Statistics

Master The Curriculum

4

Fluency & Reasoning Teaching Slides

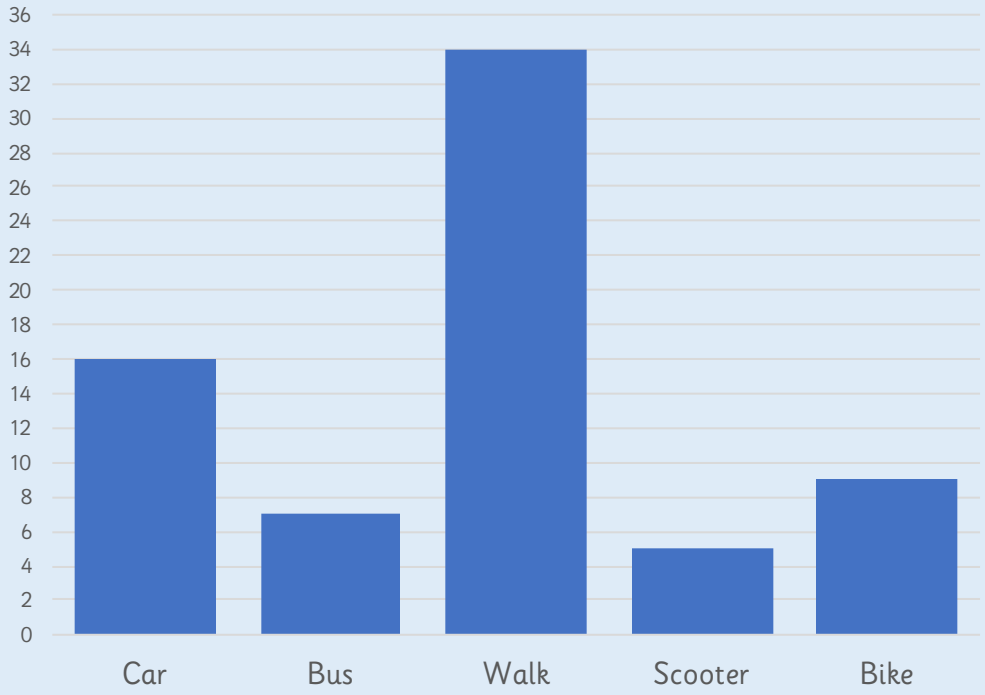
Interpret Charts

4

Fluency & Reasoning Teaching Slides

Activity 1 Interpret Charts

Complete the table using the information in the bar chart.

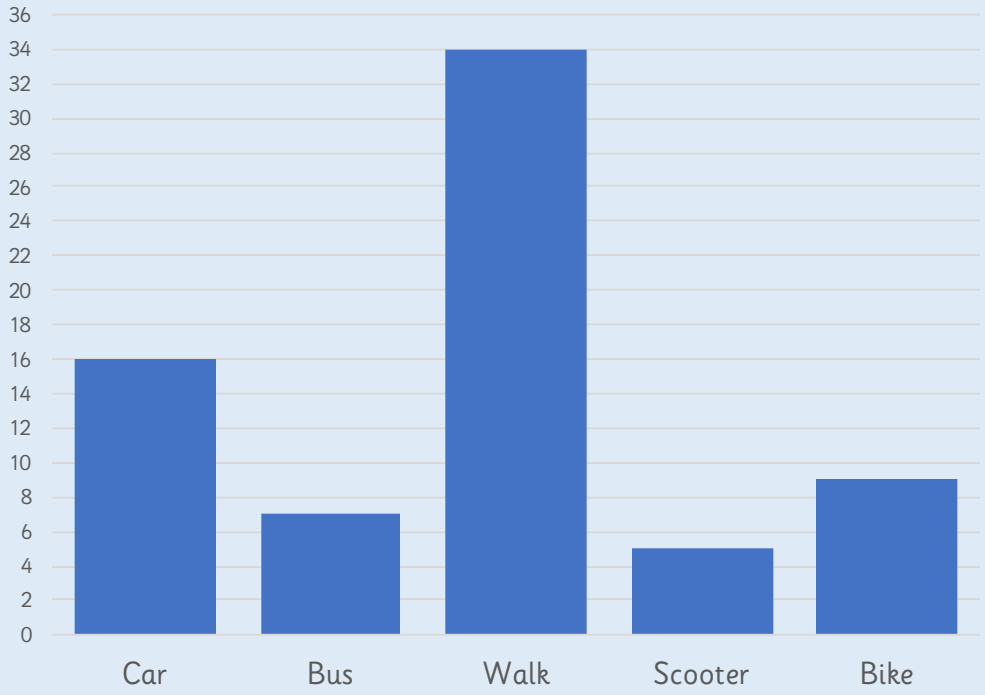


Transport	Number of children
Car	
Bus	
Walk	
Scooter	
Bike	

What is the most popular way to get to school?
What is the least popular?
How many children scooter to school?
What other questions could you ask about the data?

Activity 1 Interpret Charts

Complete the table using the information in the bar chart.



Transport	Number of children
Car	16
Bus	7
Walk	34
Scooter	5
Bike	9

What is the most popular way to get to school? Walking

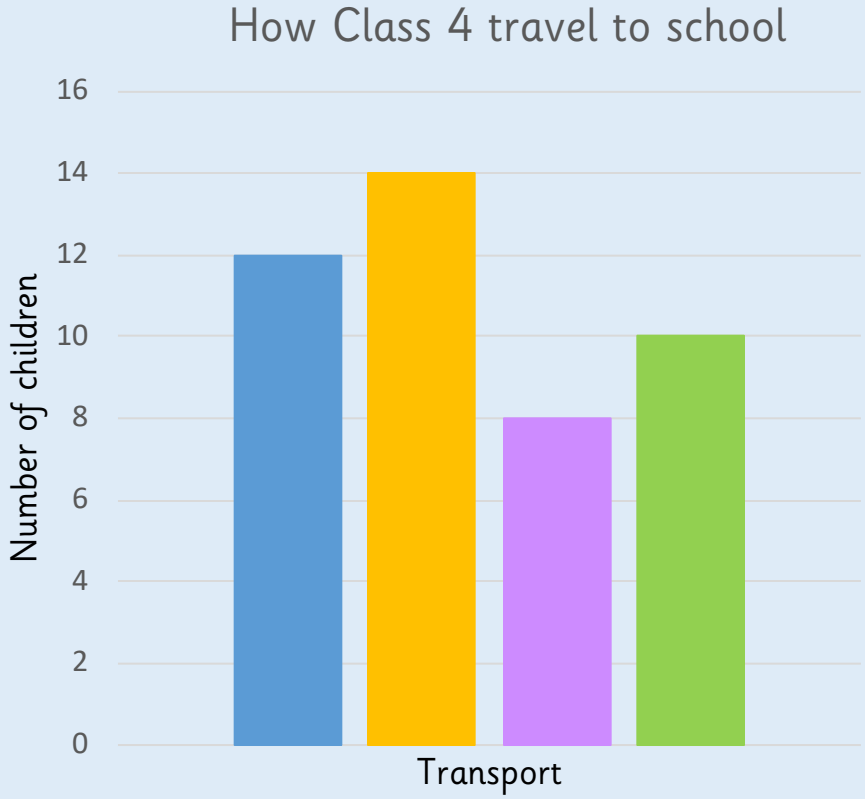
What is the least popular? Scooter

How many children scooter to school? 5

What other questions could you ask about the data?

Activity 1 Interpret Charts

Complete the table using the information in the bar chart.



