal groups</p> </div> </div>	<div style="display: flex; justify-content: space-between;"> <div style="width: 45%;">  <p>Draw to show $2 \times 3 = 6$</p> <p>Double 4 is 8</p> <p>Children make representations to show counting in multiples.</p> </div> <div style="width: 45%;">  </div> </div>	<p>Write addition sentences to describe objects and pictures.</p>  <p style="text-align: center;">$2 + 2 + 2 + 2 + 2 = 10$</p> <p>Count in multiples of a number aloud.</p> <p>Write sequences with multiples of numbers.</p> <p>2, 4, 6, 8, 10</p> <p style="text-align: right;">$3 \times 2 = 6$</p> <p>5, 10, 15, 20, 25, 30</p> <p style="text-align: right;">$2 \times 5 = 10$</p>

Reasoning

Making links

If one teddy has two apples, how many apples will three teddies have?
Here are 10 Lego people. If 2 people fit into the train carriage, how many carriages do we need?

Spot the mistake

Use a puppet to count but make some deliberate mistakes, e.g., 2 4 5 6
10 9 8 6
See if the pupils can spot the deliberate mistakes and correct the puppet.

Teddy and Alex are writing number sentences to describe the array.





Teddy $4 + 4 + 4 + 4 + 4 = 20$



Alex $5 + 5 + 5 + 5 = 20$

Who do you agree with? Explain why.

Eva begins to make an array with 40 counters. She has finished her first row and her first column. Complete her array.



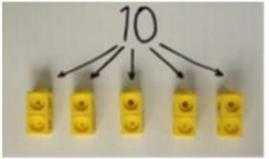
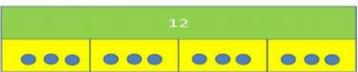
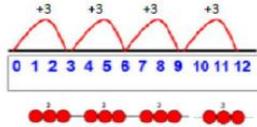
Write two different number sentences to describe the finished array.

Multiplication and Division

Key vocab: multiples, twos, fives, tens, number, multiply, divide, multiplication, division, one-step problem, answer, concrete object, pictorial representation, arrays, count, equals, write

NC Objectives:

- Count in multiples, including 2s, 5s and 10s.
- Solve one-step problems involving **division**, by calculating the answer using concrete objects, pictorial representations, and arrays, with the support of the teacher.

Concrete	Pictorial	Abstract
<p>Count the groups as children are skip counting, children may use their fingers as they are skip counting.</p>    <p>Use cubes, counters, objects or place value counters to aid understanding.</p>  	<p>Children use pictures or shapes to share quantities.</p>  <div style="border: 1px solid black; padding: 2px; width: fit-content; margin: 5px auto;">$8 \div 2 = 4$</div> <p>Children use bar modelling to show and support understanding.</p>  <p>$12 \div 4 = 3$</p> <p>Use number lines for grouping</p>  <p style="text-align: center; color: red;">$12 \div 3 = 4$</p>	<p>Partition a number and then double each part before recombining it back together.</p> <div style="text-align: center;"> $\begin{array}{c} 16 \\ \swarrow \quad \searrow \\ 10 \quad 6 \\ \quad \\ \times 2 \quad \times 2 \\ 20 \quad + \quad 12 = 32 \end{array}$ </div> <div style="text-align: right; font-size: 1.2em;">$12 \div 3 = 4$</div> <p>Tim has 16 bananas. He shares them equally between two boxes. How many bananas are in each box? Represent and solve the problem.</p>

Reasoning

There are 10 cakes and 2 boxes.

An equal amount needs to be put into each box.



Put them into groups of 2



Share them into 2 groups.

Eva

Who is correct?
Explain your answer.

Sarah is filling party bags with sweets. She has 20 sweets altogether and decides to put 5 in every bag. How many bags can she fill?

How else could 20 sweets be put into bags so that every bag had the same number of sweets?

How many bags would be packed each time?

Dora has 10 biscuits.



She wants to share them equally at her party.

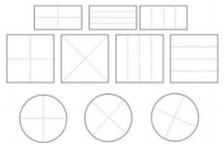
How many people could be at the party?

