Spring Block 4

Statistics

Small steps

Step 1	Tally charts
Step 2	Tables
Step 3	Block diagrams
Step 4	Draw pictograms
Step 5	Interpret pictograms

Tally charts

Notes and guidance

This block is the first time that Year 1 children are introduced to statistics and different representations of data. In this small step, children use tally charts to systematically record data.

It is important that children understand how different numbers are represented and when to use a "gate" to represent a group of 5. Year 1 children may need to practise counting in 5s, as they should use this skill when finding the totals represented by tallies. Children should be given plenty of opportunities to draw tallies for themselves to record numbers of objects.

Tallies are used throughout this block, so children must be confident using them before moving on to the next step.

Things to look out for

- Children may draw five individual lines rather than using a "gate".
- Children may count the groups of 5s as 10s or 1s.
- If looking at pictures, children may need efficient strategies to avoid counting an object more than once.
- Children may think that they need to draw something to represent zero.

Key questions

- What is a tally chart?
- How do you show 1/2/3/4/5 as tallies?
- What number does the tally show? How do you know?

Possible sentence stems

- To show _____ as a tally, I need to draw _____ groups of 5 and _____ single lines.
- The tally chart shows _____ groups of 5 and _____ single lines. The total is _____

Single age small step links

- N/A

- Make tally charts (Y2)

National Curriculum links

- Interpret and construct simple pictograms, tally charts, block diagrams and tables (Y2)
- Ask and answer simple questions by counting the number of objects in each category and sorting the categories by quantity (Y2)

Tally charts

Key learning

- What do you notice about the tallies?

𝍸	𝍸	𝍸	𝍸	𝍸	𝍸
1	2	3	4	5	6

Why do you think we group 5 together?

- Draw tallies for the numbers.
  - 8
  - 9
  - 10
  - 11
  - 15

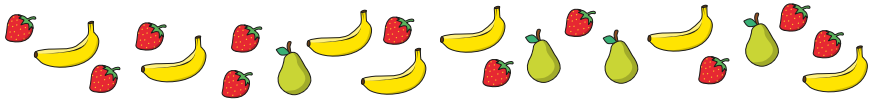
- Complete the tally chart.

Favourite colour	Tally	Total
orange	𝍸 𝍸	
green	𝍸 𝍸 𝍸	
purple	𝍸 𝍸	

- Complete the tally chart.

Year group	Tally	Total
Year 1	𝍸 𝍸 𝍸 𝍸	
Year 2		21
Year 3	𝍸 𝍸 𝍸 𝍸 𝍸	

- Complete the tally chart for the fruit.



Fruit	Tally	Total
banana		
strawberry		
pear		

Ask children to find some objects, for example small sticks and pebbles.

Ask them to count how many of each object they have.

How can they record the data they have found?

Ask children to create a tally chart of their findings.

Ask children to collect their own data and create a tally chart. Possible topics include:

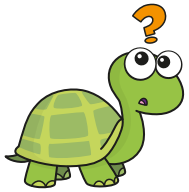
- favourite colour
- favourite sport
- how children travel to school

Tally charts

Reasoning and problem solving

Tiny draws a tally chart to show how children in Class 1 get to school.

Journey to school	Tally	Total
bus	𝍸	4
car	𝍸 ||	7
cycle	||	2
walk	||||||||	8



What mistakes has Tiny made?

Correct Tiny's mistakes.

How many children are there in Class 1?

Tiny has missed the gate from 8:

𝍸 \|\|\|

4 should not have a gate:

\|\|\|\|

21

Here is a tally chart showing some children's favourite colours.

Favourite colour	Tally
green	𝍸 ||
orange	
purple	𝍸 𝍸 𝍸 𝍸 |||
blue	

- Orange is the least popular colour.
- The number of children who like blue is greater than the number who like green, but less than the number who like purple.

Complete the tally chart.

Is there more than one answer?

orange: any number less than 7

blue: any number between 7 and 23

Tables

Notes and guidance

In this small step, children explore the use of simple tables. Some include tallies, but others just show the totals.