Transport	Number of children
Car	
Walk	
Bus	
Bicycle	

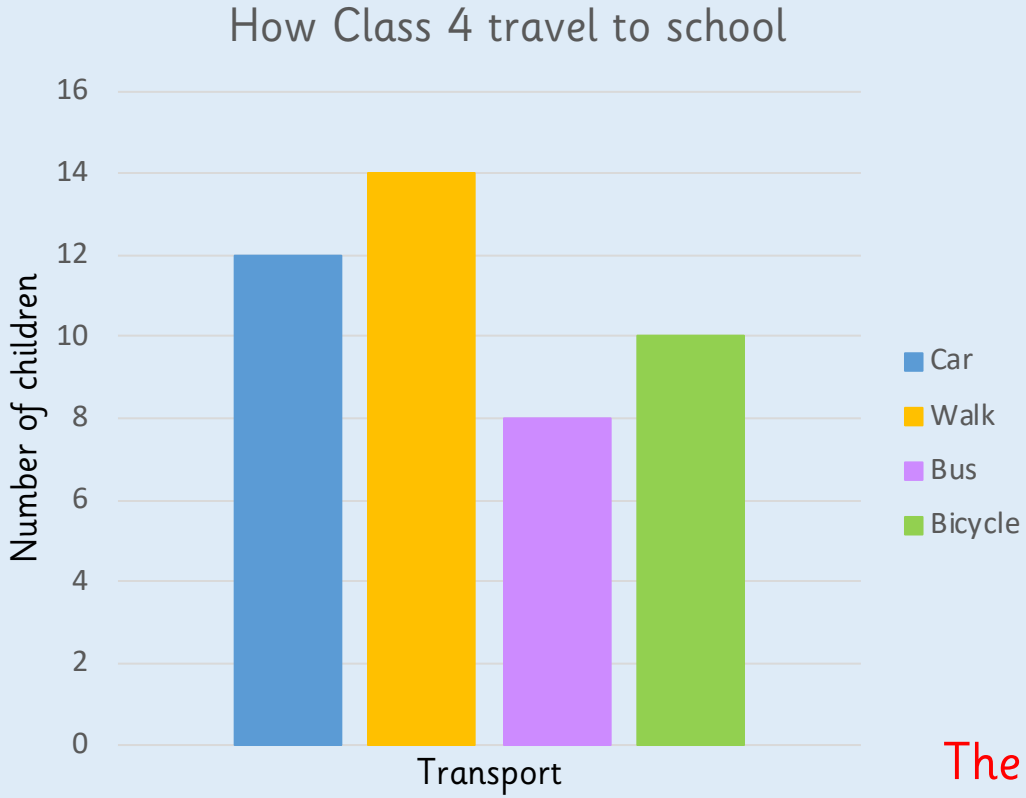
What is the most/least popular way to get to school?

How many children walk to school?

What are the different ways to present data?

Activity 1 Interpret Charts

Complete the table using the information in the bar chart.



Transport	Number of children
Car	12
Walk	14
Bus	8
Bicycle	10

What is the most/least popular way to get to school?

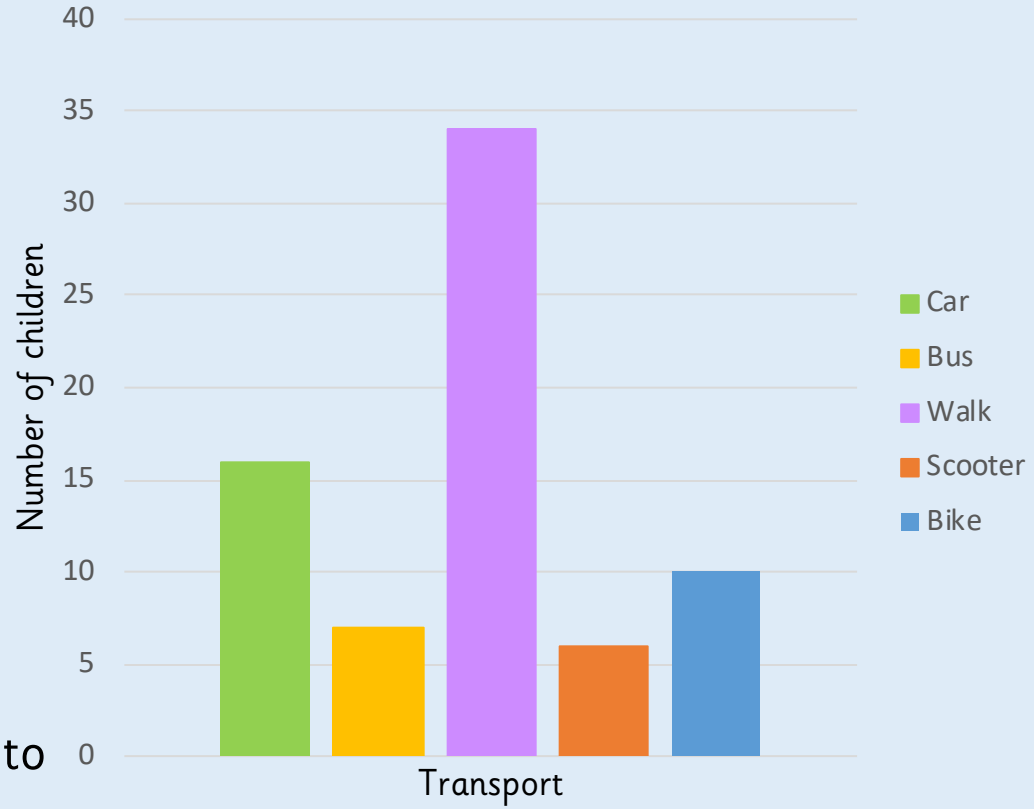
How many children walk to school?

The most popular way to get to school is by walking and the least popular way is by bus. There are 14 children who walk to school.

Activity 1 Interpret Charts

Complete the table using the information in the bar chart.

Transport	Number of children
Car	
Bus	
Walk	
Scooter	
Bike	



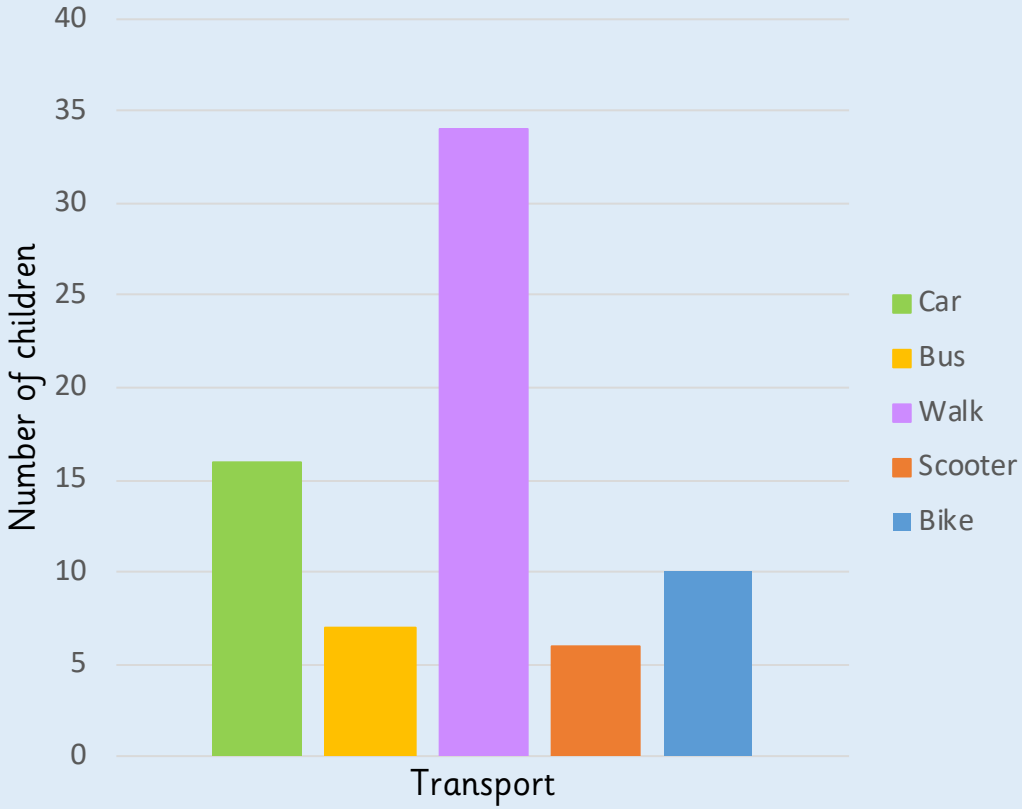
What is the most/least popular way to get to school?

