Year 2

Small Steps Guidance and Examples

Block 2: Statistics

White Rose Maths

Year 2 – Yearly Overview

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12
Autumn	Number: Place value			Number: Addition and Subtraction					Measurement: Money		Number: Multiplication and Division	
Spring	Number: Multiplication and Division		Statistics		Geometry: Properties of Shape			Number: Fractions			Measurement: length and height	Consolidation
Summer	Position and direction			Problem solving and efficient methods		Measurement: Time			Measurement: Mass, Capacity and Temperature		Investigations	

Overview

Small Steps

◣	Make tally charts
◣	Draw pictograms (1-1)
◣	Interpret pictograms (1-1)
◣	Draw pictograms (2, 5 and 10)
◣	Interpret pictograms (2, 5 and 10)
◣	Block diagrams

NC Objectives

Interpret and construct simple pictograms, tally charts, block diagrams and simple tables.

Ask and answer simple questions by counting the number of objects in each category and sorting the categories by quantity.

Ask and answer questions about totalling and comparing categorical data.

Make Tally Charts

Notes and Guidance

Children should be confident counting in 5s and have an understanding of the vocabulary total, altogether, more, less and difference.

Tally charts need to be taught as a systematic method of recording data as a running total for an unknown quantity.

Mathematical Talk

What does 1 mark represent? How would we count the single marks?

What do you notice about every fifth marker? How would we count these?

Why do we count in 5s and 1s? What makes this method of counting more efficient?

How do we ensure that we use our tally marks to work systematically? (Recording tally marks systematically 1:1 as objects are counted NOT counting objects as a set then recording the matching tally in order to avoid miscounting)

Varied Fluency

1 Complete the tally chart.

Favourite colour	Tally	Total
Blue	ⅢⅢ Ⅲ	
Red	ⅢⅢ ⅢⅢ Ⅱ	
Yellow	Ⅱ	
Green	Ⅲ	

What does the data tell you? Tell me the story.

2 Complete the tally chart for Year 2

Year group	Tally	Total
Year 1	ⅢⅢ ⅢⅢ	10
Year 2		19
Year 3	ⅢⅢ ⅢⅢ ⅢⅢ ⅢⅢ Ⅰ	21
Year 4	ⅢⅢ ⅢⅢ ⅢⅢ Ⅱ	17

What could the title be for this tally chart?

3 Make a tally chart about one of the following topics:
- Equipment in class (scissors, glue etc)
- Favourite sport
- Favourite fruit
- Ways of getting to school (walk, car, cycle etc)
- A choice of your own

Make Tally Charts

Reasoning and Problem Solving

Frankie makes a tally chart of the animals he saw at the zoo

Animals at the zoo	Tally
🐢	ЖII
🐘	IIII
🐼	II
🐴	ЖII

Tick one box below that shows all of the animals Frankie saw and explain why the others are incorrect.

Box 1   Box 2   Box 3   Box 4

Box 1 is incorrect because there are not enough elephants to match the tally chart.

Box 2 is incorrect because there are not enough pandas to match the tally chart.

Box 3 is incorrect because there are too many turtles.

Box 4 ✓

What is the same? What is different?

Favourite ice-cream flavours in class 1	Tally
Vanilla	ЖI ЖI ЖI
Chocolate	ЖI ЖI ЖI ЖI
Strawberry	ЖI II
Mint	I

Favourite ice-cream flavours in class 1	Tally
Vanilla	ЖI ЖI II
Chocolate	ЖI ЖI ЖI ЖI
Strawberry	ЖI
Mint	III

The same:
Both tally charts show that chocolate is the favourite flavour, mint is the least favourite flavour, chocolate is the favourite, then vanilla, then strawberry and that mint is the least favourite.
Different:
In Class 1, three more children like Vanilla. It shows that are more children in Class 2 than Class 1 More children like mint in Class 2 Mint is 3 times more popular in Class 2

Draw Pictograms (1-1)

Notes and Guidance

Children use tally charts to produce pictograms.
To build children's understanding and confidence they begin by filling in one missing column or row. Children then move on to editing given data to see the importance of checking that data reflects the pictogram.
Finally children draw a pictogram from the data given.
It is important that children see pictograms both horizontally and vertically.

