

White Rose Maths Hub
Small steps guidance and examples

Year 1

Block 1 – Place Value (within 10)

Overview

Small Steps

- Sort objects
- Count objects
- Represent objects
- Count, read and write forwards from any number 0 to 10
- Count, read and writing backwards from any number 0 to 10
- Count one more
- Count one less
- One to one correspondence to start to compare groups
- Compare groups using language such as equal, more/greater, less/fewer
- Introduce = , > and < symbols
- Compare numbers
- Order groups of objects
- Order numbers
- Ordinal numbers (1st, 2nd, 3rd)
- The number line

NC Objectives

Count to **ten**, forwards and backwards, beginning with 0 or 1, or from any given number.

Count, read and write numbers to **10** in numerals and words.

Given a number, identify one more or one less.

Identify and represent numbers using objects and pictorial representations including the number line, and use the language of: equal to, more than, less than (fewer), most, least.

Sorting Objects

Notes and Guidance

To build on skills learned in Early Years, children need to sort groups by characteristics before they count.

Children should be encouraged to sort groups in a variety of ways.

For example, sorting a group of children into girls and boys or sorting counters by colour.

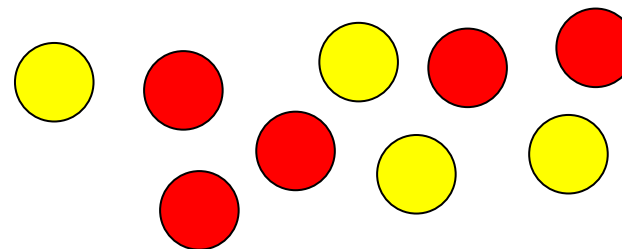
Mathematical Talk

How can you sort the objects?

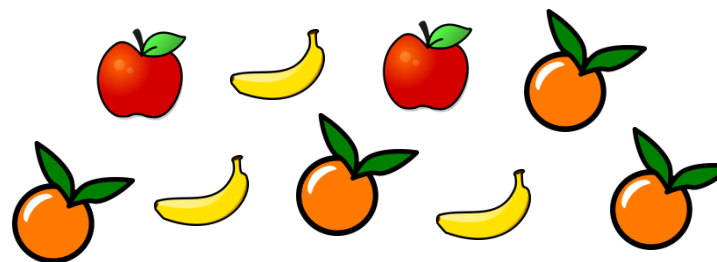
How have you grouped the objects?

Varied Fluency

- Sort the counters into groups and explain how you have sorted them.



- Sort the fruit into groups and explain how you have sorted them.



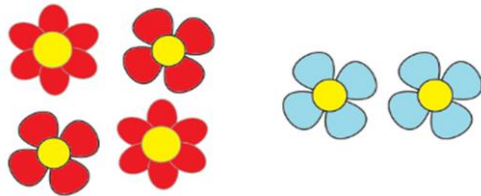
- How many ways can you sort the children into groups?



Sorting Objects

Reasoning and Problem Solving

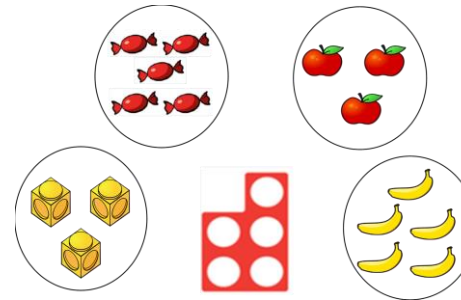
How have the objects been sorted?



They have been sorted into colours.

They could have been sorted into 4 petal flowers and 5 petal flowers.

How can the objects be sorted?



They can be sorted into:

Red and yellow
Fruit and non-fruit
5 and 3

Counting Objects

Notes and Guidance

Once children are able to sort a set of objects, they should begin to count from 1 to 10 to work out how many there are.

It is important that they count one object at a time and that they understand the last number they count is the total amount.

Children should be encouraged to place the objects in a line to improve accuracy when counting. They should also be exposed to what zero looks like.

Mathematical Talk

What does zero look like?

Can you show me zero with your fingers?

What do you notice about the amount of green and yellow cars?