Fractions, Decimals and Percentages

Key vocab: fraction, half, equal parts, one whole, object, shape, quarter, quantity

NC Objectives:

- Recognise, find, and name a half as one of two equal parts of an object, shape, or quantity.
- Recognise, find, and name a quarter as one of four equal parts of an object, shape, or quantity.

Concrete	Pictorial	Abstract
<p>Show the children real life objects and how they can be cut in half. How can we cut these objects in half?</p> <div style="text-align: center;">  </div> <p>Can any of the objects be cut in half in more than one way?</p> <p>Use a range of containers and rice/water. Can you show me a quarter full in each container? Do they look the same or different?</p> <p>Use counters to complete the sentences.</p> <p style="text-align: center;">A quarter of 4 is ____ A quarter of 8 is ____</p> <p style="text-align: center;">1 is one quarter of ____ 3 is one quarter of ____</p>	<p>Find half of each amount.</p> <div style="text-align: center;">  </div> <p>Find half of the amounts and complete the stem sentences.</p> <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;">  <p>There are ____ beads. Half of ____ is ____</p> </div> <div style="text-align: center;">  <p>There are ____ marbles. Half of ____ is ____</p> </div> </div> <p>Colour a quarter of each shape. Can you colour it in different ways?</p> <div style="text-align: center;">  </div>	<p>Half of ____ is ____</p> <p>One quarter of ____ is ____</p> <p style="text-align: right;">half of 2 = <input style="width: 40px;" type="text"/></p> <p style="text-align: right;">half of 4 = <input style="width: 40px;" type="text"/></p> <p style="text-align: right;">half of 6 = <input style="width: 40px;" type="text"/></p> <p style="text-align: right;">half of 8 = <input style="width: 40px;" type="text"/></p> <p style="text-align: right;">half of 10 = <input style="width: 40px;" type="text"/></p>

Reasoning

Eva and Jack are both attempting to split a rectangle in half.




Eva

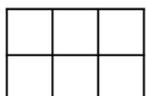
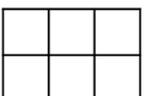
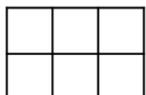
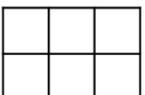
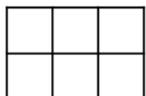
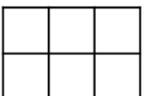
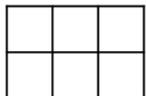
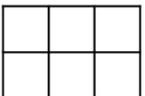
Jack thinks he can find three more ways.



Jack

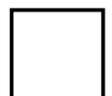
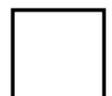
Find Jack's three examples.

How many different ways can you shade one half of the shapes?

Use the squares to show:

- Less than a quarter shaded.
- Exactly a quarter shaded.
- More than a quarter shaded.

Alex and Jack are talking about quarters.



My shape shows quarters because it has four equal parts.

Alex

My shape shows quarters because it has four parts.



Jack

Are they correct? Explain your answer.

One cube  is a quarter, what could the whole look like?

Two cubes  are a quarter, what could the whole look like?

Three cubes  are a quarter, what could the whole look like?

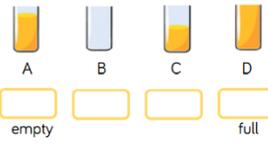
How many different possibilities can you make?

Measurement

Key vocab: length, height, long, short, longer, shorter, tall, double, half, mass, heavy, light, heavier than, lighter than, volume, full, empty, more than, less than, half, half full, quarter, quicker, slower, earlier, later, sequence events, chronological order, before/after, first/next, today/yesterday/tomorrow, morning/afternoon/evening, record, hours, minutes, half past, o'clock, hands, clock face, seconds, coins, notes, dates, days/weeks/months/years

NC Objectives:

- Compare, describe, and solve practical problems for: lengths and heights, mass/weight and capacity and volume.
- Measure and begin to record the following: lengths and heights, mass/weight and capacity and volume.