Mathematical Talk
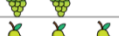
How did you know how many images to draw?

What is the same and what is different about these two pictograms? (same data but shown horizontally and vertically)

Which pictogram is easier to read? Why?

What symbol could we draw? Why did you choose this?

Varied Fluency

1 Complete the pictogram.

Hair colour		Number
Black	●●●●●	5
Blonde	●●●●●●●	7
Brown		9
Ginger	●●●●	4

2 Use the tally chart to help you complete the pictogram.

Fruit	Tally
Banana	卌I
Grapes	IIII
Pear	卌 III
Apple	III

Fruit	Number
Banana	🍌🍌🍌🍌🍌🍌
Grapes	🍇🍇
Pear	🍐🍐🍐
Apple	🍎🍎

3 Complete the pictogram using the data given.

Name	Tally of goals scored
Raj	II
Mark	卌 IIII
Rose	卌
Amal	卌 I

⚽ ⚽			
Raj	Mark	Rose	Amal

⚽ = 1 goal
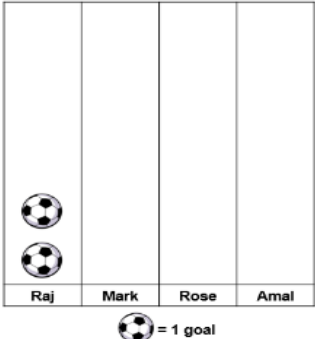
Draw Pictograms (1-1)

Reasoning and Problem Solving

Here is a pictogram showing the number of counters each child has.

Tim	⬤⬤ ⬤
Sally	⬤ ⬤ ⬤⬤
Tom	⬤ ⬤ ⬤
Kate	⬤⬤⬤ ⬤

How could you improve the pictogram?

Possible answer
Children show understanding that the pictogram is hard to read as the symbols are over the top of each other. It would be much clearer if the circles were evenly spaced.

Use the clues below to help you complete the pictogram.
- More caramel was sold than Bubble-gum flavour, but less than strawberry flavour.
- Mint Chocolate was the most popular flavour by 2
- Vanilla was the least popular by 3
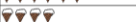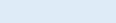
🍦 = 1 ice cream

Flavour		Number
Strawberry	🍦🍦🍦🍦🍦🍦	
Vanilla		
Chocolate	🍦🍦🍦🍦	
Mint		
Caramel		
Bubble-gum	🍦🍦🍦🍦	4
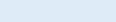
How many different ways are there to complete the pictogram?

Possible answers

🍦 = 1 ice cream

Flavour		Number
Strawberry	🍦🍦🍦🍦🍦🍦🍦🍦	8
Vanilla	🍦	1
Chocolate	🍦🍦🍦🍦	4
Mint	🍦🍦🍦🍦🍦🍦🍦🍦🍦🍦	10
Caramel	🍦🍦🍦🍦🍦🍦	6
Bubble-gum	🍦🍦🍦🍦	4

🍦 = 1 ice cream

Flavour		Number
Strawberry	🍦🍦🍦🍦🍦🍦🍦🍦	8
Vanilla	🍦	1
Chocolate	🍦🍦🍦🍦	4
Mint	🍦🍦🍦🍦🍦🍦🍦🍦🍦🍦	10
Caramel	🍦🍦🍦🍦🍦🍦🍦	7
Bubble-gum	🍦🍦🍦🍦	4

Interpret Pictograms (1-1)

Notes and Guidance

Children answer questions by using the information from pictograms. They use their knowledge of one to one correspondence to help them interpret the data presented.

It is important that children are able to compare data within the pictograms.

Mathematical Talk

How do you know where to find the information?

What strategy did you use to check?

Can you think of your own questions to ask a partner?