How many children get to school by car?

Activity 1 Interpret Charts

Complete the table using the information in the bar chart.

Transport	Number of children
Car	16
Bus	7
Walk	34
Scooter	6
Bike	10

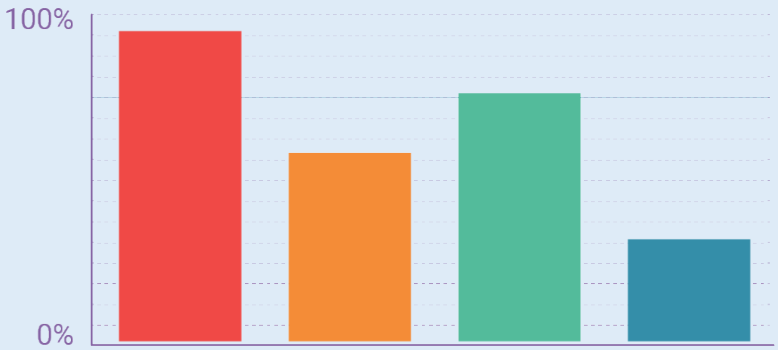


What is the most/least popular way to get to school?
How many children get to school by car?

The most popular way to get to school is by walking and the least popular way is by scooter.
16 children get to school by car.

Activity 2 Interpret Charts

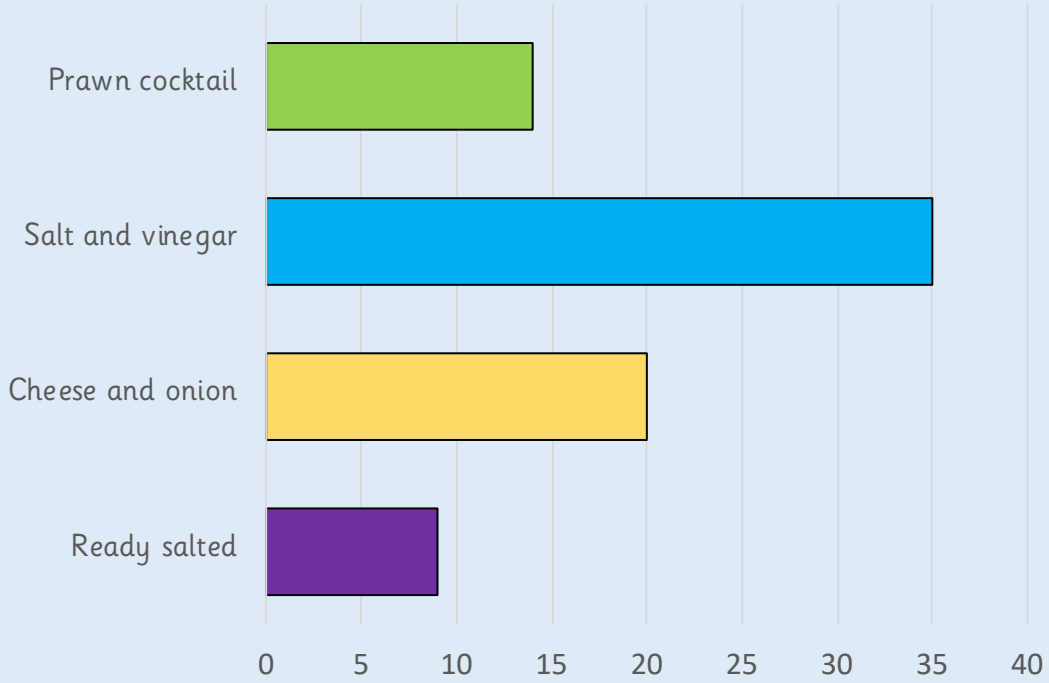
Produce your own table, bar chart or pictogram showing how the children in your class travel to school.



What scale will you use for your data? Why?

Activity 3 Interpret Charts

What data has been collected?

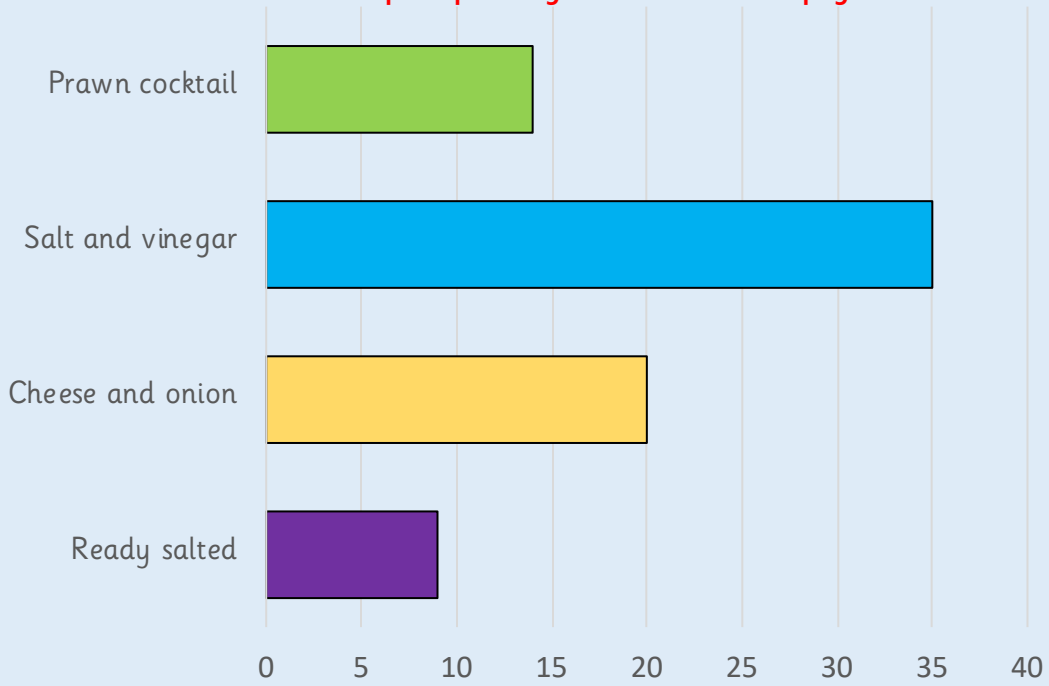


What is needed to complete the bar chart?
What is different and what is the same about this bar chart and the bar chart on slide 7?
What questions could you ask?

Activity 3 Interpret Charts

What data has been collected?

It could be people's favourite crisp flavour.



What is needed to complete the bar chart? X and Y axes need labels

What is different and what is the same about this bar chart and the bar chart on slide 7?

What questions could you ask?

Activity 4 Interpret Charts

Represent the data in each table as a bar chart.

Table	Table points ● = 20 points
Triangles	
Squares	
Circles	
Rectangles	
Hexagons	

Day	Number of cookies sold
Monday	65
Tuesday	25
Wednesday	40
Thursday	30
Friday	95

What scale will you use? Why?

What does a full circle represent?
What does a quarter/half/three-quarter circle represent?

Activity 4 Interpret Charts

Represent the data in each table as a bar chart.