Concrete	Pictorial	Abstract
<p>Provide a range of different containers for children to explore practically using water or sand.</p> <p>Show me full containers. Show me empty containers. Show me almost full. Show me almost empty.</p>  <p>Take three different containers. Fill each container with liquid or rice using the same unit of measure e.g. A small cup.</p> <p>Order the containers from largest to smallest capacity.</p> <p>Choose two objects. Which is heavier? Which is lighter? Can you be a human weighing scale? Now use the weighing scale to check.</p>  <p>Which object is heavier? Which object is lighter? The _____ is heavier/lighter than the _____.</p>	<p>Use cubes to measure the length of objects around your classroom. Write a sentence for each object.</p> <p>The pencil is <input type="text"/> cubes long.</p>  <p>The <input type="text"/> is <input type="text"/> cubes long.</p> <p>Mr White is 5 sticks tall. Choose a suitable piece of equipment to measure how tall your friend is.</p>  <p>Which is longer - your maths book or a lunch box? The <input type="text"/> is longer than the <input type="text"/>.</p> <p>Choose a unit to measure the objects to check you are correct.</p> <p>Put these in order from empty to full.</p>  <p>empty <input type="text"/> full <input type="text"/></p> <p>Fill in the missing gaps to make the sentences correct.</p>  <p>The _____ is heavier than the _____. The _____ is lighter than the _____. The _____ is equal to the _____.</p> <p>Can you order the objects from heaviest to lightest?</p>  <p>Ball = 3 pencils Teddy Bear = 8 pencils Sock = 4 pencils</p> <p>How long is the building block?  The building block is <input type="text"/> cm.</p> <p>What is the length of the chocolate bar?  The chocolate bar is <input type="text"/> cm.</p> <p>Which straw is the tallest? The blue straw is <input type="text"/> cm tall. The red straw is <input type="text"/> cm tall. The <input type="text"/> straw is the tallest. The <input type="text"/> straw is the shortest.</p>	<p>Use length understanding to make estimates to questions such as 'Is the table taller or shorter than 1 metre?'</p>

Reasoning

How do you know that this (object) is heavier / longer / taller than this one?
Explain how you know.



How many cubes does the teddy bear weigh?
Explain how you know.

Using classroom equipment, can you find an object which is longer than your rubber but shorter than your pencil?

Can you find a friend who is shorter than you but taller than your other friend?

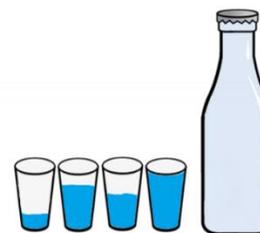
Always, Sometimes, Never?

The tallest container holds the most liquid.

Identical containers can have a different capacity.

Show me.

Whitney pours her cups into the bottle and they fill it exactly.



She says the bottle has a capacity of four cups. Do you agree?

Whitney measures the length of two toys.



She says,

The toys are the same length.

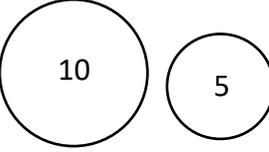
Do you agree with Whitney?
Explain your answer.

Measurement

Key vocab: length, height, long, short, longer, shorter, tall, double, half, mass, heavy, light, heavier than, lighter than, volume, full, empty, more than, less than, half, half full, quarter, quicker, slower, earlier, later, sequence events, chronological order, before/after, first/next, today/yesterday/tomorrow, morning/afternoon/evening, record, hours, minutes, half past, o'clock, hands, clock face, seconds, coins, notes, dates, days/weeks/months/years

NC Objectives:

- Recognise and know the value of different denominations of coins and notes.

Concrete	Pictorial	Abstract
<p>Use coins to make different amounts of money.</p> <p>15p </p> <p>Shop role play – making different amounts of money to pay for items.</p> <p>Organise the coins on your table into pence and pounds. Can you name each coin?</p> 	<p>Draw coins to make different amounts of money.</p> <p>15p </p> <p>Match the cards with equal values.</p> <div style="display: flex; flex-wrap: wrap; justify-content: space-around;"> <div style="border: 1px solid blue; padding: 5px; margin: 5px;">  A </div> <div style="border: 1px solid blue; padding: 5px; margin: 5px;">  B </div> <div style="border: 1px solid blue; padding: 5px; margin: 5px;">  C </div> <div style="border: 1px solid blue; padding: 5px; margin: 5px;">  D </div> </div>	<p>How can you make different amounts of money?</p> <p>15p = 10p + 5p</p>

Reasoning

Ella has two silver coins.
How much money might she have?