Varied Fluency

1 Use the pictogram to answer the questions.

Colour	
Blue	👕👕👕👕👕👕👕
Green	👕👕
Red	👕👕👕👕
Purple	👕👕👕👕👕👕
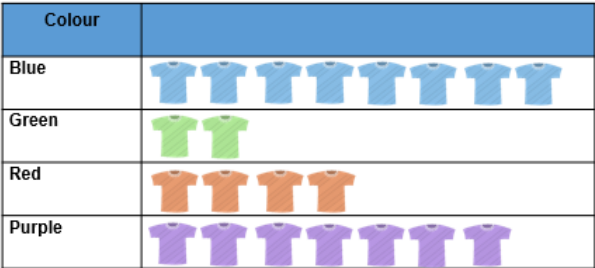
👕 = 1 t-shirt

What was the most popular colour t-shirt?
What was the least popular t-shirt?
How many more blue t-shirts were sold than red?
How many t-shirts were sold in total?

2 Use the pictogram to complete the stem sentences.

Minibeast	
Woodlouse	●●●●●●●●
Ladybird	●●●●●●
Centipede	●●
Worm	●●●●
Spider	●●●●●
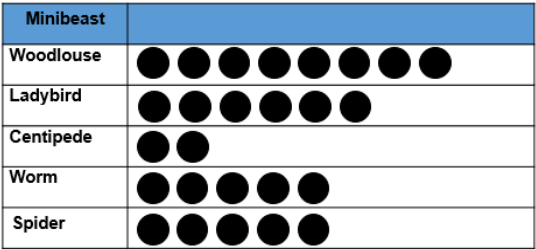
● = 1 minibeast
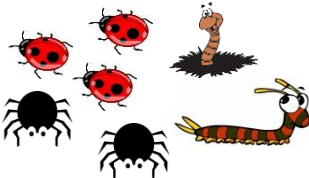
There are ____ ladybirds.
There are _____ centipedes and worms altogether.
_____ is the difference between worms and spiders.
How many more sentences can you write?

Interpret Pictograms (1-1)

Reasoning and Problem Solving

Sam writes these statements about his pictogram:

- There were more cows than sheep.
- There were the same number of sheep and horses.
- There were more chickens than any other animal.
- There were less cows than goats.

Can you draw the pictogram, with a heading, so that Sam's statements are correct?

Possible answer

Pictogram to show the number of animals spotted at the farm

| Chickens | Cows | Sheep | Goats | Horses |
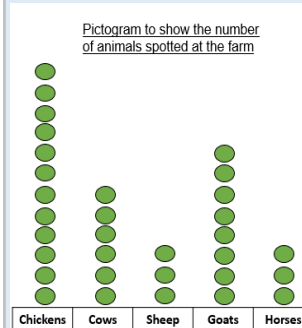
Children may have different numbers from this and still be correct.

Here is a pictogram.

Number of sweets in a packet
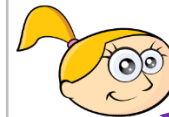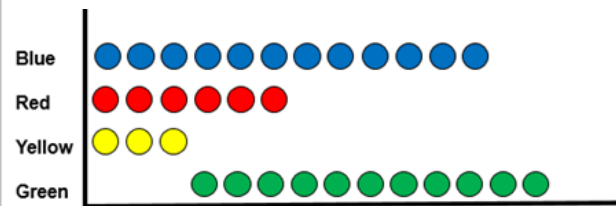
The most popular colour sweet is green.

Do you agree with Anya?

Explain why and correct any mistakes.

Anya is wrong because the green sweets are not lined up correctly. There are 11 green and 12 blue.

It should look like this

Draw Pictograms (2, 5 & 10)

Notes and Guidance

Children look at pictograms where the symbols represent 2, 5 or 10 items.

Careful consideration needs to be given to the picture or symbol used so that it can be halved.

They count in twos, fives, and tens to complete and draw pictograms.

Mathematical Talk

Why is it important to use a picture to represent 10 objects in this pictogram?

Discuss with children that when using larger numbers, 1-1 correspondence becomes impractical.

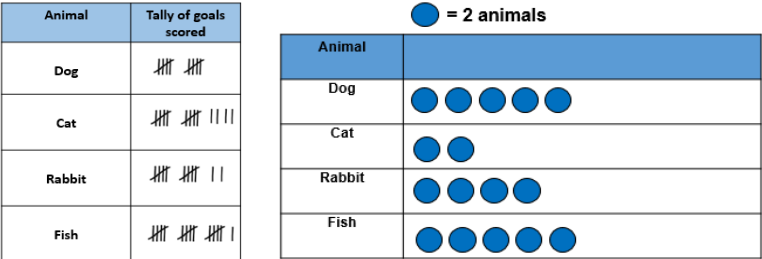If a symbol = 2, how can you show 3 on a pictogram? How can you show 5? How can you show any odd number?