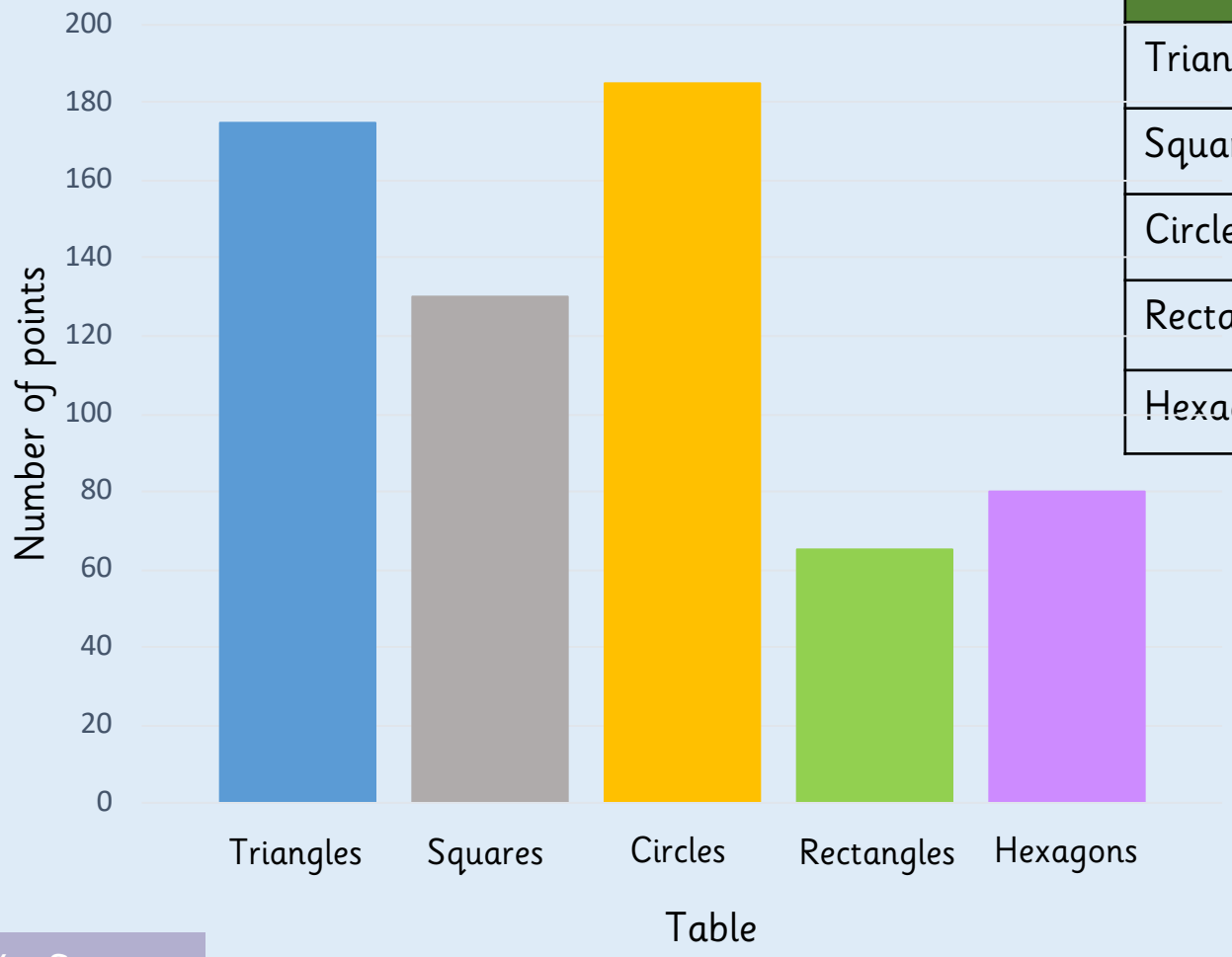
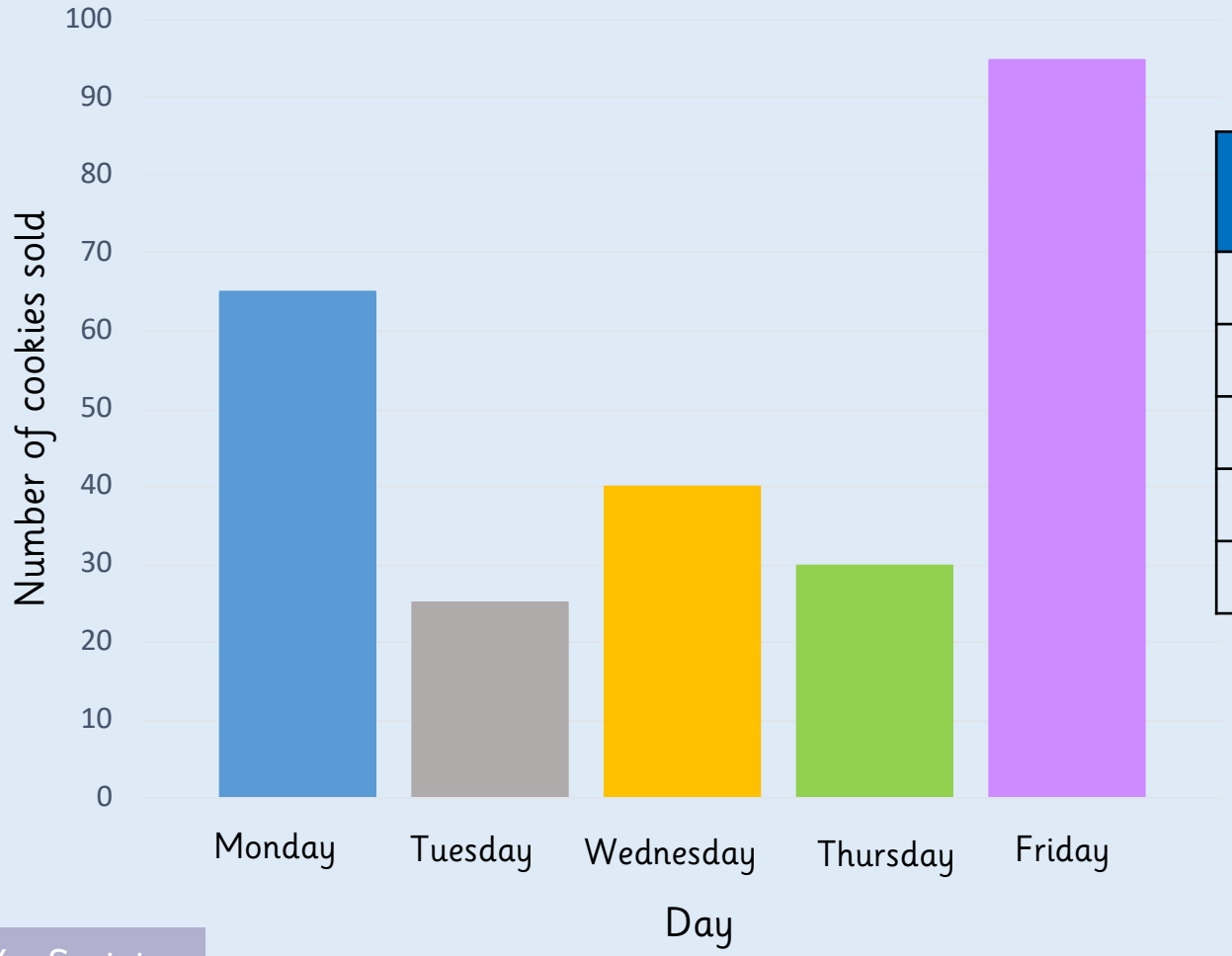


Table	Table points
Triangles	●●●●●●●●◔
Squares	●●●●●●◗
Circles	●●●●●●●●◗
Rectangles	●●●◢
Hexagons	●●●●

● = 20 points

Activity 4 Interpret Charts

Represent the data in each table as a bar chart.



Day	Number of cookies sold
Monday	65
Tuesday	25
Wednesday	40
Thursday	30
Friday	95

Activity 4 Interpret Charts

Represent the data in each table as a bar chart.

