







Statistics: Transport Statistics

Aim: Interpret and present discrete and continuous data using appropriate graphical methods, including bar charts and time graphs. I can interpret and present discrete data using pictograms and bar charts.	Success Criteria: I can collect discrete data in a frequency table. I can interpret and answer questions about data presented in a pictogram or bar chart. I can present data in a pictogram or bar chart.	Resources: Lesson Pack Whiteboards and pens - 1 per child
	Key/New Words: Pictogram, frequency table, tally, data, bar chart, axis, scale, discrete data.	Preparation: Differentiated Transport Statistics Activity Sheets - 1 per child

Prior Learning: It will be helpful if children have experience of interpreting and presenting data in pictograms.

Learning Sequence

	Colour Car Investigation: Using the animation displayed on the Lesson Presentation , the children complete a frequency table to show the different colours of cars which pass by a school in a five-minute period. Discuss the purpose of the three columns in the frequency table and how to correctly use tally marks. Complete the activity by answering three questions about the data collected.	
	Pictograms: Rehearse the features of a pictogram by discussing the example shown on the Lesson Presentation . Draw attention to the use of a key to indicate the value of the individual image. Challenge the children to interpret the pictogram and suggest a suitable title for it. Complete the activity by answering three questions about the data the pictogram represents.	
	Drawing a Pictogram: Discuss the table of data shown on the Lesson Presentation , which shows the different ways that the children in KS2 travel to school. Working with a partner, challenge the children to draw a pictogram of the data where each symbol represents four children. An example pictogram is included for the children to self-assess against.	
	Bar Charts: Use the step-by-step instructions and animated diagrams shown on the Lesson Presentation to model how to draw a bar chart using the table of data from the previous activity. Key features to discuss include the gap between the bars, the choice of scale based on the range of the data and the importance of a clear title and data labels.	
	Bar Chart Questions: Using the bar chart from the previous activity, answer the four questions about the data shown on the Lesson Presentation .	
	Bar Chart Scales: Shown on the Lesson Presentation is a table of data that shows the number of different vehicles that passed by the school. Discuss the four suggestions for an appropriate bar chart scale for the data. Ask the children to explain their reasoning.	
	Transport Statistics: Children complete the differentiated Transport Statistics Activity Sheets to show they can interpret and present discrete data using pictograms and bar charts. The children can use the fictional data included or if appropriate, the class can survey the different types of vehicles that pass by their own school setting in a fifteen-minute period and use that data.	
	Using the table of data, the children draw a pictogram, selecting the value of the individual image. They answer questions about the data.	
	Using the table of data, the children draw a bar chart using a scale of 2. They answer questions about the data.	
	Using the table of data, the children draw a bar chart, using a scale of 5. They answer questions about the data.	

	<p>Diving into Mastery: Schools using a mastery approach may prefer to use the following as an alternative activity. These sheets might not necessarily be used in a linear way. Some children might begin at the 'Deeper' section and in fact, others may 'dive straight in' to the 'Deepest' section if they have already mastered the skill and are applying this to show their depth of understanding.</p>	
	<p>Children interpret a table of results and present the data as a bar chart or pictogram.</p>	
	<p>Children read and answer questions about the results on both a table and bar chart.</p>	
	<p>Children identify common mistakes in creating and interpreting charts.</p>	
	<p>Who's Correct? The children discuss with a partner the statements shown on the Lesson Presentation relating to the displayed bar chart, before using their whiteboards to indicate if they think the statement is correct or incorrect. Ask children to give reasons for their answers.</p>	

Masterit

Extendit: Use Google Street View to take a virtual walk along a residential street and create a tally chart to show the different colours of cars. Use this data to draw pictograms and bar charts.

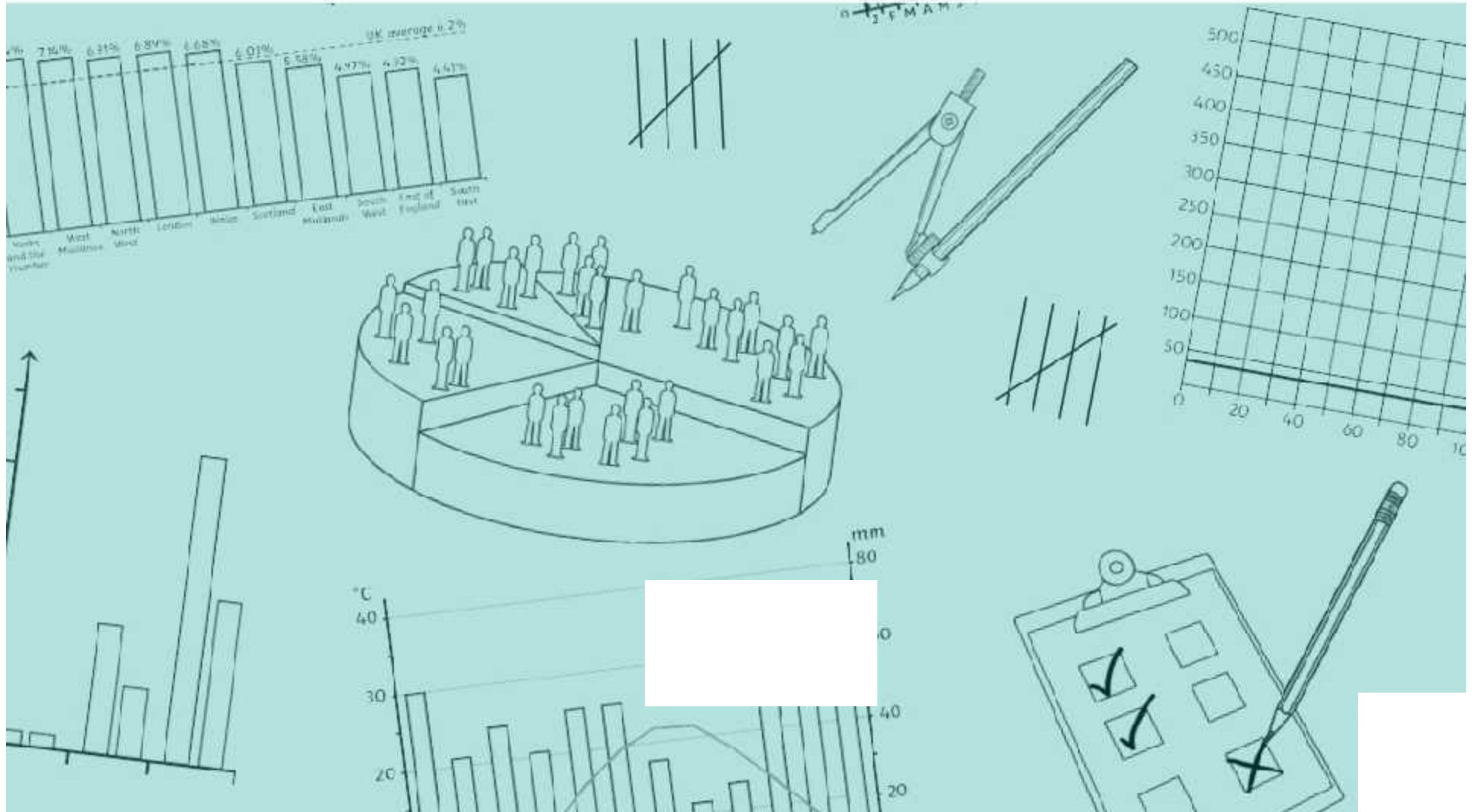
Challengeit: Challenge children to follow their own line of enquiry based around a transport theme to collect data to present as pictogram or a bar chart.



Maths

Statistics

Transport Statistics



Aim

- I can interpret and present discrete data using pictograms and bar charts.

Success Criteria

- I can collect discrete data in a frequency table.
- I can interpret and answer questions about data presented in a pictogram or bar chart.
- I can present data in a pictogram or bar chart.

Colour Car Investigation



The children in Class 4 are carrying out an investigation to find out how many different colour cars pass by their school in five minutes.

Complete frequency table and show the results.

Colour	Tally	Frequency
Red		10
Blue		12
Black		8
Silver		9
Other		6

What are the frequencies of each different colour?

Colour Car Investigation



Data that is counted and has no inbetween value is called discrete data.
Help the class to answer these questions about their discrete data.

Colour	Tally	Frequency
Red		10
Blue		12
Black		8
Silver		9
Other		6

How many more red cars
~~than blue cars~~ passed by than black
cars?
by together?
cars?