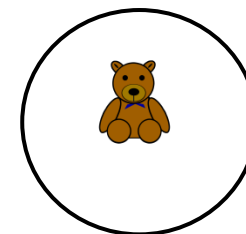
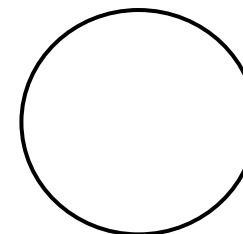
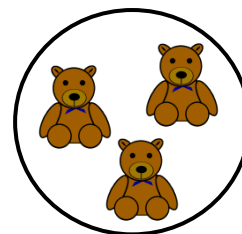
Line up the objects, is it now easier to count? Why?

Varied Fluency

- 1 How many red cubes and how many green cubes are there?



- 2 Match the teddies to the correct number.



0

1

3

- 3 Use the picture to complete the sentences.



There are green cars.

There are yellow cars.

There are red cars.

Representing Objects

Notes and Guidance

Children learn that one object can be represented by another. For example, one elephant can be represented by one cube or counter.

Children can also pictorially represent an object to aid understanding. The use of zero is important so children understand what zero means. Although we model the use of numerals, you could also introduce the written word here too.

Mathematical Talk

How can the 5 frame help you?






Where you have written the 3, can you write the word too?

How many ways can you draw 3?

Do we always have to use counters to show an amount?

Varied Fluency

1 Using counters, show how many pineapples there are.

				
1	2	3	4	5

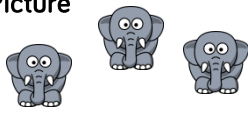
2 How many whales can you see on the wrapping paper?

Place counters on the whales to help you.

What else can you count?



3 Complete the table

Picture 	Number
Draw it 	Show it

Counting and Representing Objects

Reasoning and Problem Solving

I am going to count on from 8

Will I say the number 6?

Explain your answer.

No, you will say 9 and 10. If you were counting backwards you would say the number 6

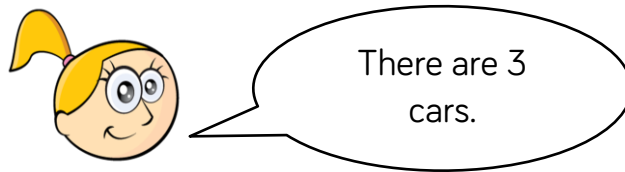
How many ways can you represent 6 glasses of apple juice?

How many ways can you show me less than 4 sweets?

How can you show me that there are more green cars than blue cars?

Children could line up 6 counters, cubes
Children could line up 3, 2, 1 or get zero counters
Children could get 1 blue cube and 2 green cubes etc.

Jo has counted the toy cars and said:



Jo might not have started on the first car.

Jo might have started counting from 0 instead of 1

She might have just counted the blue cars.



Explain the mistake she could have made.

Counting Forwards

Notes and Guidance

Children develop counting to continue a number sequence. Problems should be presented in a variety of ways e.g. numerals, words and images. Variation should challenge children by providing them with missing numbers which are non-consecutive.

When counting a set of objects, children need to be able to visualise what zero looks like, but when counting out loud they need to know that 0 comes before 1.

Mathematical Talk






How can our counting skills help us complete a number track?



Do we always have to count from 0 or 1?

Can anything in our classroom help you with the words? (on a number line/working wall ensure words are matched with numeral)

Varied Fluency

1 Complete the number tracks.

						
1	2			Three		Five

		
4	5	

2 Complete the number tracks.

1		3	4	5	6		8	9	10
----------	--	----------	----------	----------	----------	--	----------	----------	-----------

one		three	four	five	six		eight	nine	ten
------------	--	--------------	-------------	-------------	------------	--	--------------	-------------	------------

3 Fill in the missing numbers.

(a) , 1, 2, 3, (b) 3, 4, , 6 (c) 1, , 3,

(d) six, , , nine

Counting Backwards

Notes and Guidance

Children develop counting to continue a number sequence. Problems should be presented in a variety of ways e.g. numerals, words and images.

Variation should challenge children by providing them with missing numbers which are non-consecutive.

When counting backwards, children should be exposed to zero.

Mathematical Talk

How can we use our counting skills?

Do we always have to start at 10, when counting backwards?

Will all the boxes have dots in?

Varied Fluency

1 Complete.

5	4	3	2		9	8	7																	
7															4					3				

2 Complete the number tracks.

10		8	7	6			3	2	1
ten	nine	eight		six		four	three	two	

3 Fill in the empty boxes.

●● ●●	●● ●●	●● ●●			●	
6	5		3		1	

Counting Forwards and Backwards

Reasoning and Problem Solving

Spot the mistake and explain what has been done wrong.