Varied Fluency

1 Use the tally chart to complete the pictogram.

Animal	Tally of goals scored
Dog	卌 卌
Cat	卌 卌 IIII
Rabbit	卌 卌 II
Fish	卌 卌 卌 I

● = 2 animals

Animal	
Dog	●●●●●
Cat	●●
Rabbit	●●●●
Fish	●●●●●

2 Use the information from the table to complete the pictogram.

Number of books read in each class

Class 1	卌 卌 卌 卌 卌
Class 2	卌 卌 卌 卌 卌 卌
Class 3	卌 卌 卌
Class 4	卌 卌 卌 卌 卌 卌
Class 5	卌 卌 卌 卌
Class 6	卌 卌 卌

Number of books read in each class

Class 1	📖 📖 📖
Class 2	📖 📖 📖 📖 📖
Class 3	📖 📖 📖
Class 4	📖 📖 📖 📖
Class 5	
Class 6	📖 📖 📖 📖

📖 = 5 books
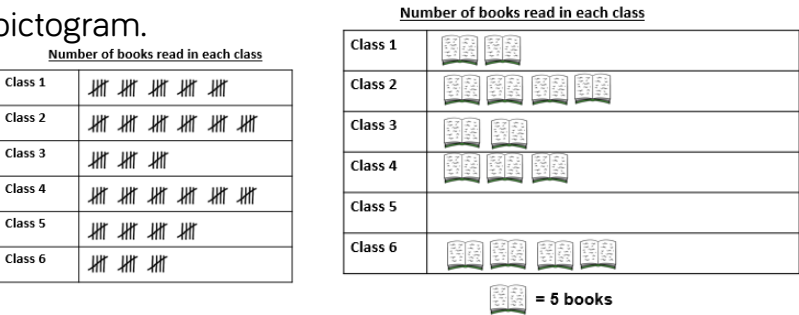
3 Year 2 sell cakes at a bake sale. The table shows the data. Draw a pictogram to represent the data. Each circle represents 10 cakes.

● = 10 cakes

Number of cakes sold

Chocolate cake	卌 卌 卌 卌
Lemon cake	卌 卌 卌 卌 卌 卌 卌 卌
Red velvet cake	卌 卌 卌 卌 卌
Mint cake	卌 卌 卌 卌 卌 卌
Carrot cake	卌 卌 卌 卌 卌 卌 卌 卌
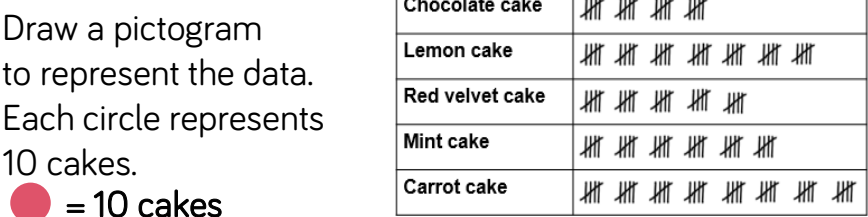
Draw Pictograms (2, 5 & 10)

Reasoning and Problem Solving

Create a pictogram to show who was born in what season in your class.

Use what you know about pictograms to help you.

Here is an example.
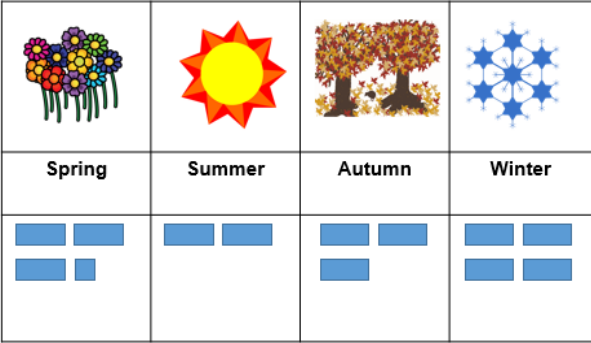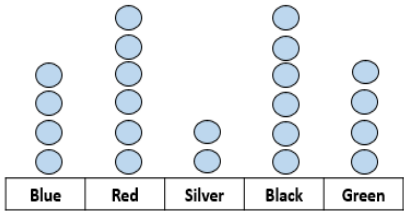
Seasons we were born in