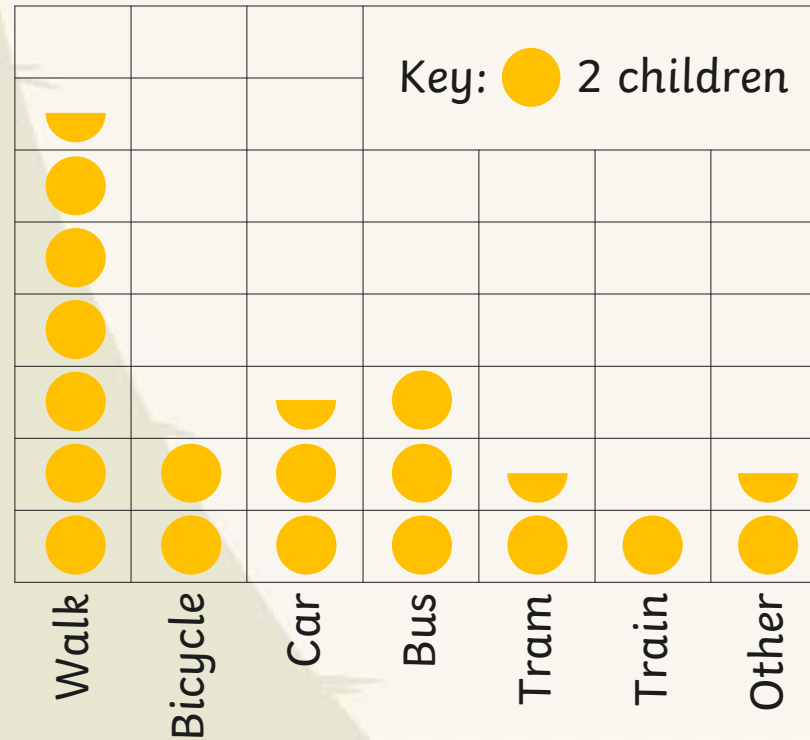
Blue
2 cars



Pictograms

The children in Class 4 have carried out a different investigation and presented it as a pictogram.

A Pictogram to Show How the Children in Class 4 Travel to School




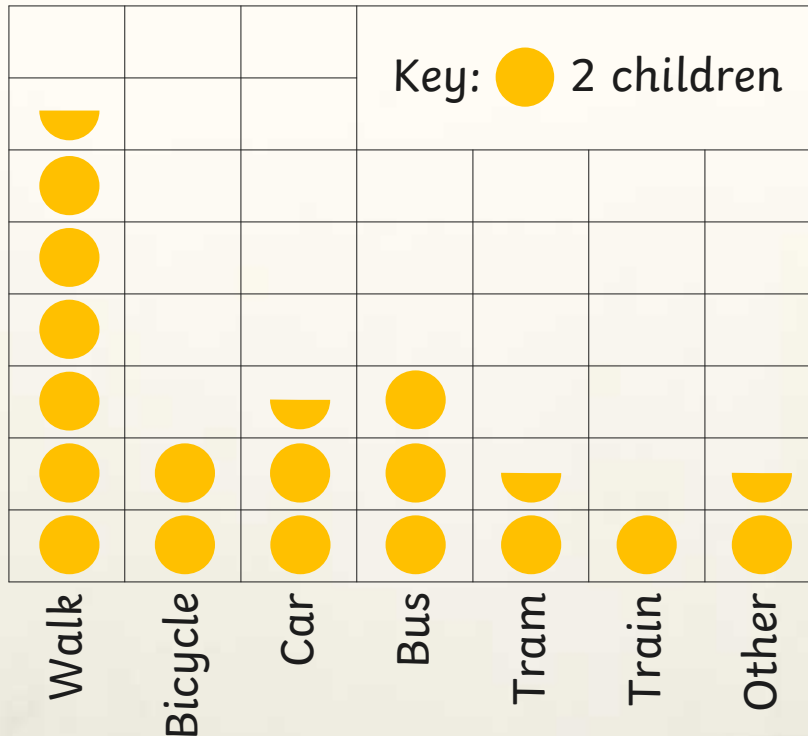
What do you think the title of this pictogram could be?

Pictograms



In this pictogram, each circle represents two children. Half of the circle represents one child. This is shown in the key.

A Pictogram to Show How the Children in Class 4 Travel to School

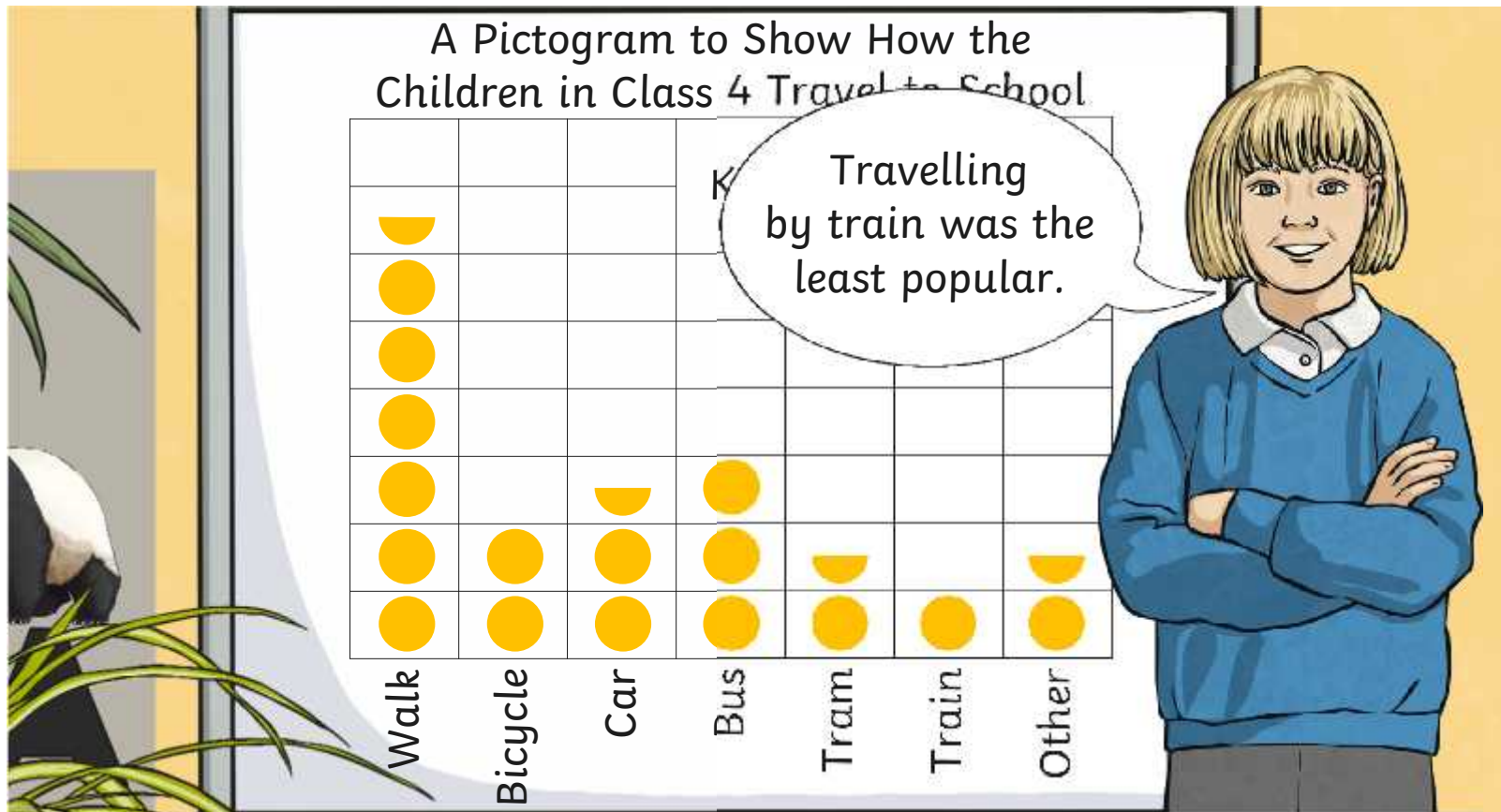


Use the pictogram to help the children in Class 4 to answer these questions about their data.