5, 6, 8, 9, 10

7, 6, 4, 3, 2

7, 6, 3, 2, 1

The number 7 is missing

The number 5 is missing

The numbers: 5 and 4 are missing

Katy is counting.




She is counting backwards because the numbers are getting smaller.

Is she counting forwards or backwards?

How do you know?

How have the sequences been sorted?

0, 1, 2, 3, 4	3, 2, 1, 0
	Seven, six, five, four

How many more sequences can you add to each column?

Children to write the correct labels on the table. Counting forwards on the left and counting backwards on the right.

Counting forwards, I could add: 3,4,5,6,7
Counting backwards I could add 9,8,7,6,5

Count One More

Notes and Guidance

Once children have practised placing numbers on a track, the language of one more can be introduced.

Children should know that one more is the number after and they should use their counting skills or number track.

The use of dice and dominoes should be included to keep using subitising skills.

Mathematical Talk

How can counting help us with finding 1 more?

Where can 1 more than ____ be found on a number track?

Varied Fluency


- 1 Roll a dice, represent the number using counters on a track, and add 1 more.

Then, complete the sentences

1 more than ____ is ____

____ is one more than ____

- 2 Complete each box using a picture, a numeral and a word.

	→ one more →	<input type="text"/>
3	→ one more →	<input type="text"/>
six	→ one more →	<input type="text"/>

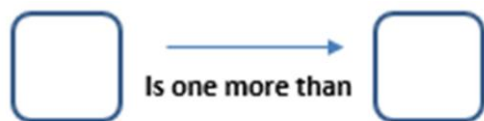
- 3 Choose a number card from 0 to 9 then complete the table.

Number in numerals	Number in words	Number track
		<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>
Sentence		
One more than ____ is ____		

Count One More

Reasoning and Problem Solving

Using number cards 0 to 10.
How many different ways can you complete the boxes below?



Look to see if the children are working systematically e.g. 1 and 0, then 2 and 1 etc

Timmy rolls the number that is 1 more than the dice below.

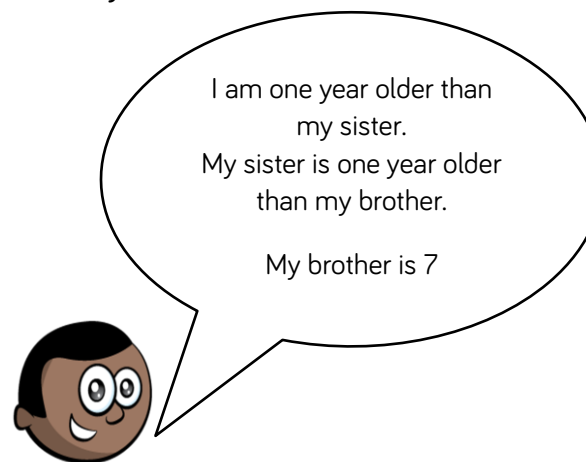


Timmy has said 1 less than 3 instead of 1 more than 3

He says that he rolls 2

Explain his mistake.

Dan says:



His sister is 8 because she is one more than 7 so he is 9 because he is one more than 8 Dan is the oldest because 9 comes after 7 and 8

How old is Dan?
Who is oldest?

Explain why.

Count One Less

Notes and Guidance

Children should relate one less to one more and understand that it is the opposite.

It should be made clear that 1 less is the number before the starting number.

Mathematical Talk

How can counting help us with finding 1 less?

Where can 1 less than ____ be found on a number track?

Varied Fluency

- 1 Choose a number between 1 and 10

Then, complete the sentences

1 less than ____ is ____

____ is one less than ____

- 2 Complete each box using a picture, a numeral and a word.



one less →

1

one less →

nine

one less →

- 3 Choose a number card from 1 to 10 then complete the table.

Starting number	Number track										
	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	
More than sentence						Less than sentence					

Count One Less

Reasoning and Problem Solving

True or false?

One more than 7 is the same as 1 less than 9

Use a number track to help you.



Can you think of another statement like this?

It is true because one more than 7 is 8 and one less than 9 is also 8

1 more than 5 and 1 less than 7 are the same for example

One more than ___ is 1.

One less than ___ is 1.

Sam



I can use the same number to fill in the gaps.

Is he correct?

Explain how you know.

Sam is incorrect because one more than 1 is 2 and 1 less than 1 is 0

One to One Correspondence

Notes and Guidance

Children match one object with another.