Team	Number of house points
Sycamore	
Oak	
Beech	
Ash	

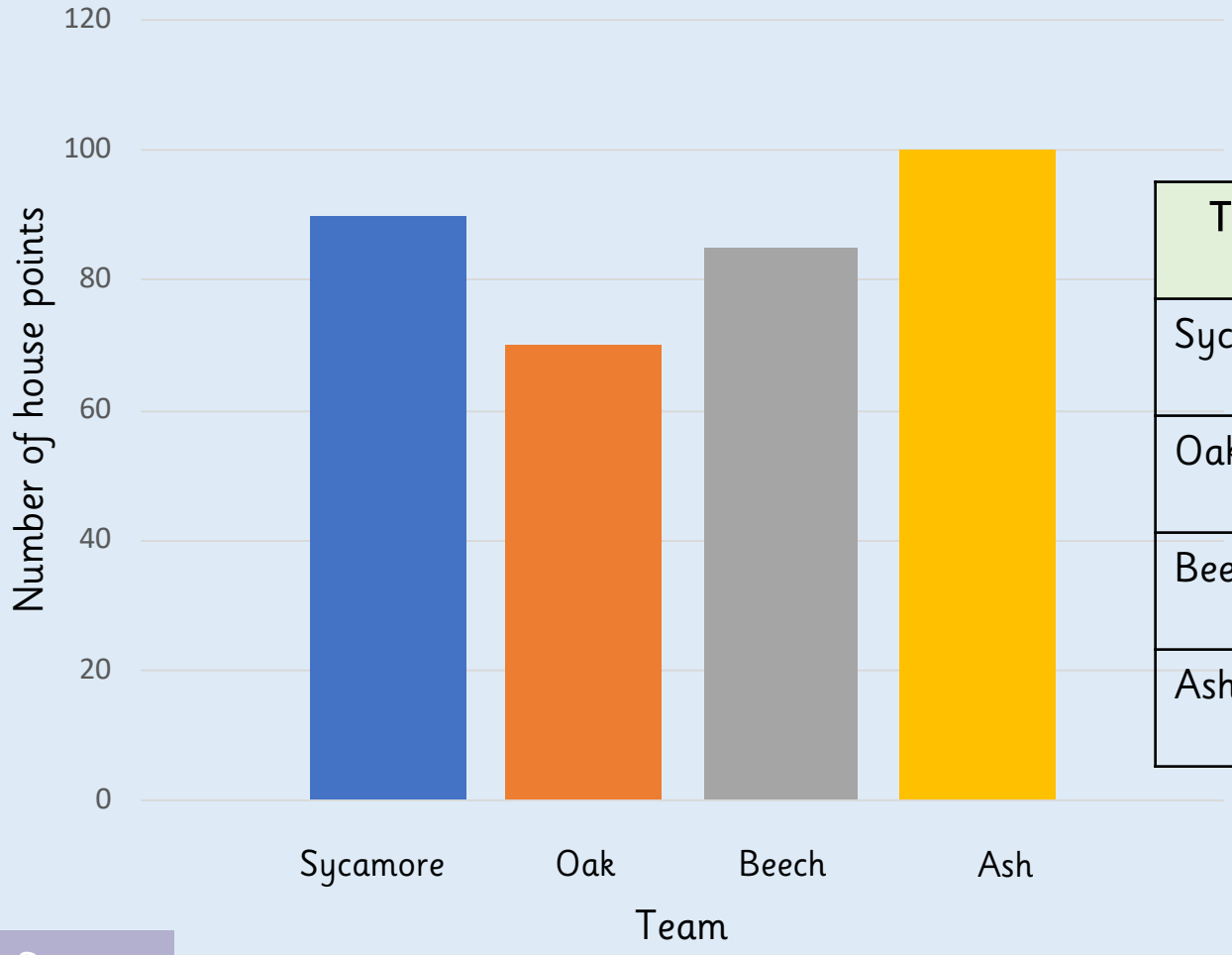
 = 20 points

Day	Number of tickets sold
Monday	55
Tuesday	30
Wednesday	45
Thursday	75
Friday	85

What do you notice about the scale of the bar chart?

Activity 4 Interpret Charts

Represent the data in each table as a bar chart.

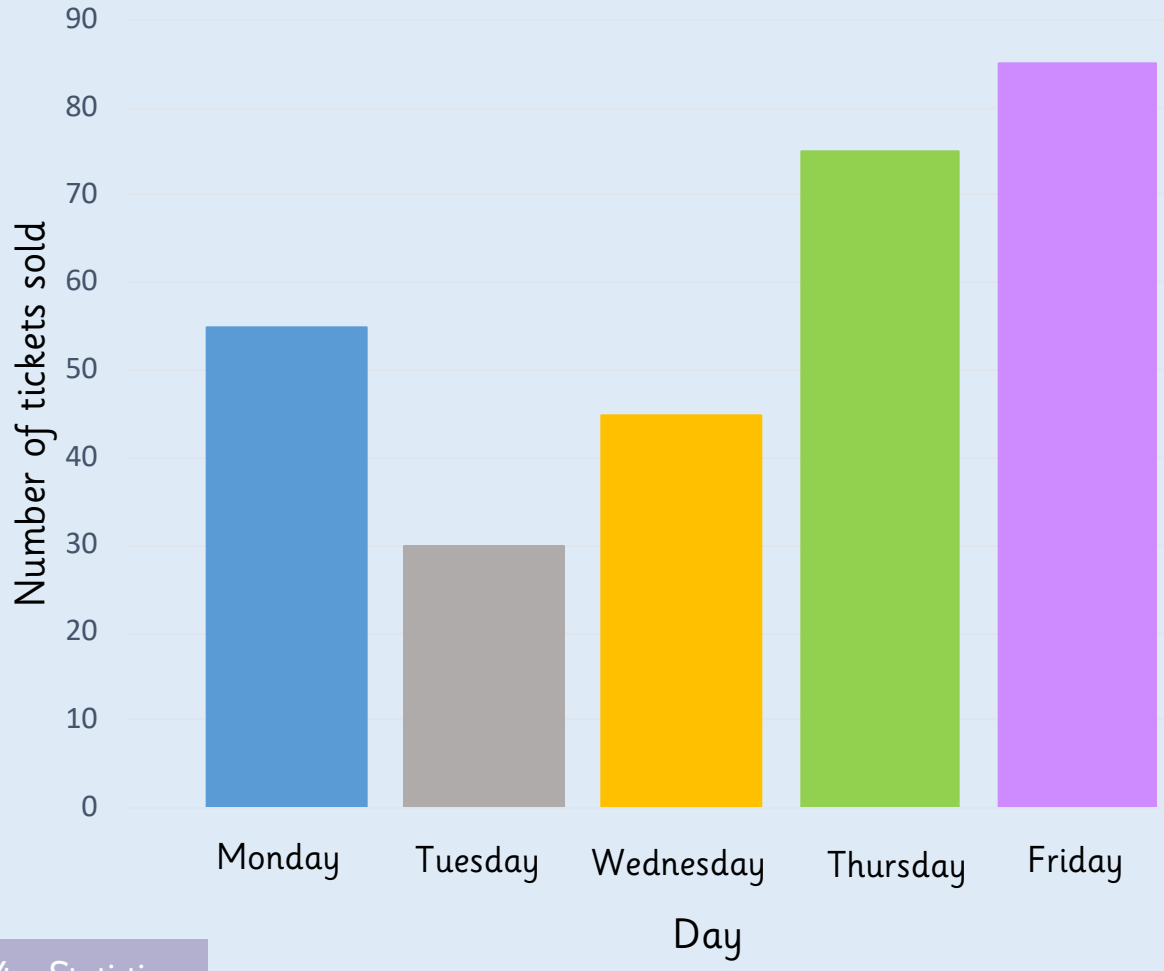


= 20 points

Team	Number of house points
Sycamore	
Oak	
Beech	
Ash	

Activity 4 Interpret Charts

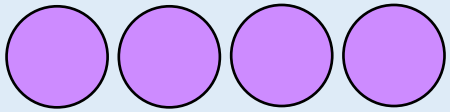
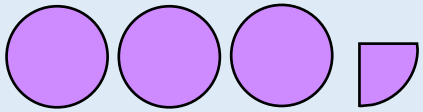
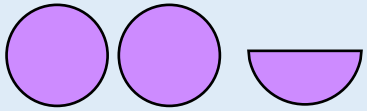
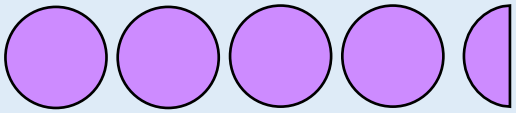
Represent the data in each table as a bar chart.