Pictograms

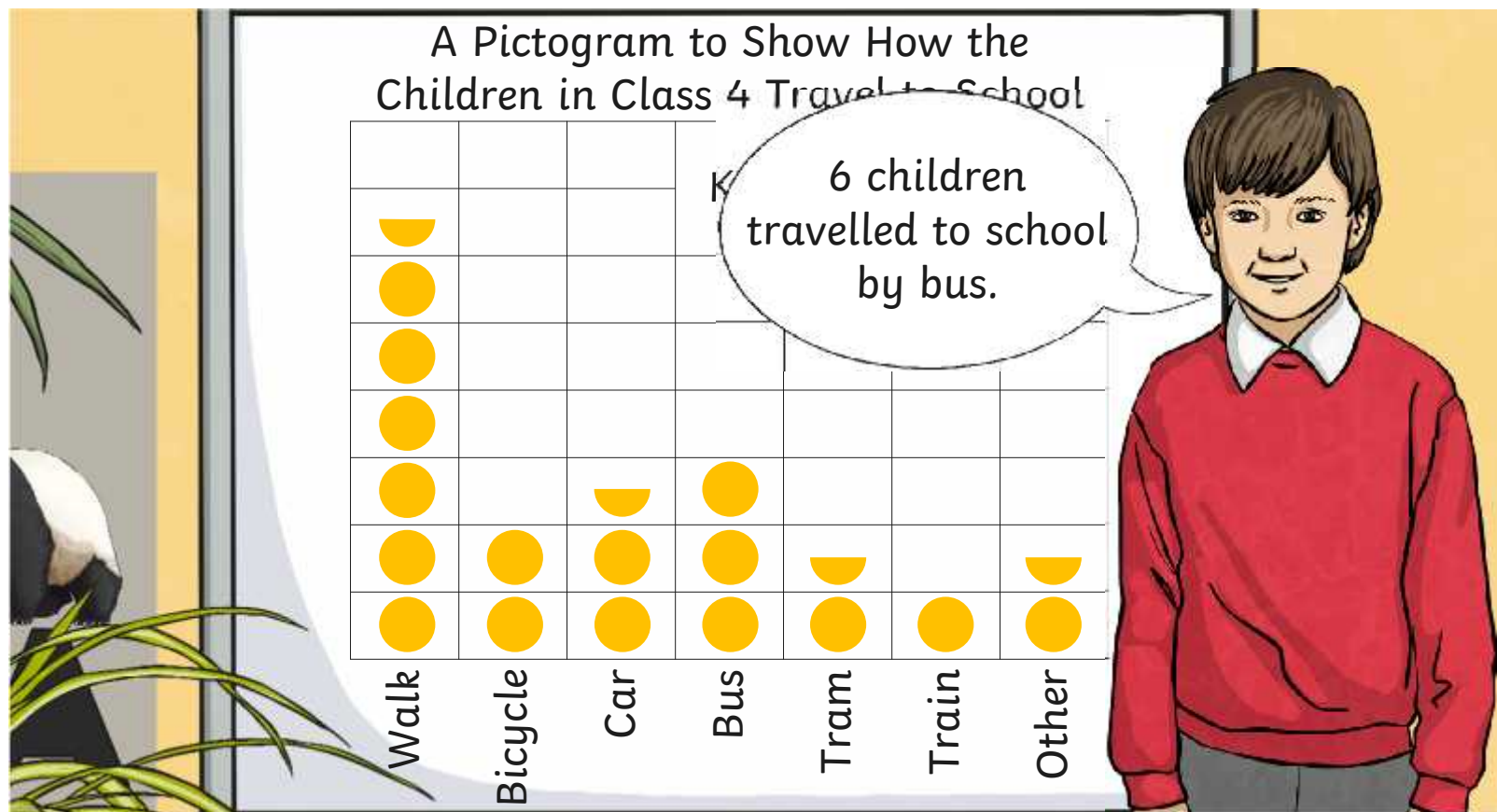
What is the least popular way for the children of Class 4 to travel to school?



Pictograms



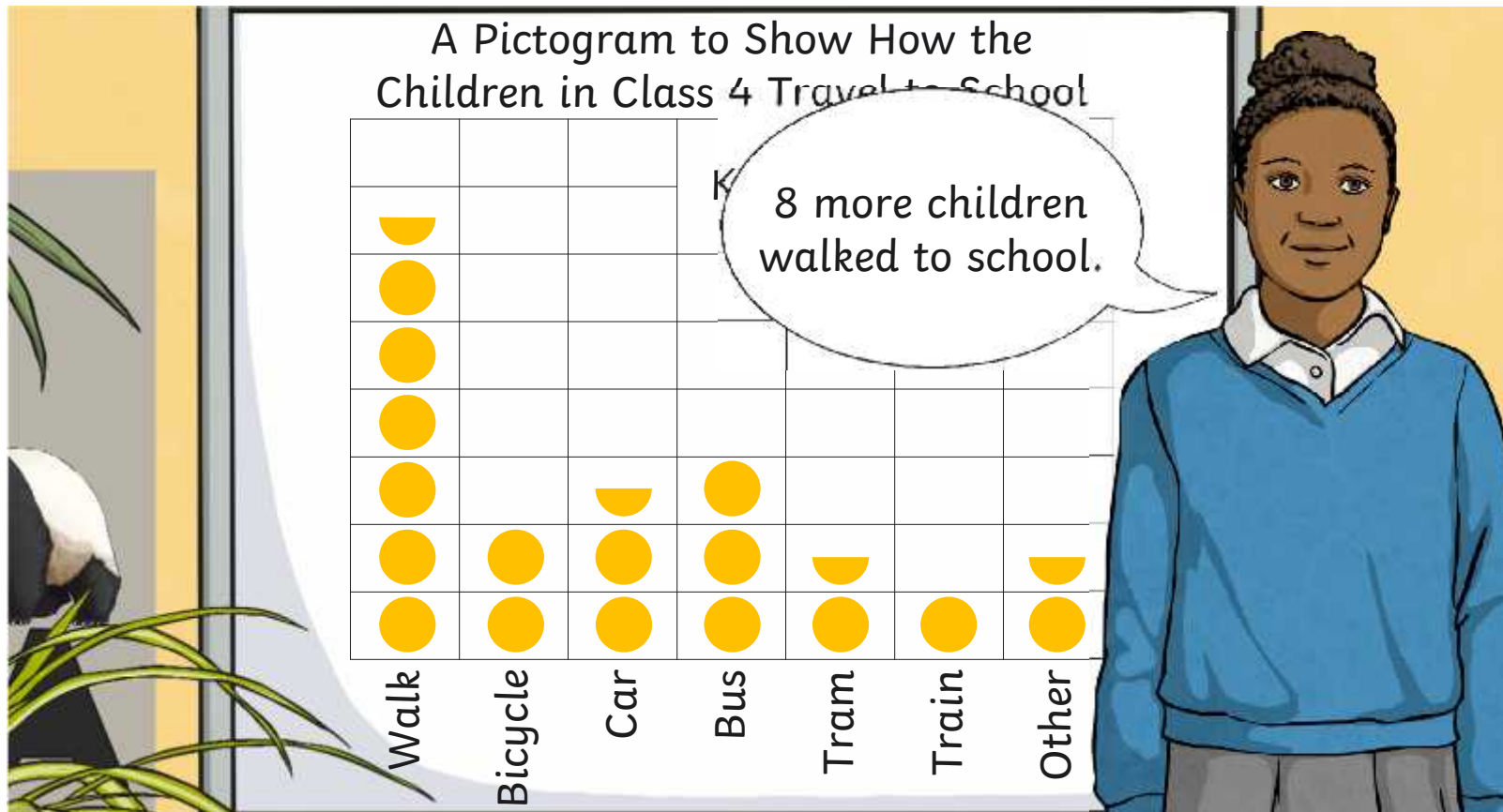
How many children in Class 4 travel by bus to school?



Pictograms



How many more children in Class 4 walk to school than travel by car?



Drawing a Pictogram



Next, the children in Class 4 asked all the children in KS2 how they travelled to school.