They match where there are too many, not enough or just the right amount.

Children do not need to know the exact difference between the groups.

Mathematical Talk

How can you match the items?

Is it easier to have both sets of objects given?

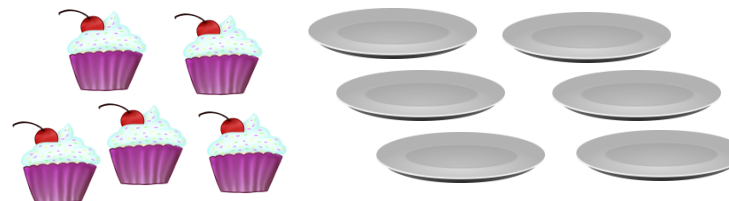
Can you make your own question for a friend?

Varied Fluency

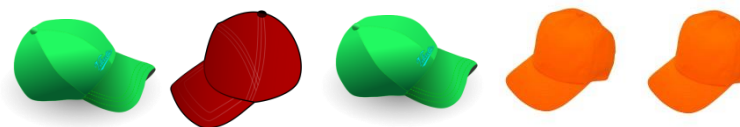
- 1 Are there enough bowls for the bears?



- 2 Are there enough plates for each cake?



- 3 Six children are going to the beach. Are there enough caps for everyone?



How many more caps are needed?

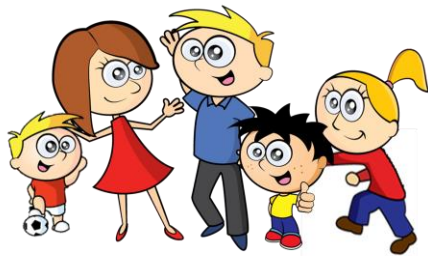
One to One Correspondence

Reasoning and Problem Solving

There are 4 children going to the beach.
Can every child have a bucket and spade?



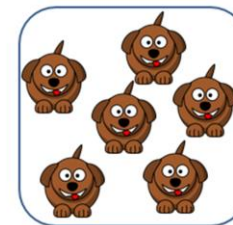
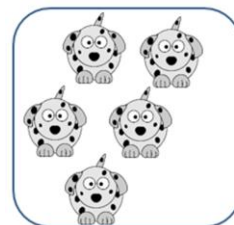
If not, why not?



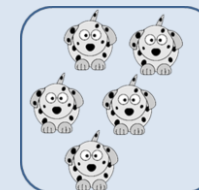
Can the family all travel in a 6 seater car?
Explain how you know.

No. There are enough spades for one each but not enough buckets.

Which group of dogs match the leads?
Explain why.



There are 5 leads so the box with 5 dogs in matches the leads.



Yes. There are 6 seats and only 5 people.

Comparing Objects

Notes and Guidance

Children use the language ‘equal to’, ‘more’, ‘less’, ‘greater than’, ‘fewer’ and ‘less than’ to compare groups of objects.

Children do not need to know the difference between the groups, just that one group is greater or less than another or that the groups are equal to each other.

Mathematical Talk

Can you compare the same objects using the word “fewer” and then using the word “more”?

Is there more than one answer?

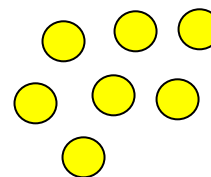
How many answers can you find?

Varied Fluency

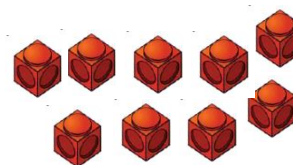
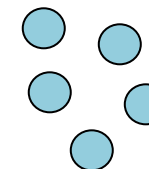
1 Circle the picture with more trees.



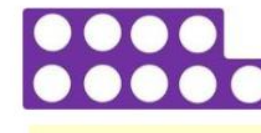
2 Use **greater than**, **less than** or **equal to** to complete the sentences.