Which is the odd one out?

20 p

8 p

2 p

10 p

Why?

Teddy is given one  for Christmas.
Eva is given two 

Alex has 2 silver coins.
Teddy has 5 bronze coins.
Amir has 1 silver coin.

They all have the same amount of money.
Which coins do they each have?
Collect or draw the coins to prove it.

Who is correct?
Explain your reasoning.

Are there any other amounts that this works for?

Dora says:

All coins are round.

Do you agree with Dora?
Justify your answer.

Always, sometimes, never

Money in notes is worth more than money in coins.

Measurement

Key vocab: length, height, long, short, longer, shorter, tall, double, half, mass, heavy, light, heavier than, lighter than, volume, full, empty, more than, less than, half, half full, quarter, quicker, slower, earlier, later, sequence events, chronological order, before/after, first/next, today/yesterday/tomorrow, morning/afternoon/evening, record, hours, minutes, half past, o'clock, hands, clock face, seconds, coins, notes, dates, days/weeks/months/years

NC Objectives:

- Sequence events in chronological order using language (e.g., before, after, next, first, today, yesterday, tomorrow, morning, afternoon, evening).
- Recognise and use language relating to dates, including days of the week, weeks, months, years.
- Compare, describe, and solve practical problems for time.
- Measure and begin to record the following: time (hours, minutes, seconds).
- Tell the time to the hour and half past the hour and draw the hands on a clock face to show these times.

Concrete	Pictorial and Abstract														
<p>• Encourage children to sit for 1 minute so they gain an understanding of its length.</p>	<div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <p>Sort the activities into before and after school.</p> <div style="display: flex; justify-content: space-around; text-align: center;"> <div style="border: 1px solid blue; padding: 5px;"> Breakfast</div> <div style="border: 1px solid blue; padding: 5px;"> Bedtime story</div> <div style="border: 1px solid blue; padding: 5px;"> Get dressed</div> <div style="border: 1px solid blue; padding: 5px;"> Go to a party</div> </div> <p>Can you think of one more activity for each group? Can you sort the activities into three groups labelled morning, afternoon and evening?</p> <p>Fill in the missing days of the week and complete the sentences.</p> <table style="width: 100%; border-collapse: collapse;"> <tr><td style="border: 1px solid blue; padding: 2px;">Sunday</td><td>• Today is Wednesday, yesterday was _____.</td></tr> <tr><td style="border: 1px solid blue; padding: 2px;"> </td><td>• Yesterday was Monday, today is _____.</td></tr> <tr><td style="border: 1px solid blue; padding: 2px;">Tuesday</td><td>• Today is Saturday, tomorrow is _____.</td></tr> <tr><td style="border: 1px solid blue; padding: 2px;"> </td><td>• Tomorrow is _____, today is Wednesday.</td></tr> <tr><td style="border: 1px solid blue; padding: 2px;">Wednesday</td><td> </td></tr> <tr><td style="border: 1px solid blue; padding: 2px;"> </td><td> </td></tr> <tr><td style="border: 1px solid blue; padding: 2px;">Saturday</td><td> </td></tr> </table> </div> <div style="width: 45%;"> <p>Match the times to the clocks.</p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;"> 9 o'clock</div> <div style="text-align: center;"> Two o'clock</div> </div> <div style="display: flex; justify-content: space-around; align-items: center; margin-top: 10px;"> <div style="text-align: center;"> 5 o'clock</div> </div> <p>Complete the times.</p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;"> The time is half past ____</div> <div style="text-align: center;"> The time is half past ____</div> </div> <p>Draw the hour hand and the minute hand on clock faces to show these times: Half past 1 Half past four Half past 8</p> </div> </div> <div style="width: 45%;"> <p>Teddy, Mo and Whitney are running a race. Here are their times.</p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;"> Teddy - 52 seconds</div> <div style="text-align: center;"> Mo - 58 seconds</div> <div style="text-align: center;"> Whitney - 48 seconds</div> </div> <p>Use faster or slower to complete each sentence. Teddy is _____ than Mo. Teddy is _____ than Whitney. Whitney is _____ than Mo. Can you write any more sentences to describe the race using the words slower and faster?</p> <p>Three planes are flying to Paris in the morning. Here are the times they arrive.</p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;"> A</div> <div style="text-align: center;"> B</div> <div style="text-align: center;"> C</div> </div> <p>Use earlier and later to complete the sentences. Plane A is _____ than Plane B. Plane B is _____ than Plane C. Plane C is _____ than Plane A.</p> </div>	Sunday	• Today is Wednesday, yesterday was _____.		• Yesterday was Monday, today is _____.	Tuesday	• Today is Saturday, tomorrow is _____.		• Tomorrow is _____, today is Wednesday.	Wednesday				Saturday	
Sunday	• Today is Wednesday, yesterday was _____.														
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Wednesday															
Saturday															