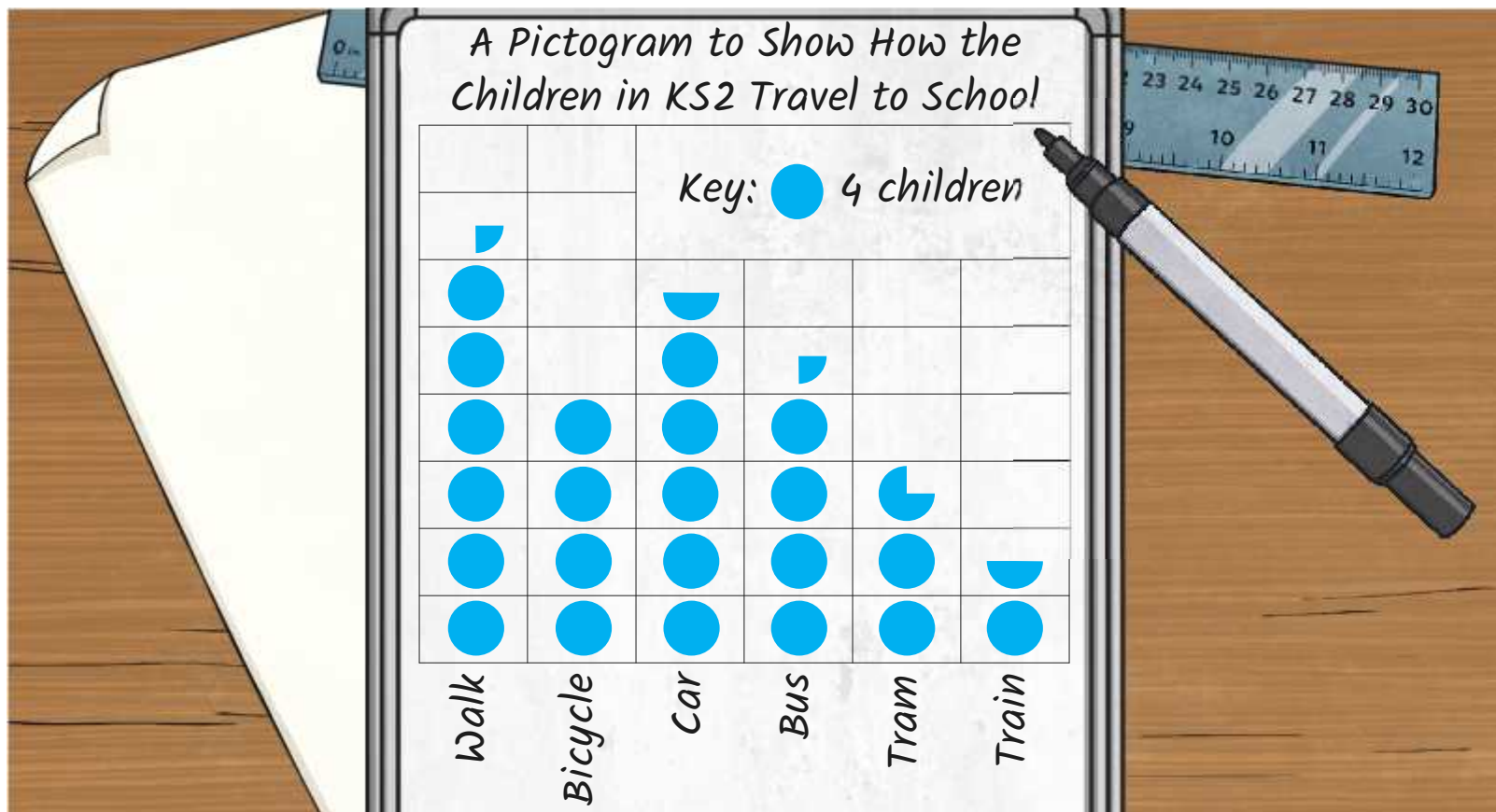
How do children in KS2 travel to school?

<i>Mode of Transport</i>	<i>Number of Children</i>
<i>Walk</i>	<i>25</i>
<i>Bicycle</i>	<i>16</i>
<i>Car</i>	<i>22</i>
<i>Bus</i>	<i>17</i>
<i>Tram</i>	<i>11</i>
<i>Train</i>	<i>6</i>

Drawing a Pictogram

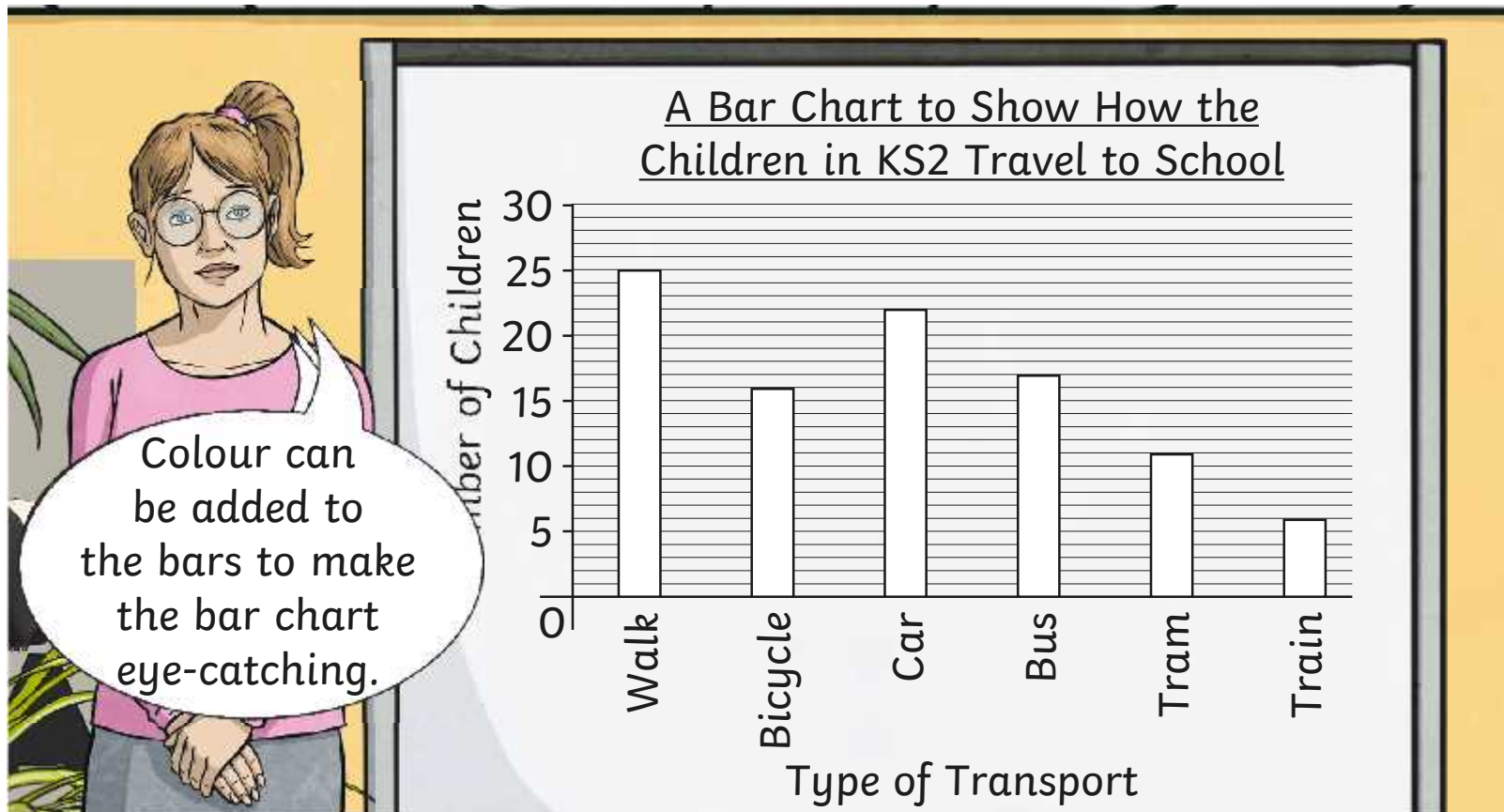


This is a pictogram of the children's data.
Does it match your own?



Bar Charts

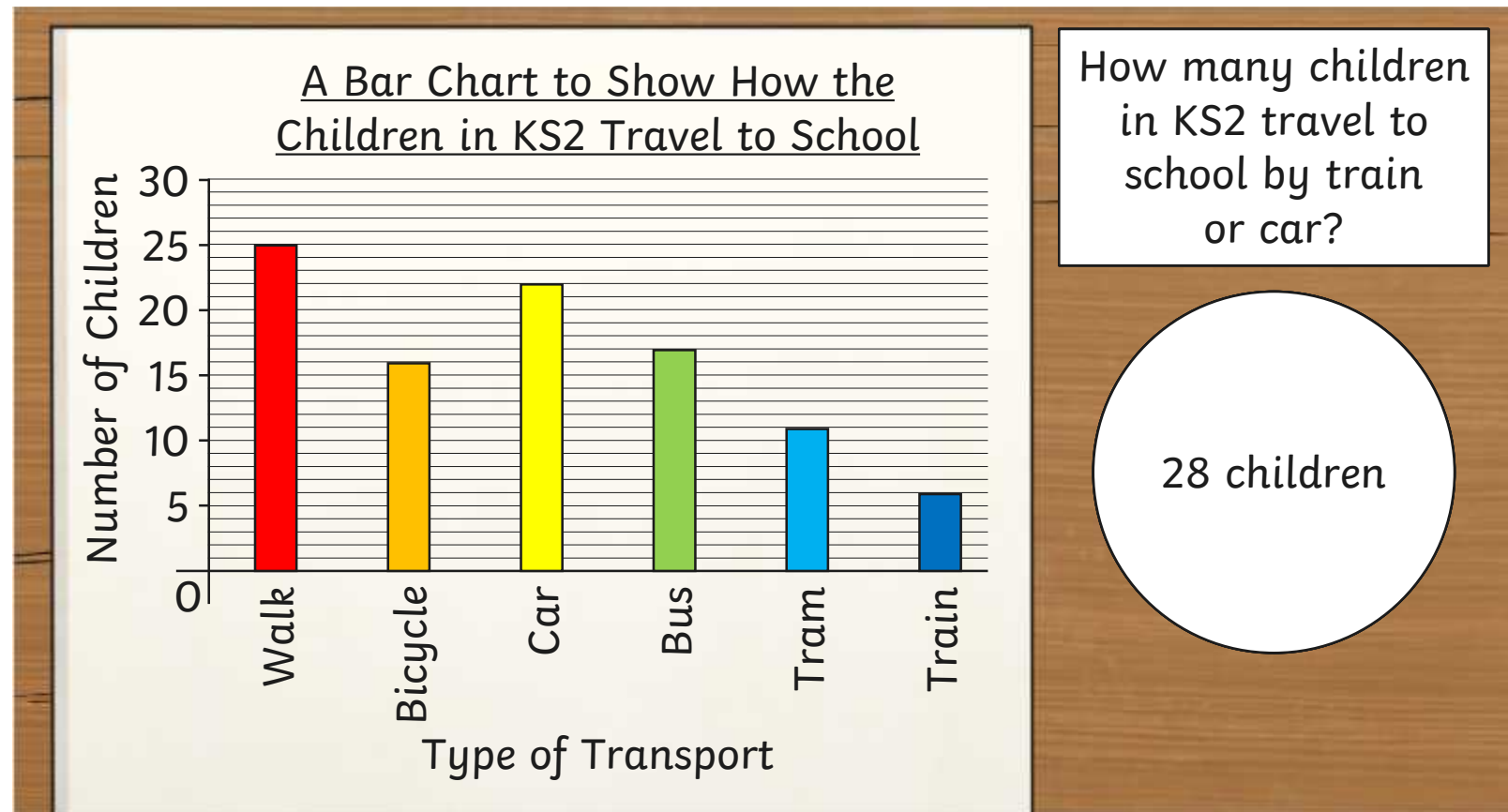
Class 4's teacher, Ms Jones, explains to the children that they can also present their data as a bar chart.