Day	Number of tickets sold
Monday	55
Tuesday	30
Wednesday	45
Thursday	75
Friday	85

Activity 4 Interpret Charts

Represent the data in each table as a bar chart.

Table	Table points
Hexagons	
Rectangles	
Circles	
Squares	

 = 20 points

Day	Number of tickets sold
Monday	65
Tuesday	25
Wednesday	40
Thursday	30
Friday	95

Activity 4 Interpret Charts

Represent the data in each table as a bar chart.

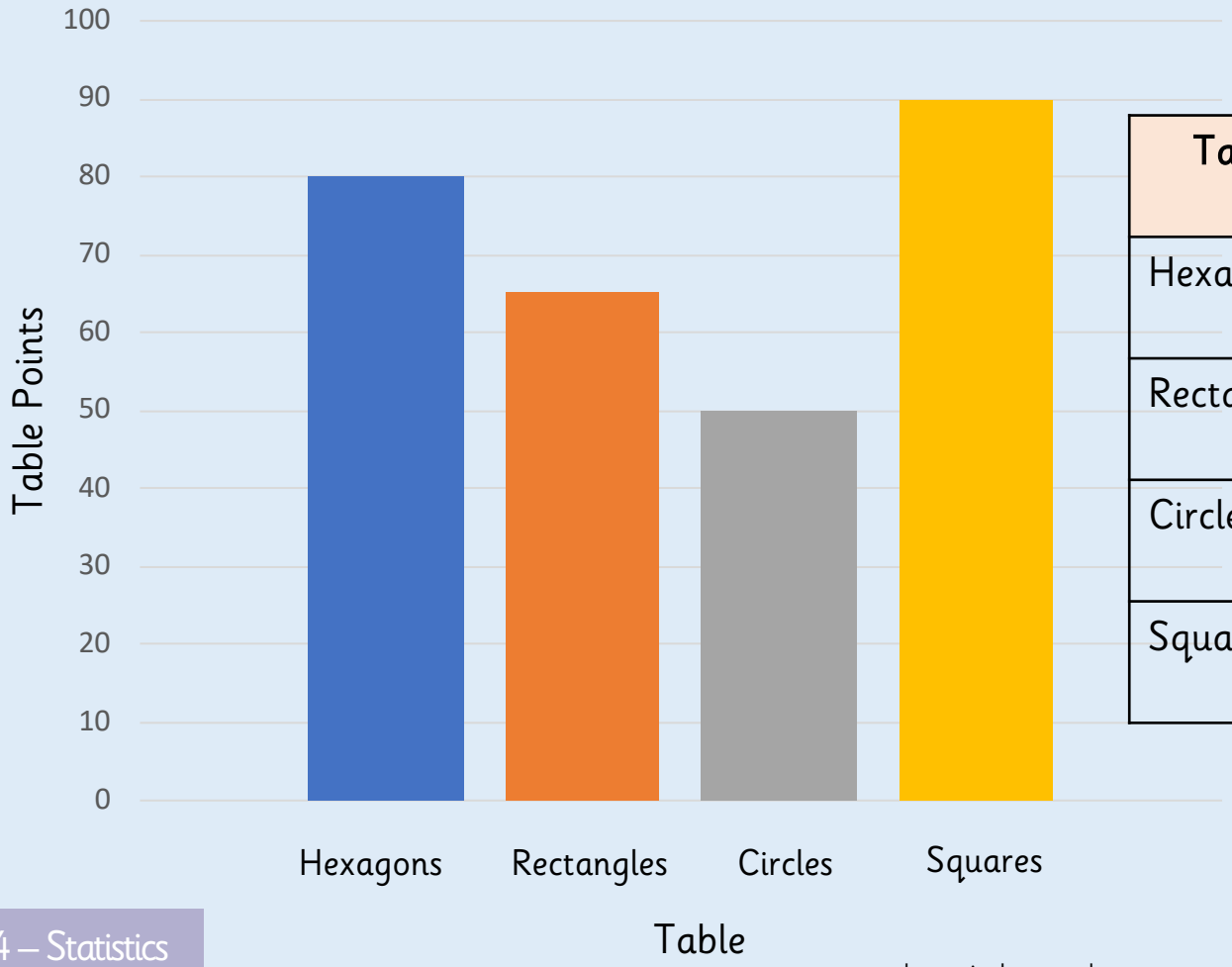
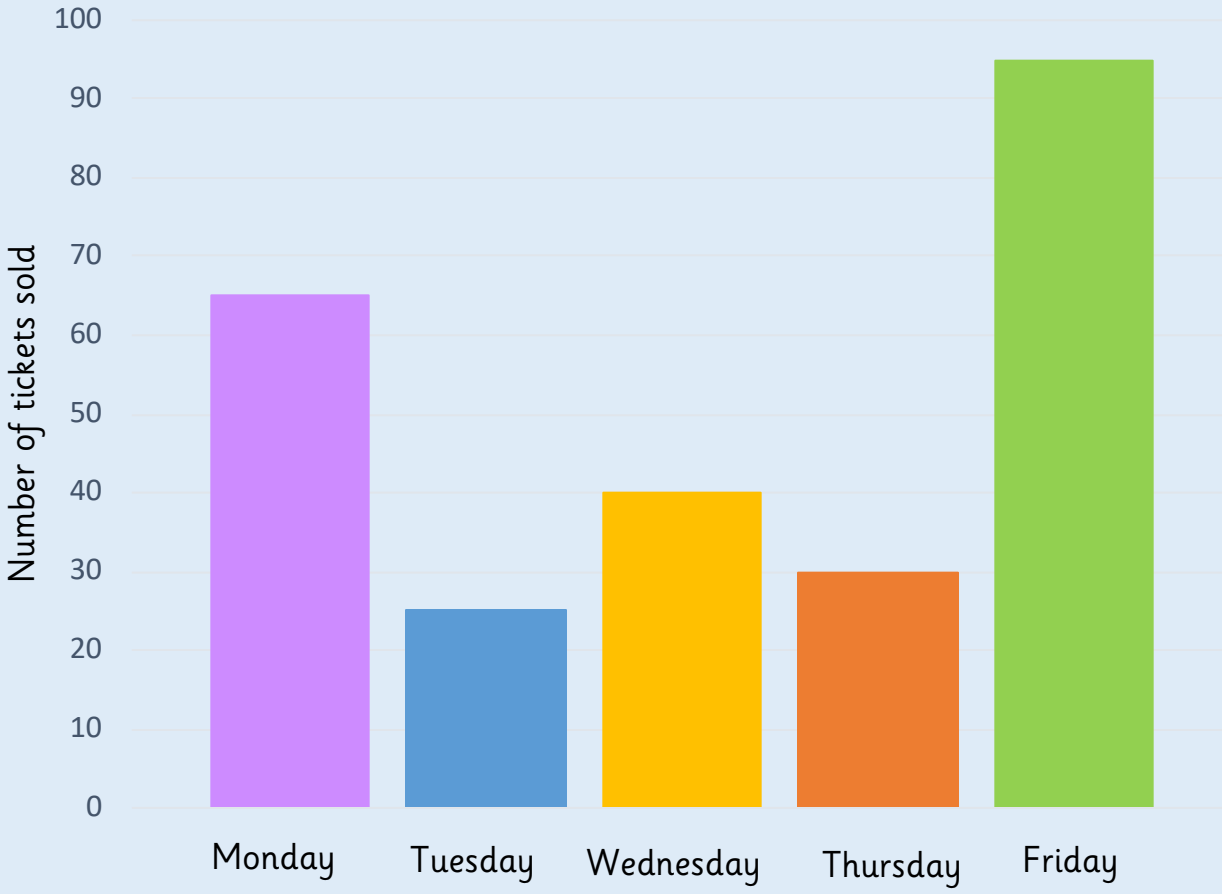


Table	Table points
Hexagons	● ● ● ●
Rectangles	● ● ● ▪
Circles	● ● ◡
Squares	● ● ● ● ◗

● = 20 points

Activity 4 Interpret Charts

Represent the data in each table as a bar chart.