Spring	Summer	Autumn	Winter
(flowers)	(sun)	(autumn tree)	(snowflakes)

= 2 children

Zac and Lily both draw a pictogram to show how many cars they have seen pass their school.
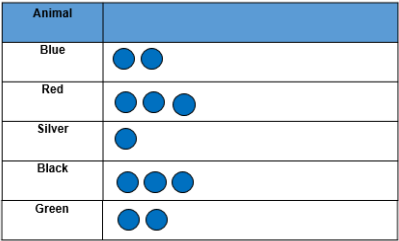
Pictogram to show the number of cars

Blue	Red	Silver	Black	Green

◯ = 5 cars

Mine is better because it shows big numbers.

Pictogram to show the number of cars

Animal	
Blue	●●
Red	●●●
Silver	●
Black	●●●
Green	●●

● = 10 cars

Mine is better because I can count in 10s

Whose pictogram is better?
Explain your reasoning.

Possible answer. They are both equally as good. Each pictogram is easy to read. One counts in 5s and the other counts in 10s, but they both show the same information.

Interpret Pictograms (2, 5 & 10)

Notes and Guidance

Children build on previous work of counting in 2s, 5s and 10s and answer questions based on this information.

To help the children to fully understand pictograms it is important they have collected their own data previously in tally charts and constructed larger scale pictograms practically.

Children need to be confident to halve 2 and 10.

It is important the children are exposed to both horizontal and vertical pictograms.
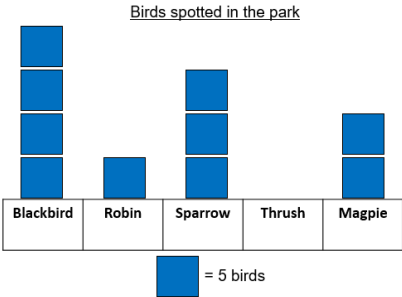
Mathematical Talk

How can we represent 0?

What does this pictogram show? What would the title of this pictogram be?
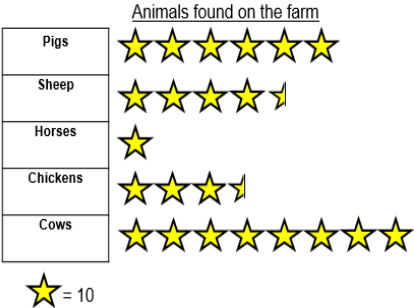
What is each symbol worth?

Varied Fluency

1 Find the difference between sparrows and robins.
What is the total number of birds?
How did you calculate this?
Can you think of your own question to ask a friend?

Birds spotted in the park

= 5 birds

2 Which is the most popular sport?
How many children voted for football and swimming?

= 2

Sport	
Football	△△△△△
Tennis	△△
basketball	△△△
Hockey	△△△◁
Swimming	△

3 Using the pictogram, sort the statements into true and false.

Animals found on the farm

Pigs	★★★★★★
Sheep	★★★★◁
Horses	★
Chickens	★★★◁
Cows	★★★★★★★★

★ = 10

Statement	True or False?
Horses were the least popular animal.	
The number of chickens seen were half the number of cows.	
The total amount of pigs and sheep is 70	
The difference between cows and horses is 60	
There were 10 less chickens than sheep.	

Interpret Pictograms (2, 5 & 10)

Reasoning and Problem Solving

Harry and Lucy have carried out a traffic survey.

Van	⊗ ⊗ ⊗
Bus	⊗ ⊗ ⊗ ⊗
Bike	⊗ ⊗ ⊗
Lorry	⊗ ⊗
Car	⊗ ⊗ ⊗ ⊗ ⊗

⊗ = 10

Harry says;

If I add the number of lorries and bikes together then it will be equal to the number of cars

Is he right? Convince me

Lucy says;

To find the total number of vehicles I need to add all the images up.
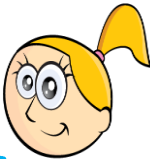
Is she correct? Explain your answer.