Bar Charts Questions



Use the bar chart to help the children in Class 4 answer these questions about their data.





Bar Charts Scales

When presenting data as a bar chart, choosing the best scale for the number line axis is an important decision.

<i>Types of Vehicle Passing by the School</i>	
<i>Type of Vehicle</i>	<i>Number Passing By</i>
<i>Car</i>	<i>54</i>
<i>Bicycle</i>	<i>15</i>
<i>Van</i>	<i>23</i>
<i>Lorry</i>	<i>14</i>
<i>Motorbike</i>	<i>17</i>
<i>Other</i>	<i>6</i>

I think we should use a scale of 1 when drawing our bar chart.

I think we should use a scale of 2 when drawing our bar chart.

I think we should use a scale of 5 when drawing our bar chart.

I think we should use a scale of 10 when drawing our bar chart.

Transport Statistics



Use your marvellous maths skills to complete these activity sheets:

Transport Statistics

Use the pictograph to find out how many people used each mode of transport to get to school.

How is a table of data that shows the number of different vehicles that passed by half an hour.

Type of Vehicle	Car	Bus	Motorcycle	Van	Motorbike
Number That Passed by	30	15	12	20	6

Draw a bar chart to show the data.

A bar chart is used to show the data.

Transport Statistics

Use the pictograph to find out how many people used each mode of transport to get to school.

How is a table of data that shows the number of different vehicles that passed by half an hour.

Type of Vehicle	Car	Bus	Tricycle	Van	Motorbike
Number That Passed by	25	10	5	12	8

Draw a bar chart to show the data.

A bar chart is used to show the data.

Transport Statistics

Use the pictograph to find out how many people used each mode of transport to get to school.

How is a table of data that shows the number of different vehicles that passed by half an hour.

Type of Vehicle	Car	Bus	Motorcycle	Van	Other
Number That Passed by	12	8	5	6	9

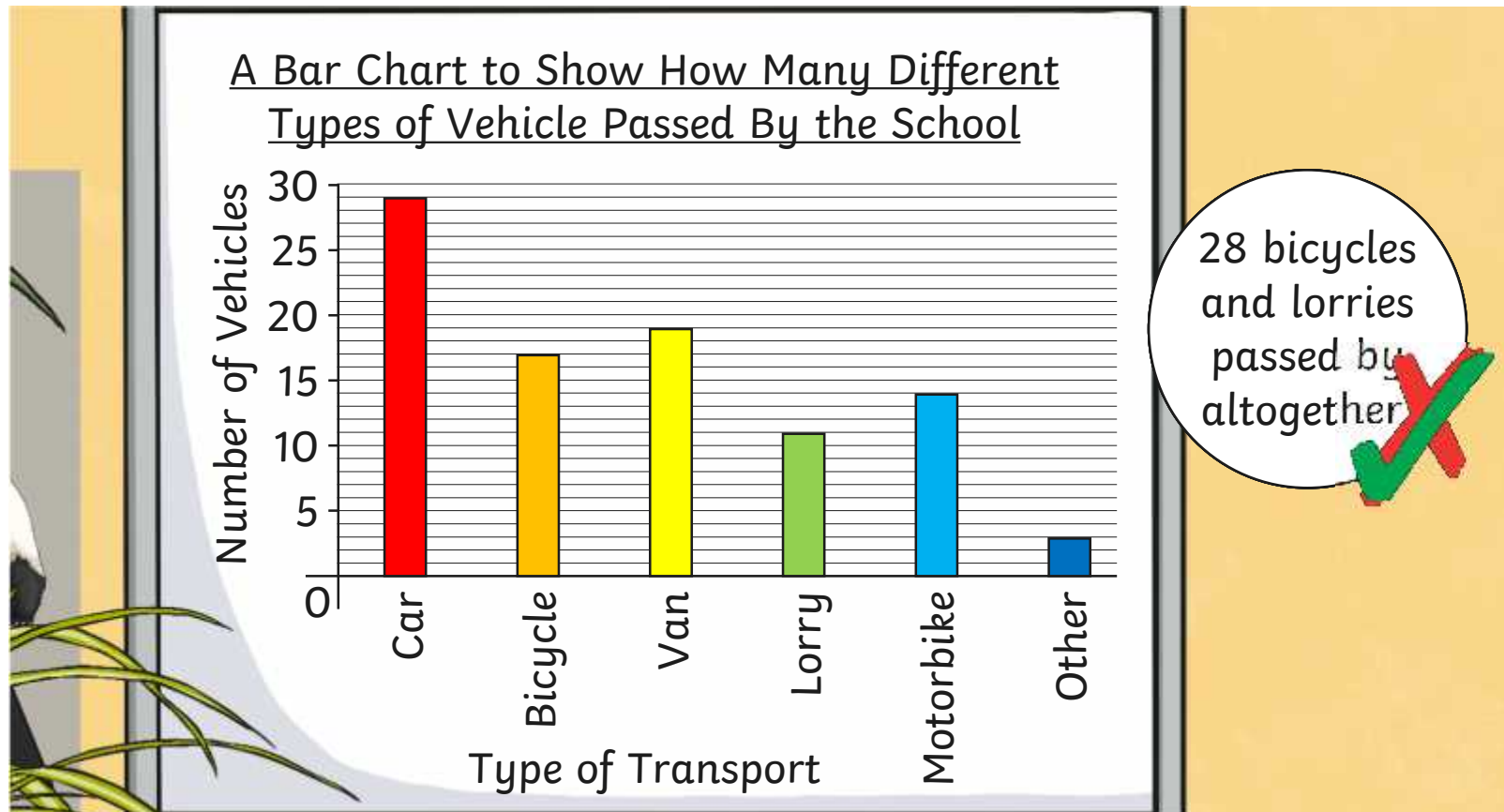
Draw a pie chart to show the data.

A pie chart is used to show the data.

Who's Correct?



Which of these statements interprets the bar chart correctly?