Day	Number of tickets sold
Monday	65
Tuesday	25
Wednesday	40
Thursday	30
Friday	95

Reasoning 1 Interpret Charts

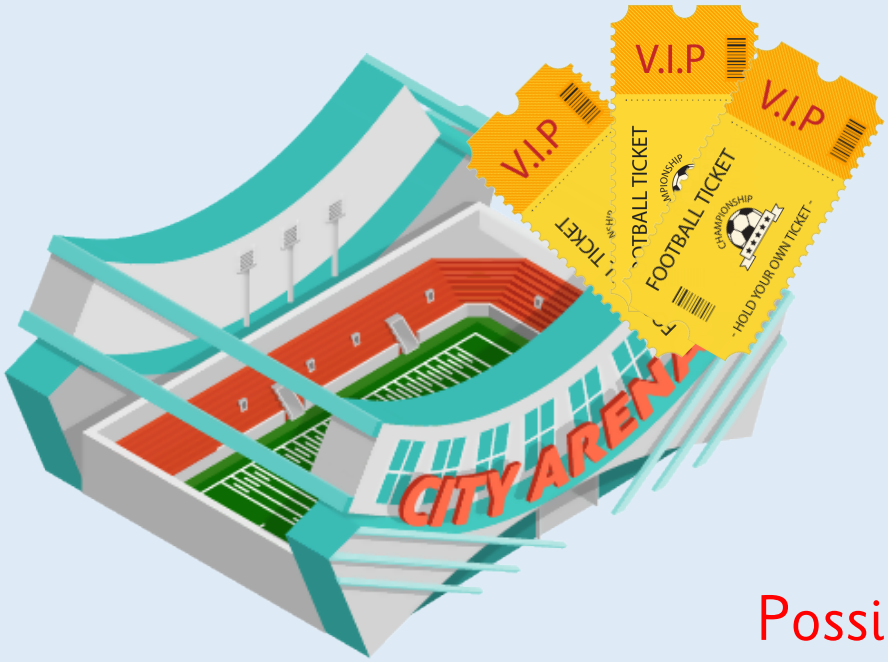
Halifax City Football Club sold the following number of season tickets:

- Male adults – 5,328
- Female adults – 4,580
- Boys – 3,902
- Girls – 4,507

Would you use a bar chart, table or pictogram to represent this data? Explain why.

Reasoning 1 Interpret Charts

Halifax City Football Club sold the following number of season tickets:



- Male adults – 5,328
- Female adults – 4,580
- Boys – 3,902
- Girls – 4,507

Possible answer:

I would represent the data in a table because it would be difficult to show the exact numbers accurately in a pictogram or bar chart.

Reasoning 2 Interpret Charts

Zach wants to use a pictogram to represent the favourite drinks of everyone in his class.

Zach

I will use this image to represent 6 children.

Explain why this is not a good idea.

Reasoning 2 Interpret Charts

Zach wants to use a pictogram to represent the favourite drinks of everyone in his class.

Zach

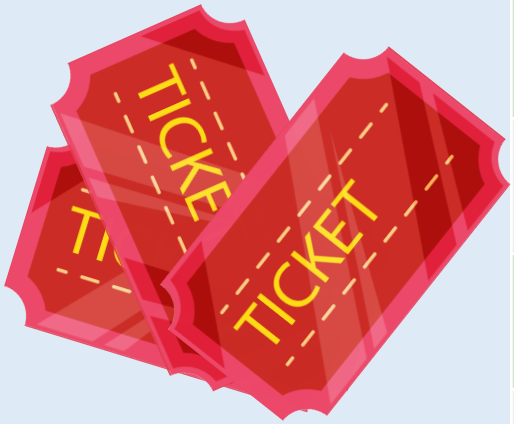
I will use this image  to represent 6 children.

Explain why this is not a good idea.

It is not a good idea because it would be difficult to show amounts which are not multiples of 6.

Reasoning 3 Interpret Charts

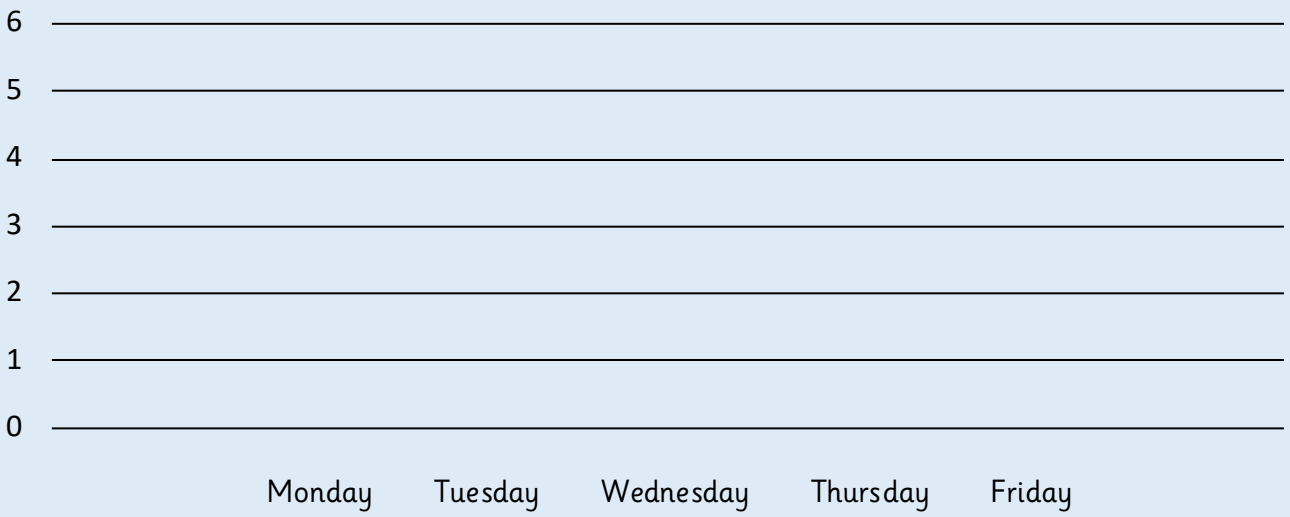
Here is some information about the number of tickets sold for a concert.



Day	Number of tickets sold
Monday	45
Tuesday	20
Wednesday	55
Thursday	85
Friday	75

Reasoning 3 Interpret Charts

Malachi starts to create a bar chart to represent the number of concert tickets sold during the week.



Day	Number of tickets sold
Monday	45
Tuesday	20
Wednesday	55
Thursday	85
Friday	75

What advice would you give Malachi about the scale he has chosen?
What would be a better scale to use?
Is there anything else missing from the chart?

Reasoning 3 Interpret Charts

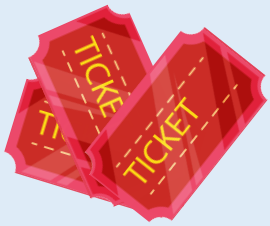
Malachi starts to create a bar chart to represent the number of concert tickets sold during the week.

Possible response:

I would tell Malachi to use a different scale for his bar chart because the numbers in the table are quite large.