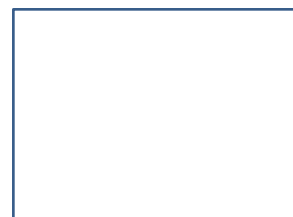
is _____



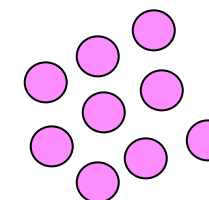
is _____



3 Draw counters in the box to complete the sentence.



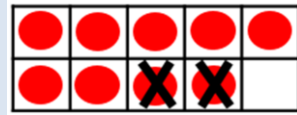
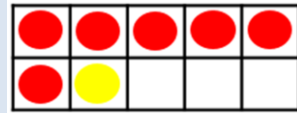
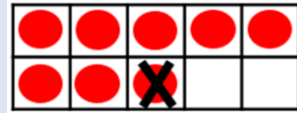
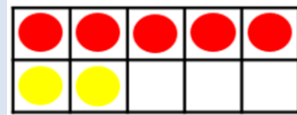
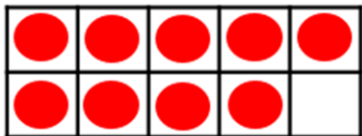
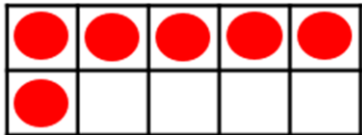
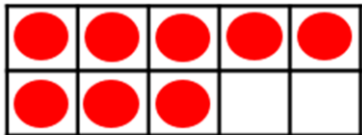
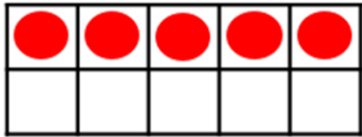
is fewer than



Comparing Objects

Reasoning and Problem Solving

Move three counters so all the ten frames show the same amount.



Create your own problem like this.

Miriam has this many cubes in one hand:



She has fewer cubes in the other hand.

How many cubes could she have in her other hand?

She could have:

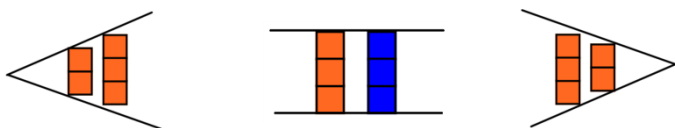
- 4 cubes
- 3 cubes
- 2 cubes
- 1 cube

Introducing <, > and =

Notes and Guidance

Inequality symbols are not introduced in the National Curriculum until Year 2. However, it is a good opportunity to introduce them when working with smaller numbers and concrete materials.

For example:



Mathematical Talk

Is there more than one answer?

How can you check?

Can you show the sentence in a different way?

Varied Fluency

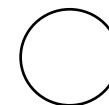
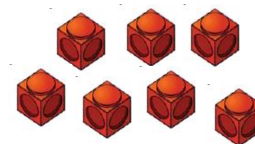
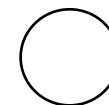
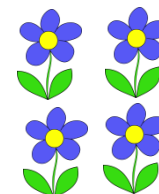
1 Use cubes to show that,

$3 < 4$

$6 > 2$

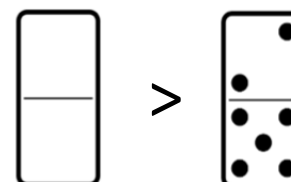
$5 = 5$

2 Put <, > or = in each circle to make the statement correct.

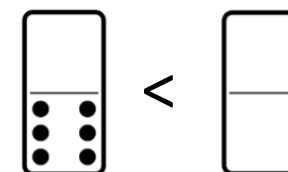


Seven

3 Complete the blank dominoes.



>



<

Introducing <, > and =

Reasoning and Problem Solving

Circle all the numbers from the number track that **cannot** go in the box. Why?

$$6 < \square$$



6, 5, 4, 3, 2, 1 because $6 <$ means '6 is less than' so the other number needs to be greater than 6.

Children can include 0 even though it is not on the number track

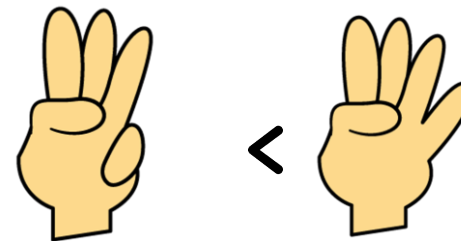
Draw images to go in both boxes to make the statement true.

$$\square > 6 > \square$$

Children to draw image of 7 or above in left box and image of 5 or below in right box.

Follow the instructions to play the game:

1. Both children make a fist.
2. On 3, show some fingers.
3. Choose a sign <, > or = to make the statement correct.



This game can be played to develop fluency. To extend:

- Can we move places to change the sign?
- How can we change fingers to use the = sign?

Can we use two hands each?

Comparing Numbers

Notes and Guidance

Children use previous learning to choose an efficient method to compare numbers.