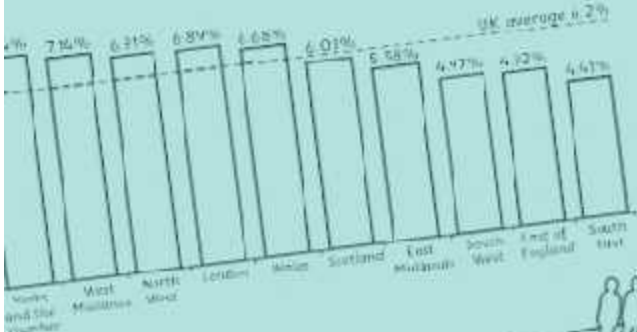
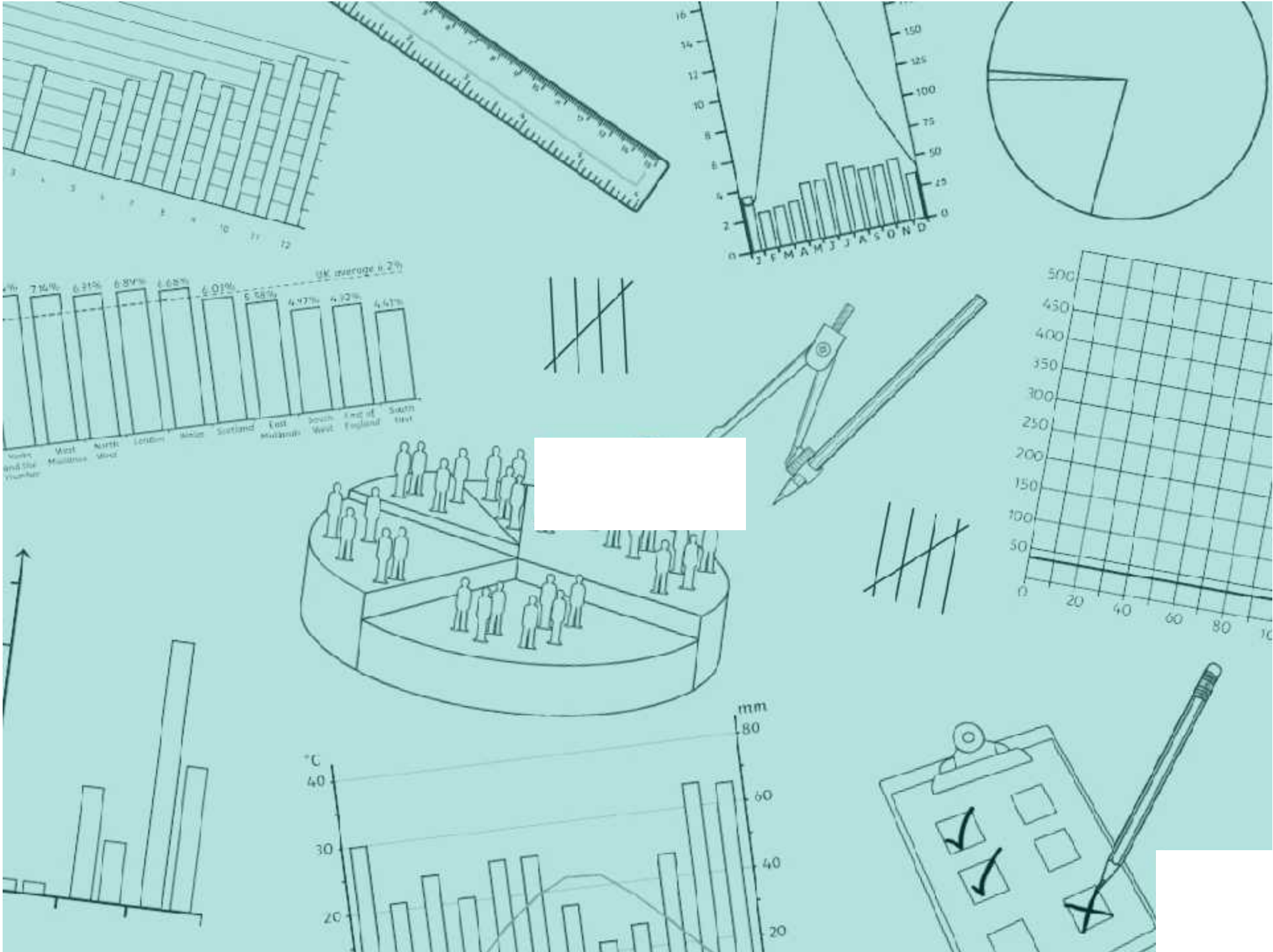
Aim



- I can interpret and present discrete data using pictograms and bar charts.

Success Criteria

- I can collect discrete data in a frequency table.
- I can interpret and answer questions about data presented in a pictogram or bar chart.
- I can present data in a pictogram or bar chart.





Transport Statistics

I can interpret and present discrete data using pictograms and bar charts.



Here is a table of data that shows the number of different vehicles that passed by a school over half an hour.

Type of Vehicle	Car	Bus	Bicycle	Van	Other
Number That Passed By	12	4	5	7	6

Draw a pictogram to show the data:

A pictogram to show _____

Key: =

- 1) What type of data is the number of vehicles?

- 2) How many more vans passed by than buses?

- 3) How many bicycles and vans passed by in total?

- 4) How many other types of vehicle passed by?

- 5) How many vehicles passed by altogether over the half an hour?





Transport Statistics **Answers**

Question	Answer
	Draw a pictogram to show the data: Pictogram will depend on the scale chosen.
	A pictogram to show <i>the number of different vehicles that passed by a school over half an hour.</i>
1.	What type of data is the number of vehicles?
	Discrete
2.	How many more vans passed by than buses?
	3
3.	How many bicycles and vans passed by in total?
	12
4.	How many other types of vehicle passed by?
	6
5.	How many vehicles passed by altogether over the half an hour?
	34



Transport Statistics

I can interpret and present discrete data using pictograms and bar charts.

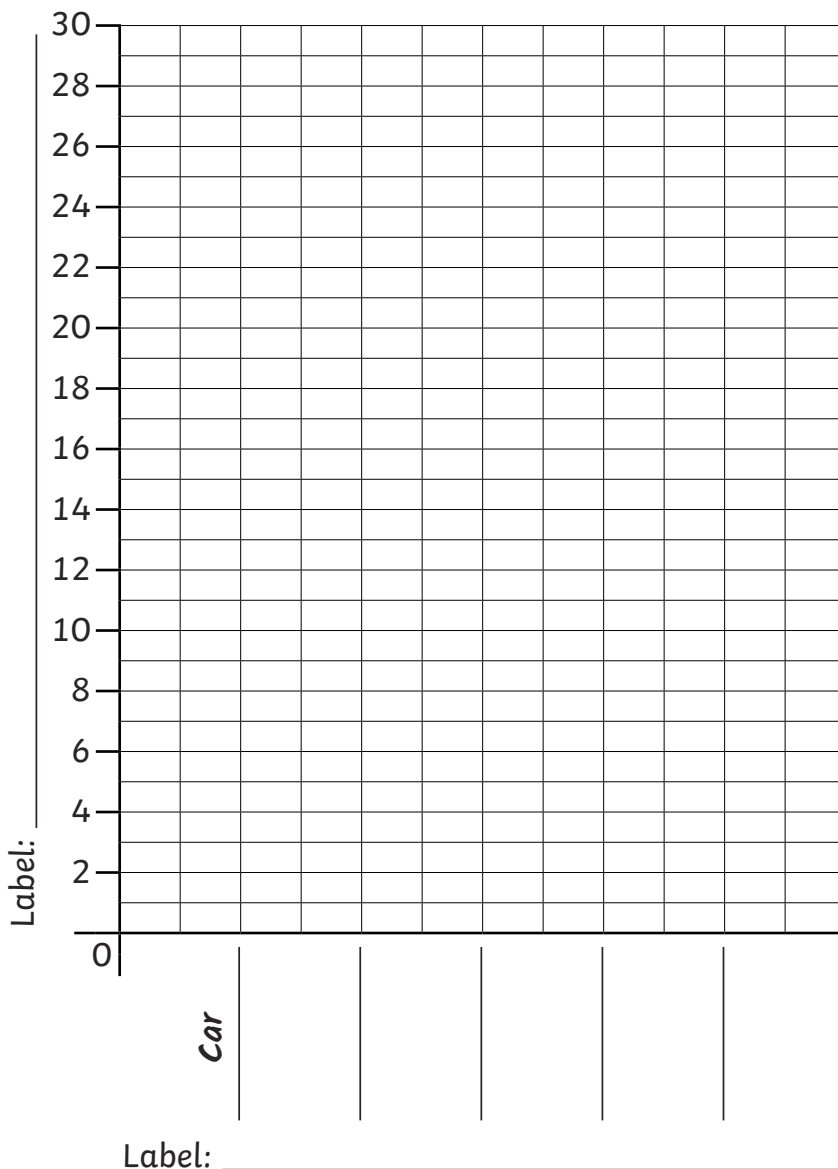


Here is a table of data that shows the number of different vehicles that passed by a school over an hour.

Type of Vehicle	Car	Bus	Bicycle	Van	Motorbike	Other
Number That Passed By	23	10	9	12	5	17

Draw a bar chart to show the data:

A bar chart to show _____



- 1) What type of data is the number of vehicles?

- 2) How many more cars passed by than buses?

- 3) How many bicycles, vans and motorbikes passed by in total?

- 4) How many more buses and bicycles passed by than vans?

- 5) How many vehicles passed by altogether over the hour?