Children compare tally charts and tables and think about when it is more efficient to use each one. They may recognise that a table is easier to read, but a tally chart is more efficient when collecting data.

Children think about what the data represents and draw pictures to match the information shown in a table, or use a picture to create a table. This should be the main focus for Year 1 children, whereas Year 2 children also compare and answer questions about the data shown.

Things to look out for

- Children may use tallies when they are not needed.
- Children may find it difficult to represent data from a table.
- Children may miscount when collecting data to put in a table.
- Children may need support to identify key information when answering comparative questions.

Key questions

- How are tally charts and tables similar/different?
- When is it better to use a tally chart/table?
- Which _____ is the most/least popular? How can you tell?

Possible sentence stems

- The tally shows _____ groups of 5 and _____ single lines.
  The total is _____
- _____ people chose _____

Single age small step links

- N/A

- Tables (Y2)

National Curriculum links

- Interpret and construct simple pictograms, tally charts, block diagrams and tables (Y2)
- Ask and answer questions about totalling and comparing categorical data (Y2)

Tables

Key learning

- Look at the tally chart and the table.

Item	Tally
ruler	𝍸 𝍸 𝍸 ||
pencil	𝍸 𝍸 𝍸 𝍸
rubber	𝍸 𝍸

Item	Total
ruler	17
pencil	20
rubber	10

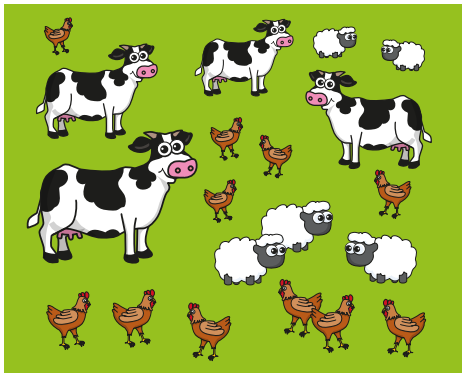
What is the same? What is different?

When should you use tally charts? When should you use a table?

- Draw a picture to show the information in the table.

Shape	Total
triangle	6
rectangle	3
circle	7

- Use the picture to complete the table.



Animal	Total
chicken	
sheep	
cow	

- The table shows the pets owned by children in Class A.

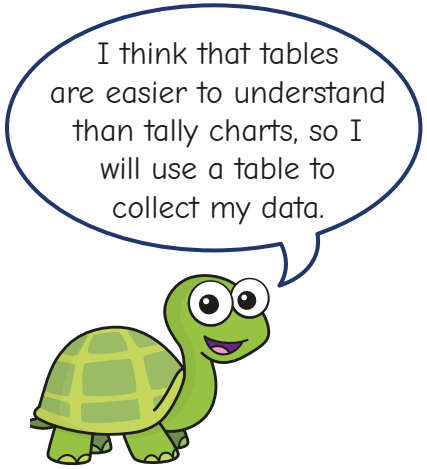
Pet	Total
dog	12
fish	18
rabbit	7

  - Which pet is the most common? Which pet is the least common?
  - How many fish and rabbits do children in Class A have?
  - How many pets do children in Class A have altogether?
  - How many more dogs than rabbits are there?

Tables

Reasoning and problem solving

Tiny wants to record the colours of cars that pass by.



Is this a good idea?

Why?

No

A tally chart is better for collecting data when all the data cannot be seen at the same time.

The table shows the number of items in a classroom.

Some of the information is missing.

Item	Total
ruler	
pencil	14
rubber	
glue stick	16

- There are 6 fewer rulers than pencils.
- The number of rubbers is greater than the number of pencils, but less than the number of glue sticks.

Complete the table.

How many items are there altogether?

8 rulers

15 rubbers

53

Block diagrams

Notes and guidance

In this small step, children use block diagrams as a way of representing data. This is a new concept for Year 1 children, so it may be beneficial to explore the similarities/differences between this and previous representations of data.

Children explore block diagrams that use one-to-one correspondence, where each block represents one item. They will develop this idea when looking at bar charts with scales in later years.