Reasoning

Ask pupils to reason and make statements about to the order of daily routines in school, e.g., we go to PE **after** we go to lunch. Is this true or false? What do we do before break time? etc.

Work in small groups.
Complete the following activities and record how long it takes each person.

- Build a tower of ten bricks.
- Run a lap of the playground.
- Write your name five times.

Write three sentences about each activity using the words **slower** and **faster**.

The 5th June is a Wednesday.
What day is the 10th June?



The time is 6 past 1



Tommy

Can you spot Tommy's mistake?

Eva is practising chanting the months of the year.

She says,

January, February, May, April, March, July, June, August, September, November, October, December.

Eva is incorrect. Correct her mistakes.



The time is 3 o'clock.



Amir

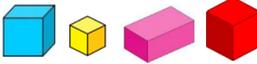
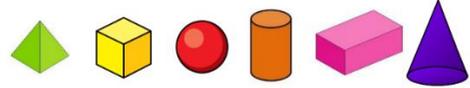
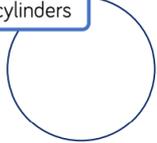
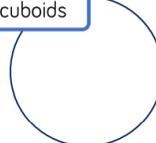
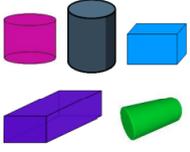
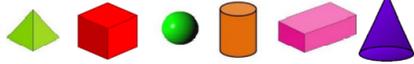
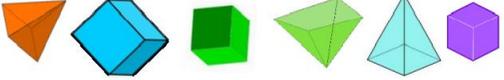
Can you spot Amir's mistake?

Geometry

Key vocab: 2D shapes, 3D shapes, two- dimensional, three- dimensional, cuboid, cube, pyramid, cone, cylinder, sphere, half turn, quarter turn, three-quarter turn, left, right, up, down top/middle/bottom, on top of/in front of, above/between/around, near/close/far, forwards/backwards, inside/outside

NC Objectives:

- Recognise and name common 2D shapes, including rectangles (including squares), circles, triangles.
- Recognise and name common 3D shapes, including cuboids (including cubes), pyramids, spheres.