For example, to compare 2 and 3, children may:

- Use a number track.
- Use knowledge of one more/one less.
- Use greater than/less than symbols.
- Use concrete objects to show the difference in size.

Mathematical Talk

What happens to the sign when you swap the numbers around?

Will zero always be the smallest?

What strategies did you use?

Varied Fluency

- 1 Here are two number cards.



Use the number track to explain which number is greater.



- 2 Use $<$, $>$ or $=$ to make the statements true.

$$5 \bigcirc 6$$

$$8 \bigcirc 1$$

$$10 \bigcirc 0$$

- 3 Choose your own numbers to complete the statements.

$$\underline{\quad} < \underline{\quad} \quad \underline{\quad} > \underline{\quad}$$

$$\underline{\quad} = \underline{\quad}$$

Comparing Numbers

Reasoning and Problem Solving

One of these statements is incorrect.
Use cubes to prove which one.

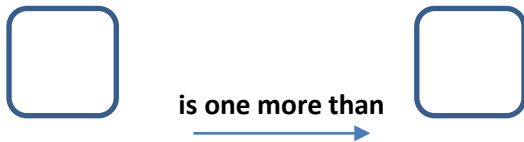
$$8 > 4$$

$$7 < 10$$

$$3 > 6$$

Children prove that $3 > 6$ is incorrect using cubes or by drawing diagrams.

Using number cards 0-10.
How many ways can you complete the following?



Some examples:

9 is 1 more than 8

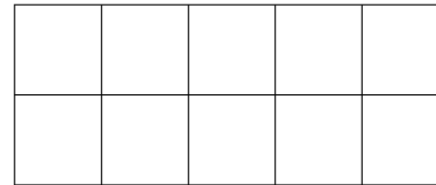
6 is 1 more than 5

Encourage children to be systematic in their approach.

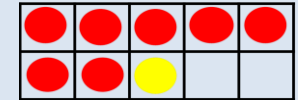
True or False?

1 more than 7 is the same as 1 less than 9.

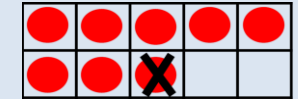
Use the ten frame to show me.



True



1 more than 7 is 8



1 less than 9 is 8

Ordering Objects

Notes and Guidance

Children order three groups of objects. It is important to share different methods so children are continually exposed to more efficient ways. Children may:

- Compare two of the three groups and eliminate one before comparing the remaining two.
- Line all three groups up at once.

New vocabulary in this lesson will be greatest and smallest.

Mathematical Talk

What strategy did you use to order the groups?

Did anyone on your table do it a different way?

Can you just look at two groups first? Why?

Is there more than one answer? Can you find them all?

Varied Fluency

1 Order the groups of cars from greatest to smallest.



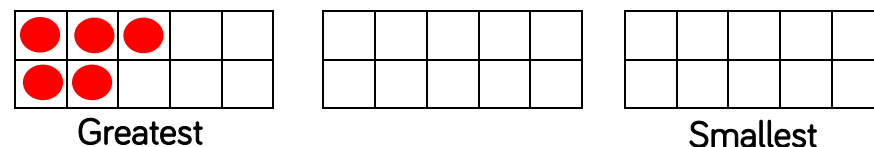
2 Put a number in each box to complete the statements.



The smallest amount of ice creams is

The greatest amount of ice creams is

3 Draw counters in the ten frames so that they are ordered from greatest to smallest.



Ordering Objects

Reasoning and Problem Solving

Milly is ordering these three ladybirds from the greatest amount of spots to least.



She says:



I can just compare the first two to work out the answer.

Do you agree? Explain why.

No, she needs to know how many spots on the third ladybird to correctly place them.

True or False?

1 more than 7 is the same as 1 less than 9.

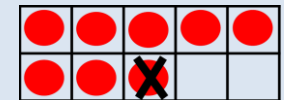
Use the ten frame to show me.



True



1 more than 7 is 8



1 less than 9 is 8

Ordering Numbers

Notes and Guidance

Children order numbers from smallest to greatest or greatest to smallest.

They should be encouraged to use concrete or pictorial representations to prove or check their answers.

Children use the vocabulary 'smallest' and 'greatest' and may also use the $<$ or $>$ symbol to show the order of their numbers.

Mathematical Talk

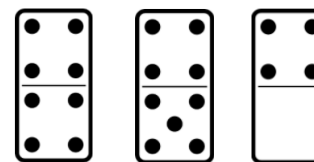
Explain how you ordered the dominoes.