Children identify simple information from a block diagram, for example using the heights/lengths of the bars to identify the most/least popular items. Stem sentences can be used to support interpretation of diagrams. Children can then create their own diagrams, firstly using concrete resources such as cubes or sticky notes. Year 2 children should progress to drawing block diagrams on paper. Explain that block diagrams can be shown vertically or horizontally.

Things to look out for

- Children may not use/draw blocks of equal size.
- Children may not use the size of the bars to compare totals.
- Children may need support to label their block diagrams.

Key questions

- How is a block diagram similar to a tally chart/table? How is it different?
- What does each block represent?

Possible sentence stems

- There are _____ blocks shaded.
  This means that _____ people chose _____
- The most/least popular item is _____ because ...

Single age small step links

- N/A

- Block diagrams (Y2)

National Curriculum links

- Interpret and construct simple pictograms, tally charts, block diagrams and tables (Y2)
- Ask and answer questions about totalling and comparing categorical data (Y2)

Block diagrams

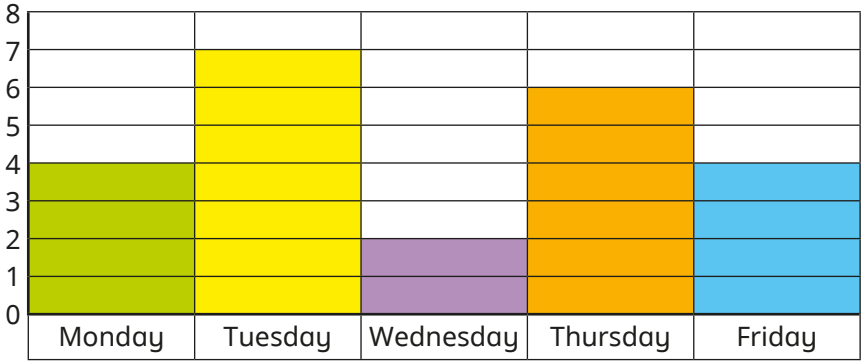
Key learning

Give every child a sticky note and ask them to write their name on it.

Use sticky notes to create block diagrams showing:

- children's favourite colour
- the month with the most birthdays.

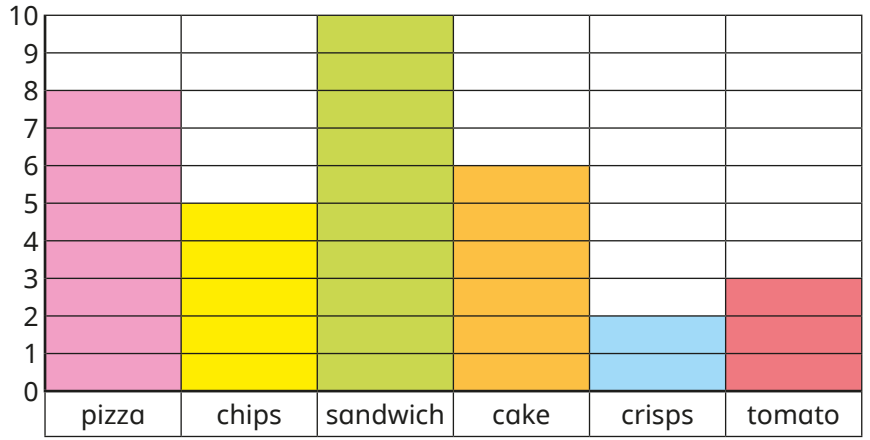
- The block diagram shows how many children cycled to school each day in one week.



Complete the sentences.

- On Monday, _____ children cycled to school.
- The day that the most children cycled was _____
- The day that the fewest children cycled was _____
- On _____ and _____, the same number of children cycled to school.

- The block diagram shows the favourite food of children in Class 1



- How many more children like pizza than cake?
- How many fewer children like crisps than chips?
- How many children are there in Class 1 altogether?

- Class B are collecting data about the number of points scored on sports day.