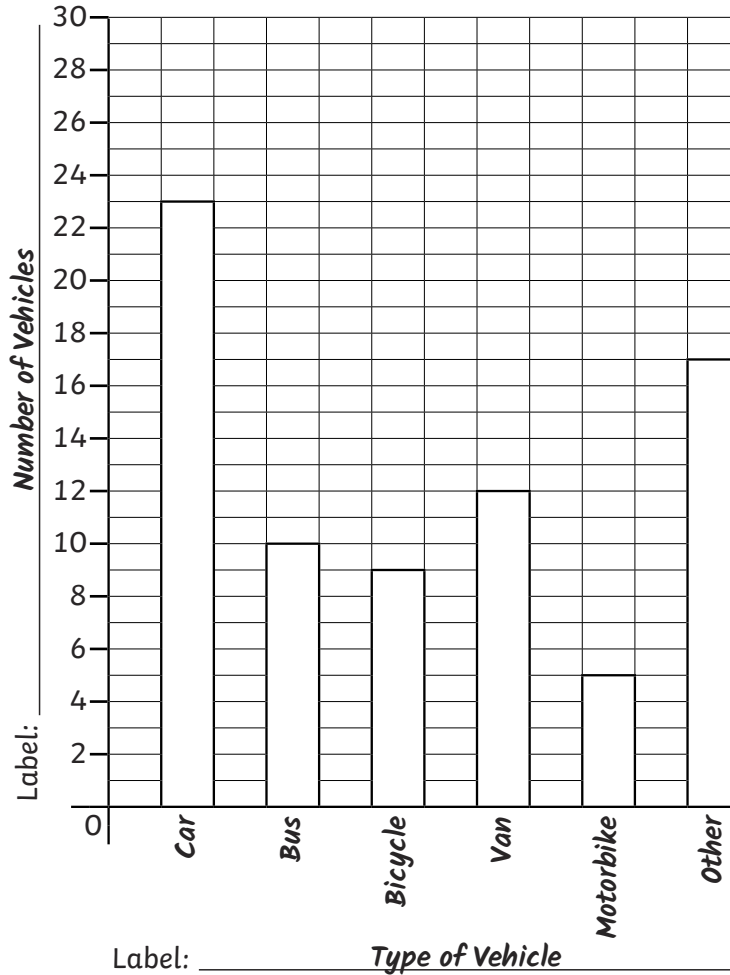


Transport Statistics **Answers**

Question	Answer
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Draw a bar chart to show the data:

A bar chart to show *the number of different vehicles that passed by a school over an hour.*



1. What type of data is the number of vehicles?	
	Discrete
2. How many more cars passed by than buses?	
	13

3. How many bicycles, vans and motorbikes passed by in total?	
	26
4. How many more buses and bicycles passed by than vans?	
	7
5. How many vehicles passed by altogether over the hour?	
	76



Transport Statistics

I can interpret and present discrete data using pictograms and bar charts.

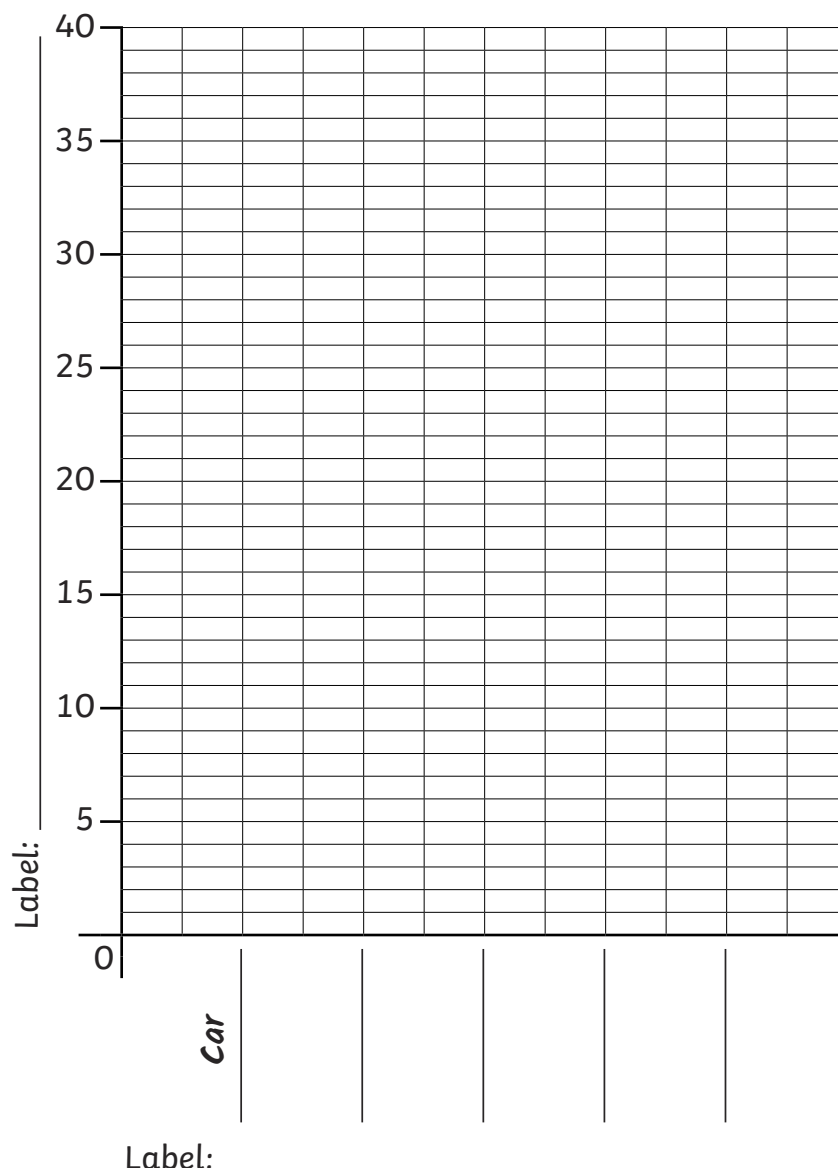


Here is a table of data that shows the number of different vehicles that passed by a school over an hour and a half.

Type of Vehicle	Car	Bus	Bicycle	Van	Motorbike	Other
Number That Passed By	37	18	12	25	6	23

Draw a bar chart to show the data:

A bar chart to show _____



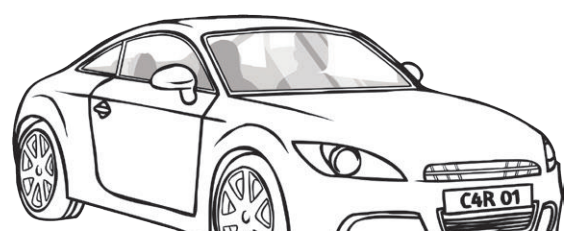
1) How many more cars passed by than buses?

2) How many more vans passed by than buses?

3) How many bicycles, vans and motorbikes passed by in total?

4) How many more buses and bicycles passed by than vans?

5) How many vehicles passed by altogether over the hour and a half?



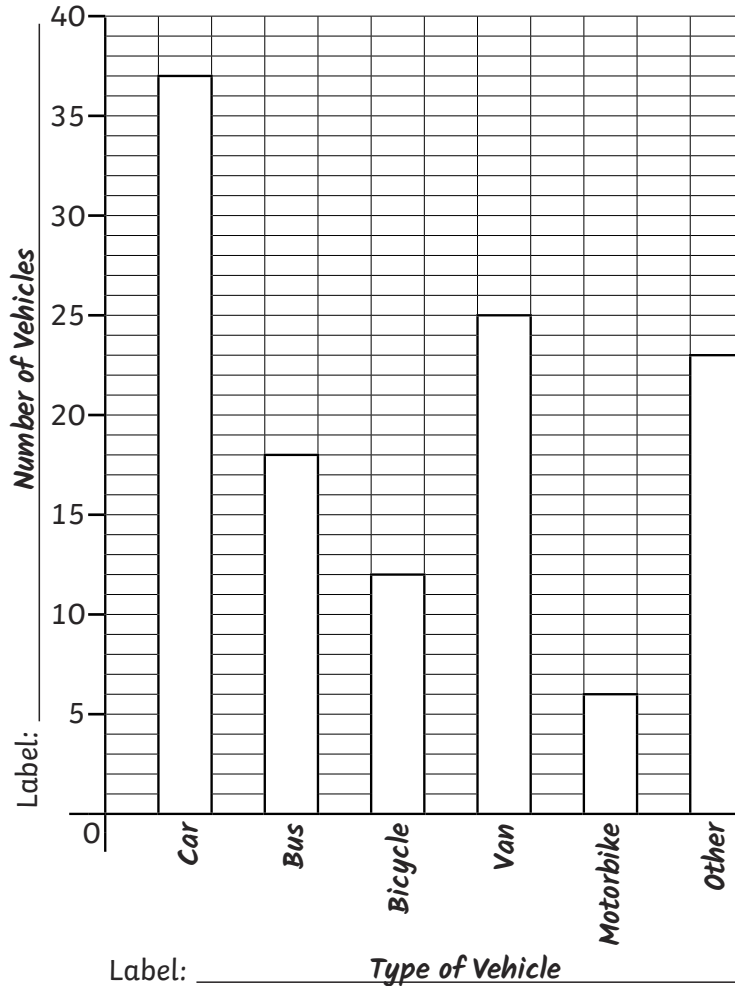


Transport Statistics Answers

Question	Answer
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Draw a bar chart to show the data:

A bar chart to show *the number of different vehicles that passed by a school over an hour and a half.*



1. How many more cars passed by than buses?	
	19
2. How many more vans passed by than buses?	
	7

3. How many bicycles, vans and motorbikes passed by in total?	
	43
4. How many more buses and bicycles passed by than vans?	
	5
5. How many vehicles passed by altogether over the hour and a half?	
	121

1) *Answers to each question will vary.*



1)

- a) 4
- b) 8
- c) 6
- d) 50



2)

- a) 43
- b) *Motorcycle or 'other'*
- c) *Car and van*
- d) *No*

- 1) *Children should disagree on the basis that her numbers are too great and to draw 220 individual cars will be hard to create and count for people reading her data.*
- 2) *He has read the greatest number shown on the chart rather than found the sum of the results.*
- 3) *Answers will vary, but could include: There were 67 cars counted in the survey. The most popular colours were white, grey and silver. The least popular colour car was green.*





1) a) Use this table to record how the children in your class travel to school.