Can you show the order of your numbers using the $<$ or $>$ symbol?

How many answers are there? Can you prove it with cubes?

Varied Fluency

- 1 Order the dominoes from smallest to greatest.



- 2 Order the number cards from greatest to smallest.



Complete the sentences.

The greatest number is _____
 _____ is the smallest number.

- 3 Put the correct symbol ($<$ or $>$) in the circles.

$$9 \bigcirc 8 \bigcirc 7$$

Put a number in the box to make the statement correct.

$$6 > 2 > \square$$

Ordering Numbers

Reasoning and Problem Solving

Complete the image and match the numerals to the correct picture

1, 3, 4 8, 3, 2

1, 3, 4 5, 7, 2 8, 3, 2

Joe says:



Do you agree with Joe?

Explain your reasoning.

Joe is incorrect because he has 5 in his ten frame. This should be the middle number.

The order should be:

Ordinal Numbers

Notes and Guidance

This is a non-statutory statement in the Year 1 curriculum. It has been included to see numbers as positional. It also links to previous lessons such as ordering numbers.

Stem sentences support children with using new mathematical language correctly.

Mathematical Talk

When would I use 'last' place? Explain how you know.

Explain how to brush your teeth using the vocabulary first, second and third.

Varied Fluency

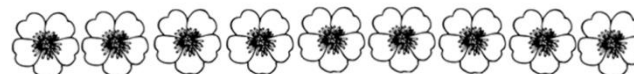
- 1 Here is a string of beads.



The 1st bead is _____

The _____ bead is black.

- 2 Colour the 7th flower blue.



Colour in another flower and complete the sentence.

The _____ flower is _____

- 3 Three children have a race.



Maggie finishes first.

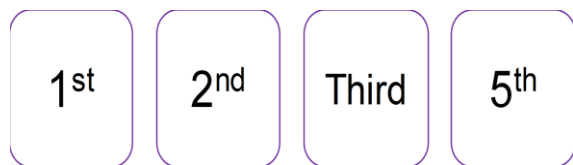
Seb finishes third.

What place does Kody finish in?

Ordinal Numbers

Reasoning and Problem Solving

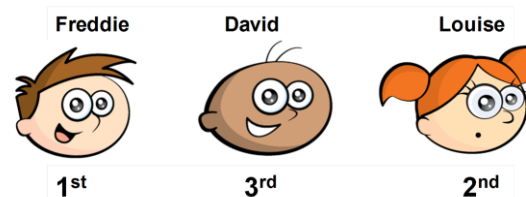
Spot and explain the mistake:



4th is missing.
Children should explain by saying things like 4th comes after 3rd and before 5th


David, Louise and Freddie take part in a race.


The results are:



David finished behind Louise or Freddie.
Freddie finished in front of David or Louise.
Louise finished in front of David but behind Freddie.

Fill in the blanks:

 Finished behind _____.

 Finished in front of _____.

 Finished in front of _____,
but behind _____.

The Number Line

Notes and Guidance

This step summarises all previous learning. Children will see that a number line can be used to:

- Count to 10
- See one more/one less
- See greater than/less than statements
- Order three numbers

Using a number line gives opportunities to count from zero.

Mathematical Talk

How many more jumps?

How do you know?

What number is one less than eight?

Have you put your numbers in the same place as your partner?

How did you choose where to put them?

Varied Fluency

- 1 On the number line
 - Circle the number 7
 - Underline a number greater than seven
 - Draw an arrow to the number that is one less than five.
 - Put a box around the smallest number.



- 2 How many jumps from zero is eight?



Is this more or less than the jumps to nine?

- 3 Write 5, 9 and 2 in the correct order on the number line.



The Number Line

Reasoning and Problem Solving

Roll a die.



Place a counter on the number line covering the digit shown by the die. Work out how many jumps to 0 and how many to 10.

Which is closer?

If you landed on 6 and did three jumps, what digits could you land on?

Can you land on a number where there are 7 and 3 jumps to 10 or 0. Which numbers could they be?

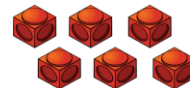
Open ended – land on 8.
2 jumps to 10, 8 jumps to 0

Jules points to a number on the number line.

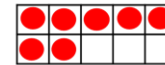


Which of the following **do not** represent this number?

A



B



C



A does not represent the arrow on the number line as it shows 6.
B and C both show 7.