Team	Total
team 1	6
team 2	9
team 3	2
team 4	4

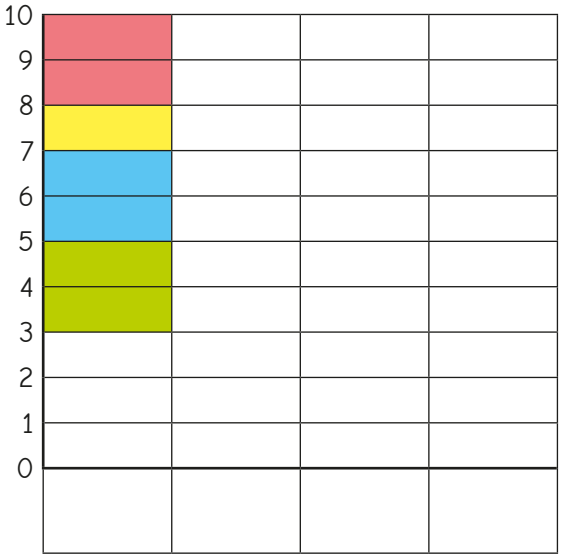
Make a block diagram, using cubes to show the data.

Now draw the block diagram.

Block diagrams

Reasoning and problem solving

Tiny draws a block diagram to show children's favourite colours.



What mistake has Tiny made?

Why is Tiny's block diagram difficult to understand?

Tiny has not made a separate column for each colour.

Match the tables to the block diagrams.

A

	Total
1	5
2	9
3	4
4	10

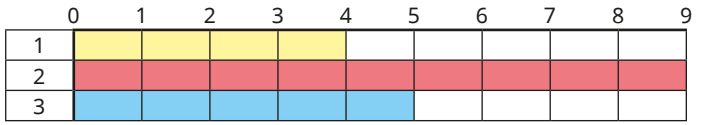
B

	Total
1	4
2	9
3	5

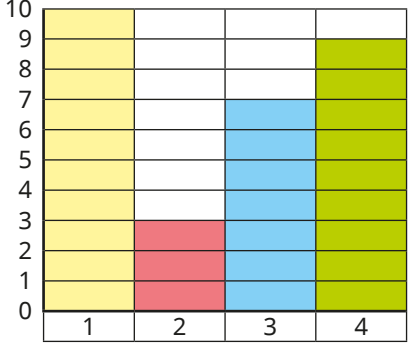
C

	Total
1	10
2	3
3	7
4	9

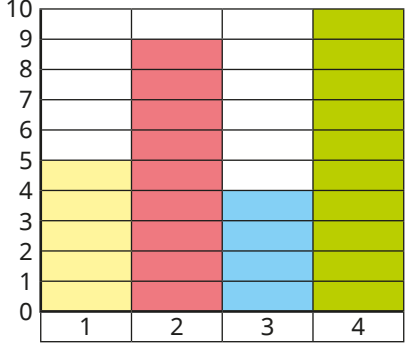
X



Y



Z



A – Z B – X C – Y

Draw pictograms

Notes and guidance

In this small step, children draw pictograms to represent data.

Pictograms are new to Year 1 children, so they should focus on using one-to-one correspondence, where each symbol represents one item. They could first use physical objects to create 3-D pictograms. Emphasise that they must use the same symbol for every category, and that symbols need to be easy to draw.

Year 2 children should progress to drawing pictograms where the symbols represent 2, 5 or 10 items. Children should consider examples of data where symbols representing one item are not appropriate, as they would take a long time to draw and take up too much space. Initially, give them keys to use, before they choose the most appropriate key depending on the data. They will also need to interpret what number is represented by half a symbol.

Things to look out for

- Children may pick symbols that are difficult to replicate.
- Children may choose symbols that are not easily halved.

Key questions

- What is a key? Why is it important? What does it show?
- What does each symbol represent? How do you know?
- Will each symbol in your key represent 1, 2, 5 or 10 items? How will you decide?

Possible sentence stems

- The key shows that 1 symbol = _____ people.
- To show _____ people, I need to draw _____ symbols.