Harry is correct because there are 10 lorries (2 lots of 10) and 30 bikes (3 lots of 10). That means there are 50 lorries and bikes altogether. This is the same as the number of cars, which is 50. Lucy is incorrect because she has ignored the key. That means there will be 165 cars, not 16 and a half.

Ice creams sold in a week

= 2 ice creams

Convince me

On Sunday the most ice creams were sold.

True or False (Why?)

Three ice creams were sold on Tuesday.

Justify

If the staff needed to pick which day to have off during the week, which would be the best day and why?

The most ice creams were sold on Sunday because this is the column with most pictures of ice creams on it. There were not 3 ice creams sold on Tuesday, there were 30 sold. One ice cream is worth 10 ice creams. The best day off would be Monday because that is the day they sold the least amount.

Block Diagrams

Notes and Guidance

Children use their knowledge of number lines to link to the idea of a scale up the side of a block diagram. They read the scale on the bar chart to work out what each block represents.

Children ask and answer questions using their addition, subtraction, multiplication and division skills.

Moving from concrete to pictorial, children build block diagrams using cubes and then move to drawing and interpreting block diagrams.

Mathematical Talk

Can you use data to draw a block diagram? What will each block be worth?

Can you make a block diagram about favourite colours about your own class?

Can you colour in the blocks on the axis to represent the data?

Can you create your own questions to ask about the block diagram?

Varied Fluency

1 Class 4 are collecting data about favourite colours.

Colour	Number of children
Red	5
Green	8
Blue	7
Yellow	2

Make a block diagram using cubes to represent the data. Can you now draw the block diagram? Remember to label the blocks and draw a clear scale.

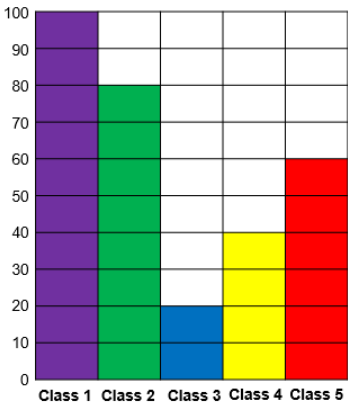**2** 5 classes collected their house points. Here are their results.

Which class collected the most house points?

Which class collected the fewest house points?

How many more points did Class 2 get than Class 4?

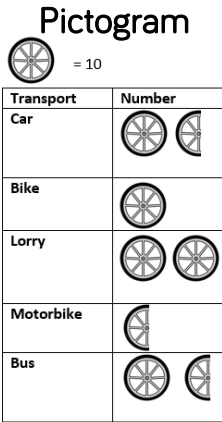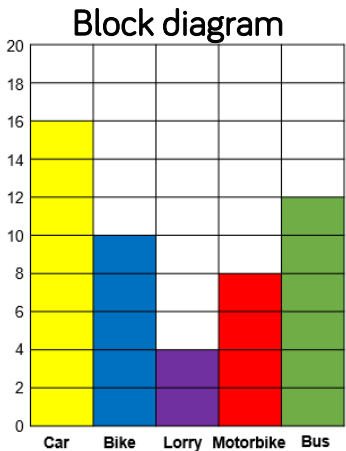How many fewer points did Class 3 get than Class 5?

How many points did Class 2 and Class 3 get altogether?

Block Diagrams

Reasoning and Problem Solving

Which one is the odd one out?
Explain why.

Block diagram

Pictogram

Transport	Number
Car	
Bike	
Lorry	
Motorbike	
Bus	

= 10

Tally Chart

Transport	Number
Car	ℋℋ ℋℋ ℋℋ I
Bike	ℋℋ ℋℋ
Lorry	II
Motorbike	IIII
Bus	ℋℋ ℋℋ II

Possible answer
The pictogram is the odd one out because the information is different from the other two sets of data. The block diagram and the tally chart match each other perfectly.

Split into groups.
Everyone needs to write their name on a post it note.
Using a blank axis of a block diagram, use your post it notes to find the answers to the following questions:

- How many boys and how many girls are there in your group?
- Which month has the most birthdays for your group?
- How old are the children in your group?