Transport Type	Tally	Number of Children
Car		
Walk		
Bus or Train		
Bicycle		
Other		

b) Use the table to complete the sentences below.

The most popular way to get to school is _____.

The least popular way to get to school is _____.

2) Use squared paper to present your results as a bar chart or pictogram.

1) Here is a table showing the number of different vehicles going past a school over an hour.



Vehicle	Number Seen Going past School
Car	28
Bicycle	3
Bus	3
Van	11
Lorry	2
Motorcycle	1
Other	2

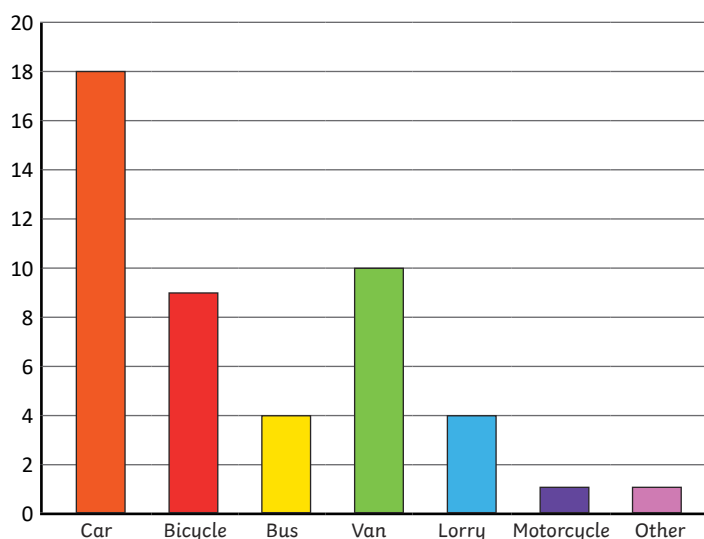
a) How many bicycles and motorcycles went past in total?

b) How many more vans went past than buses?

c) How many more cars went past than all the other vehicles combined?

d) How many vehicles in total went past the school?

2) Here is a bar chart showing the number of vehicles going past a school over an hour.



a) How many vehicles passed in total?

b) Which was the least common vehicle?

c) Which were the two most common vehicles?

d) Were there more cars going past than all the other vehicles combined?

- 1) Emma creates a pictogram to represent the different colours of cars in the supermarket car park. There are 220 cars in the car park in total. She says,

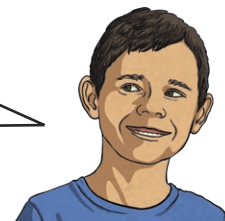
The best thing to do is to have each car picture represent one car.



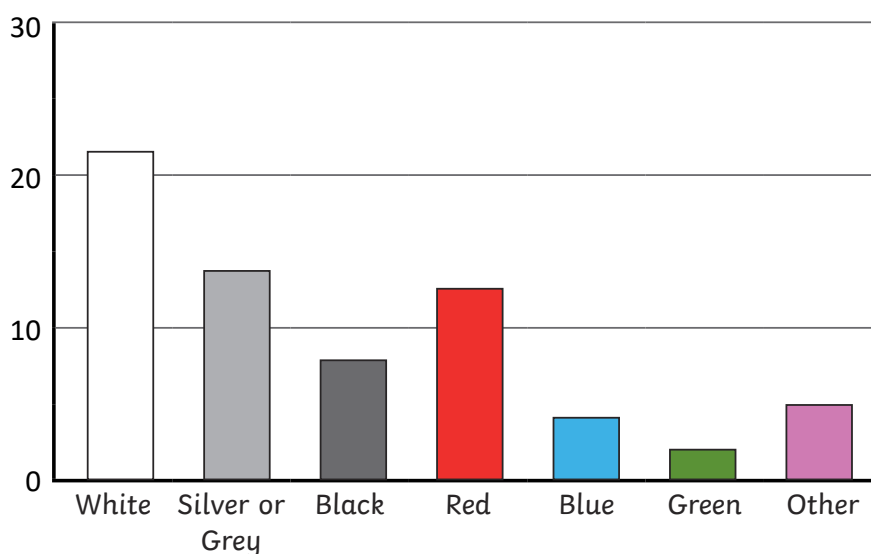
Do you agree with her? Why?

- 2) Tanjeer sees this bar chart and says,

The total number of cars in the car park is 22.



What mistake has he made?



- 3) Write as many true statements as you can that you know from looking at this bar chart.

- 1) a) Use this table to record how the children in your class travel to school.



Transport Type	Tally	Number of Children
Car		
Walk		
Bus or Train		
Bicycle		
Other		

- b) Use the table to answer the question. What are the most and least popular ways to get to school?
- 2) Use the squares in your book or squared paper to present your results as a bar chart or pictogram.

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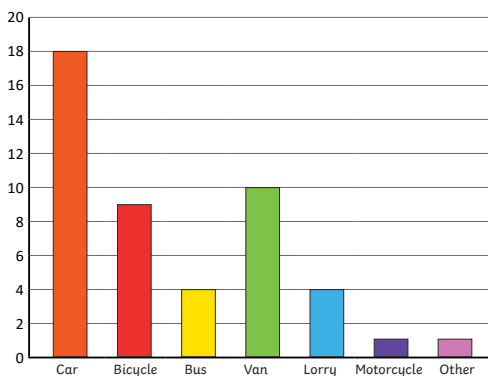
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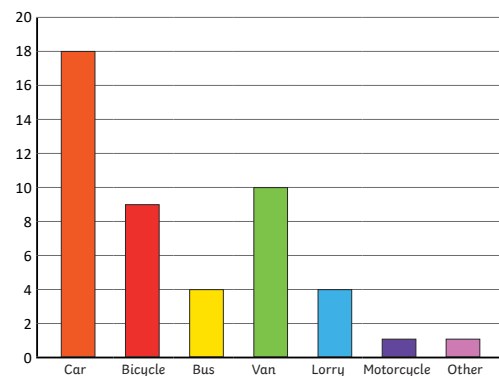
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The best thing to do is to have each car picture represent one car.

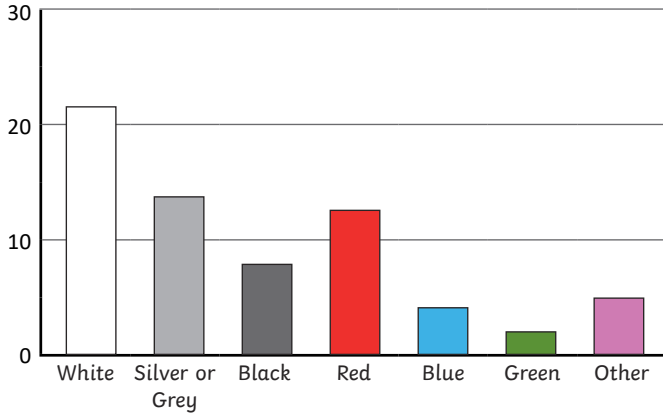
Do you agree with her? Why?



- 2) Tanjeer sees this bar chart and says,

The total number of cars in the car park is 22.

What mistake has he made?



- 3) Look at this bar chart. Using the data, write as many true statements as you can in your book.

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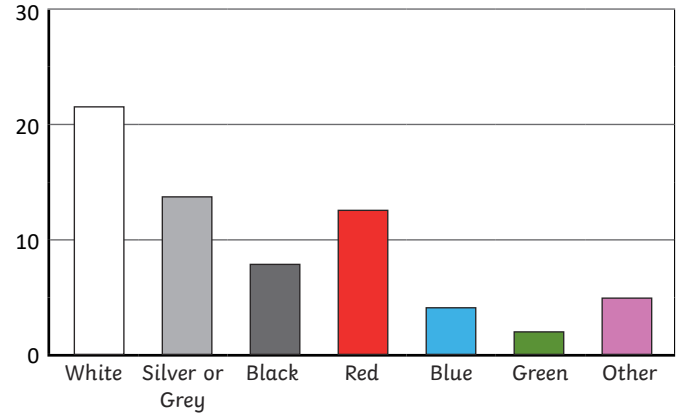
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