Single age small step links

- N/A

- Draw pictograms (1–1) (Y2)
- Draw pictograms (2, 5 and 10) (Y2)

National Curriculum links

- Interpret and construct simple pictograms, tally charts, block diagrams and tables (Y2)
- Recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers (Y2)

Draw pictograms

Key learning

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

Key ☺ = 1 sticker

Child	Number of stickers
Dan	☺☺☺
Ben	☺
Fay	☺☺
Ann	☺☺☺☺☺☺☺
Tom	

  - How are pictograms different from block diagrams? How are they similar?
  - Complete the pictogram to show that Tom has 5 stickers.

- Use the tally chart to complete the pictogram.

Key ■ = 1 animal

Animal	Tally
lion	𝍸 |
zebra	|||
hippo	𝍸 𝍸 |
giraffe	||||

Animal	Number
lion	■■■■■■
zebra	
hippo	
giraffe	

- Complete the pictograms for the flowers.

Key ■ = 1 flower

Flower	Flowers in garden
tulip	■■■■■■■■
crocus	
daffodils	

Key ■ = 2 flowers

Flower	Flowers in garden
tulip	■■■■
crocus	
daffodils	

Which pictogram do you prefer? Why?

- Use the table to complete the pictogram.

Key ● = 10 points

Child	Points
Kay	15
Mo	30
Sam	35
Ron	25

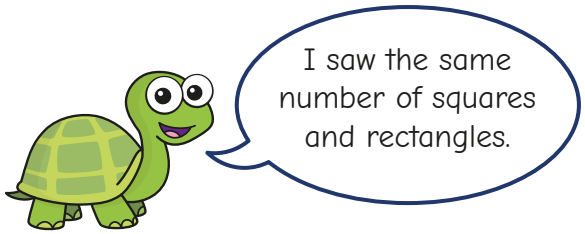
Child	Points
Kay	●◗
Mo	
Sam	
Ron	

Draw pictograms

Reasoning and problem solving

Tiny goes on a shape hunt and uses the data to make a pictogram.

Shape	Number of shapes
circle	● ●
rectangle	▬ ▬ ▬ ▬ ▬
square	■ ■ ■ ■ ■ ■ ■ ■ ■ ■
triangle	▲ ▲ ▲



Is Tiny correct?

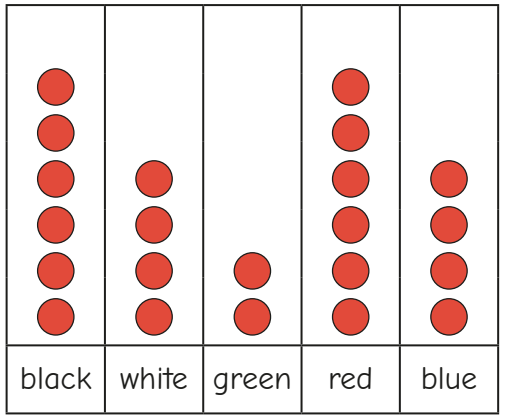
Explain your answer.

No

Max and Kim draw pictograms to show how many cars they see.

Max

Key ● = 5 cars



Kim

Key ● = 10 cars

Colour	Number of cars
black	● ● ●
white	● ●
green	●
red	● ● ●
blue	● ●

What is the same? What is different?

Whose pictogram do you prefer?

multiple possible answers, e.g.

same: same information; circle symbols; colours in the same order

different: counting in 5s and 10s; vertical and horizontal

Interpret pictograms

Notes and guidance

In this small step, children build on the previous step and interpret data from pictograms.

Year 1 children interpret pictograms where each symbol represents one item, while Year 2 children progress to interpret pictograms where the symbol represents 2, 5 or 10 items. Year 2 children interpreted part symbols in the previous step, but this is challenging and may need reinforcement.

Start by identifying totals for different categories before comparing totals. This offers a good opportunity to revisit number bonds and mental methods of calculation. Encourage children to think about the "story" the data tells them before making inferences surrounding more contextual questions. Questions include reading from a single row/column, making comparative sentences and solving simple multi-step problems.

Ensure that all children encounter both horizontal and vertical pictograms.

Things to look out for

- Children may think that if there is nothing in a column/ row, then it is unfinished, rather than representing zero.
- Children may need to have strategies modelled for them, particularly when answering multi-step problems.