Concrete	Pictorial	Abstract
<ul style="list-style-type: none"> • Sorting 2D and 3D shapes according to: <ul style="list-style-type: none"> ○ whether they roll ○ their size ○ whether they stack ○ their properties • Use objects/shapes to make patterns – can another child carry the pattern on? Describe the patterns using properties of shapes. • Name 2D and 3D shapes – discuss their properties. • Build a structure out of 3D shapes – which shapes have you used? • Go on a shape hunt around the classroom/school – what shapes can you spot? <p>Choose a 3-D object. Use one of the faces as a stencil to draw around. Name the shape that you have drawn.</p> <p>How many different 2-D shapes can you draw using 3-D shapes as a stencil?</p>	<p>Circle the odd one out in each group.</p> <div style="display: flex; justify-content: space-around; align-items: center;">   </div> <p>Match the shape to its name.</p> <div style="display: flex; justify-content: space-around; align-items: center;">  </div> <div style="display: flex; justify-content: space-around; margin-top: 5px;"> cube cylinder cuboid pyramid cone sphere </div> <p>Sort the shapes into the groups.</p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;"> cylinders  </div> <div style="text-align: center;"> cuboids  </div>  </div> <p>Which shapes will roll? Circle them. Which shapes with stack? Tick them.</p> <div style="display: flex; justify-content: space-around; align-items: center;">  </div> <p>Circle the cubes. Tick the pyramids.</p> <div style="display: flex; justify-content: space-around; align-items: center;">  </div> <p>Will any of the shapes roll and stack?</p>	

Reasoning

Amir and Eva are making patterns.

Eva



Amir




 Eva

Our patterns are exactly the same.

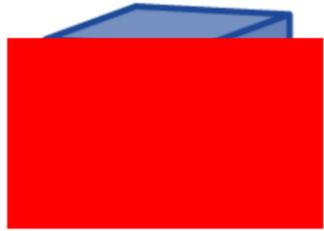

 Amir

Our patterns are different.

Who do you agree with?

Explain your answer.

The bottom of a 3-D shape is hidden.



What shape could it be?

Explain how you know.

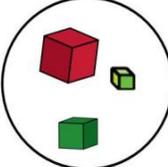
Tommy says that all shapes with 4 sides are squares.

Is Tommy correct? Prove it.

Put a selection of 3-D shapes in a feely bag. Choose a shape. What do you think it is?



Explain how you know.





Have the shapes been sorted correctly?

Explain how you know.

How else could the shapes be sorted?

Geometry

Key vocab: 2D shapes, 3D shapes, two- dimensional, three- dimensional, cuboid, cube, pyramid, cone, cylinder, sphere, half turn, quarter turn, three-quarter turn, left, right, up, down top/middle/bottom, on top of/in front of, above/between/around, near/close/far, forwards/backwards, inside/outside

NC Objectives:

- Describe position, directions, and movement, including half, quarter, and three-quarter turns.

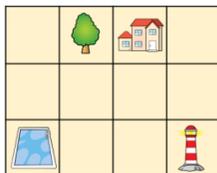
Concrete

Give the children instructions using the language 'quarter turn', 'half turn', 'three quarters turn' and 'full turn'. Children could then work in pairs to give and follow directions. This could be developed into a routine with music or as the children line up.

Use cones to mark out a route for a partner.

Describe the route your partner needs to take using the words 'left', 'right', 'forwards' and 'backwards'.

Use a grid to move a bot to different places. Use the words 'left', 'right', 'forwards' and 'backwards' to describe the movements.



Use 5 cubes to build a tower.

- Start with a yellow cube.
- Place a blue cube on top of the yellow cube.
- Place a white cube below the yellow cube.
- Place a red cube on the top of the tower.
- Place the green cube in between the yellow and white cube.

Pictorial

Complete the sentences using 'left' and 'right' to describe the position of the coins.



- The £1 coin is to the _____ of the 1p coin.
- The 50p coin is to the _____ of the 1p coin.
- The 2p coin is to the _____ of the 50p coin.

Draw what each shape will look like once it has turned a:

- quarter turn
- half turn
- three-quarter turn
- full turn



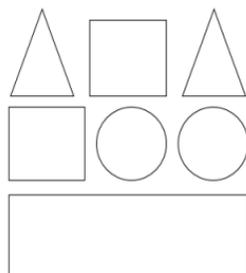
Abstract

Reasoning

How many different ways can you describe the position of the 2p coin?



Use the clues to colour the shapes.



- The circle in the middle is blue.
- The circle on the right is red.
- The shape up from the right circle is green.
- The shape down from the circles is green.
- The square to the left of the green triangle is red.
- The four-sided shape up from the rectangle is blue.
- The triangle on the left is red.

Alex turns her number shape and it finishes facing this direction.



What direction could it have started facing?

What turn could it have made?