Key questions

- What do you know? What can you find out?
- What is a key? Why is it important? What does it show?
- How many more people chose _____ than _____?

Possible sentence stems

- The key shows that 1 symbol = _____ people.
  So _____ symbols represent _____ people.
- _____ more/fewer people chose _____ than _____

Single age small step links

- N/A

- Interpret pictograms (1–1) (Y2)
- Interpret pictograms (2, 5 and 10) (Y2)

National Curriculum links

- Interpret and construct simple pictograms, tally charts, block diagrams and tables (Y2)
- Ask and answer simple questions by counting the number of objects in each category and sorting the categories by quantity (Y2)

Interpret pictograms

Key learning

- The pictogram shows the number of children in each class who ride a bicycle to school.

Class	Number of children
Class 1	
Class 2	
Class 3	
Class 4	
Class 5	

Key

 = 1 child

Complete the sentences.

- In Class 1, _____ children cycle to school.
- In Class 4, _____ children cycle to school.
- In total, _____ children cycle to school.

- The pictogram shows Class A's favourite colours.

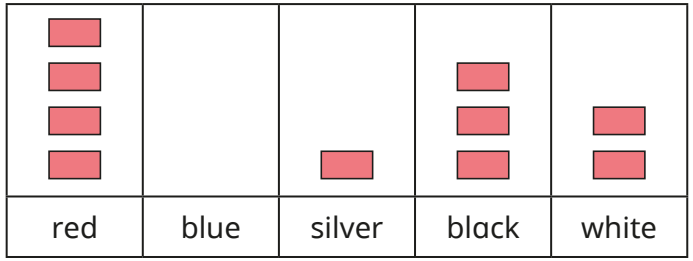
Colour	Number of children
blue	
green	
red	
pink	

Key

= 1 child

- What is the most popular colour?
- How many more children like blue than red?

- The pictogram shows the colours of cars that Jo sees on a walk.



Key

= 5 cars

- How many more black cars does she see than silver cars?
- How many more red cars does she see than silver cars?

How did you work these out?

- Here is a pictogram showing children's favourite sports.

Sport	Number of children
football	
hockey	
swimming	
basketball	
tennis	

Key

= 2 children

- How many children like either hockey or basketball best?
- How many fewer children like tennis than football?

Interpret pictograms

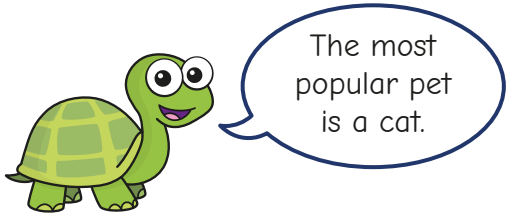
Reasoning and problem solving

The children of Class B vote for their favourite pet.

Tiny draws a pictogram to show the results.

Key ● = 1 child

Pet	Number of children
dog	●●●●
cat	●●●●●●
fish	●●●●●●●
rabbit	●



Is Tiny correct?

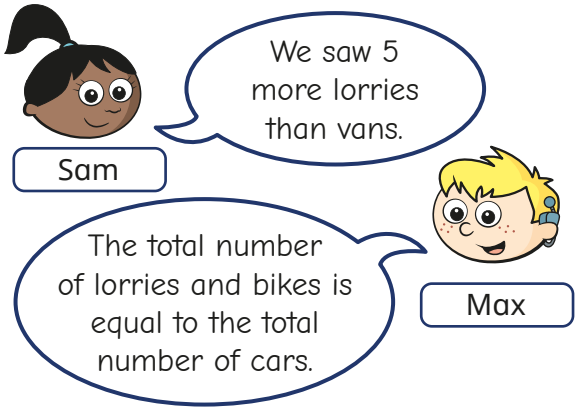
Explain your reasons.

No

Sam and Max count the number of vehicles they see. They draw a pictogram.

Key ● = 10 vehicles

Vehicle	Number of vehicles
bike	●●
van	●●●◗
bus	●●
lorry	●●●●
car	●●●●●●



Do you agree with Sam and Max?

Explain your answer.

Yes