The scale could go up in fives because the numbers are all multiples of five.

Malachi needs to record the title and he needs to label the axes.



Discussion

Interpret Charts

What are the different ways to present data?
What do you notice about the different axes?

What do you notice about the scale of the bar chart?
What other way could you present the data shown in the bar chart?

What else does the data tell us?
What is the same and what is different about the way in which the data is presented?

What scale will you use for your own bar chart? Why?

Comparison, Sum & Difference

4

Fluency & Reasoning Teaching Slides

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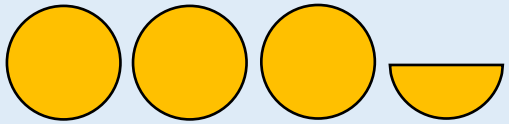
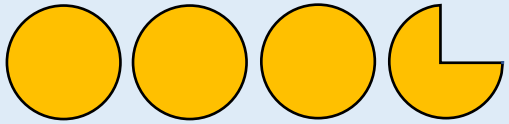
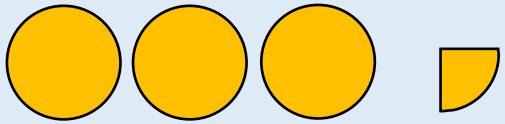
Activity 1 Comparison, Sum & Difference

How many more points does the Sycamore team have than the Ash team? How many points do Beech and Oak teams have altogether? How many points do Ash need to be equal to Oak?

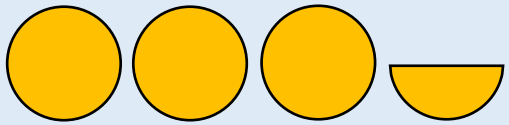
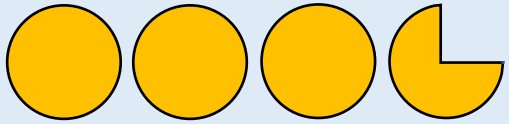
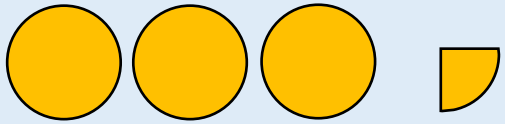
Team	Number of house points
Sycamore	
Oak	
Beech	
Ash	

 = 20 points

What does a full circle represent in the pictogram?

Activity 1 Comparison, Sum & Difference

How many more points does the Sycamore team have than the Ash team? How many points do Beech and Oak teams have altogether? How many points do Ash need to be equal to Oak?

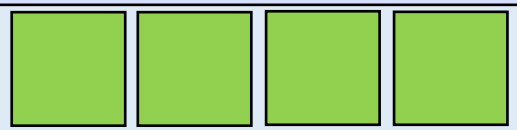
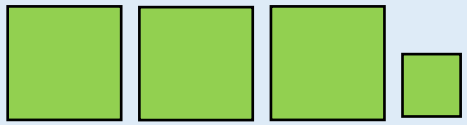
Team	Number of house points
Sycamore	
Oak	
Beech	
Ash	

 = 20 points

- Sycamore team have 15 more points than Ash team.
- Beech and Oak teams have 140 points altogether.
- Ash team need to have 20 points to be equal to Oak.

Activity 1 Comparison, Sum & Difference

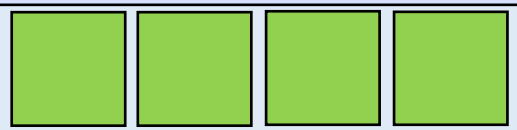
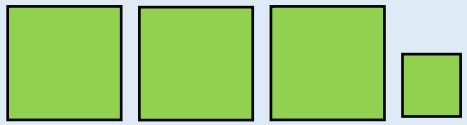
How many more points do the Squares have than Rectangles?
How many points do Hexagons and Triangles have altogether?
How many points do Circles need to be equal to Hexagons?

Table	Table points
Triangles	
Squares	
Circles	
Rectangles	
Hexagons	

 = 20 points

Activity 1 Comparison, Sum & Difference

How many more points do the Squares have than Rectangles?
How many points do Hexagons and Triangles have altogether?
How many points do Circles need to be equal to Hexagons?

Table	Table points
Triangles	
Squares	
Circles	
Rectangles	
Hexagons	

- Squares have 5 more points than Rectangles.
- Hexagons and Triangles have 190 points altogether.
- Circles need 45 points to be equal to Hexagons.

Activity 2 Comparison, Sum & Difference

Look at the information in the table.

Activity	Number of votes
Bowling	9
Cinema	10
Swimming	7
Ice-skating	14

How many people voted in total? ¼ of the votes were for _____.

Seven more people voted for _____ than _____.

What other questions could we ask about the table?

Activity 2 Comparison, Sum & Difference

Look at the information in the table.

Activity	Number of votes
Bowling	9
Cinema	10
Swimming	7
Ice-skating	14

How many people voted in total? ¼ of the votes were for cinema.
Seven more people voted for swimming than ice-skating.

40 people voted in total.

Activity 2 Comparison, Sum & Difference

Look at the information in the table.

Activity	Number of votes
Bowling	6
Swimming	15
Board games	8
Ice-skating	10
Cinema	14

How many people voted in total? Roughly one-fifth of the votes were for _____. Five more people voted for _____ than _____.

Activity 2 Comparison, Sum & Difference

Look at the information in the table.

Activity	Number of votes
Bowling	6
Swimming	15
Board games	8
Ice-skating	10
Cinema	14

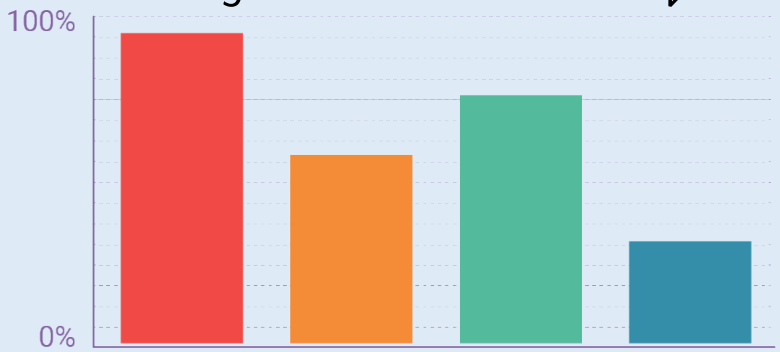
How many people voted in total? Roughly one-fifth of the votes were for ice-skating. Five more people voted for swimming than ice-skating.

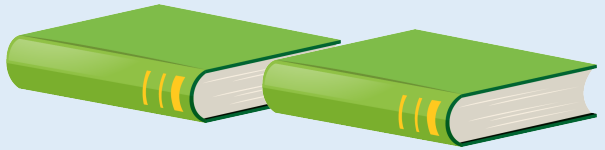
53 people voted in total.

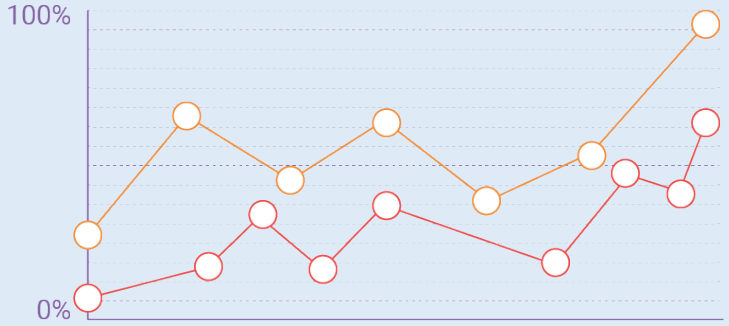
Activity 3 Comparison, Sum & Difference

As a class, decide on some data that you would like to collect, for example: favourite books, films, food.
Collect and record the data in a table.

Choose a pictogram or a bar chart to represent your data, giving reasons for your choices. What questions can you ask about the data?







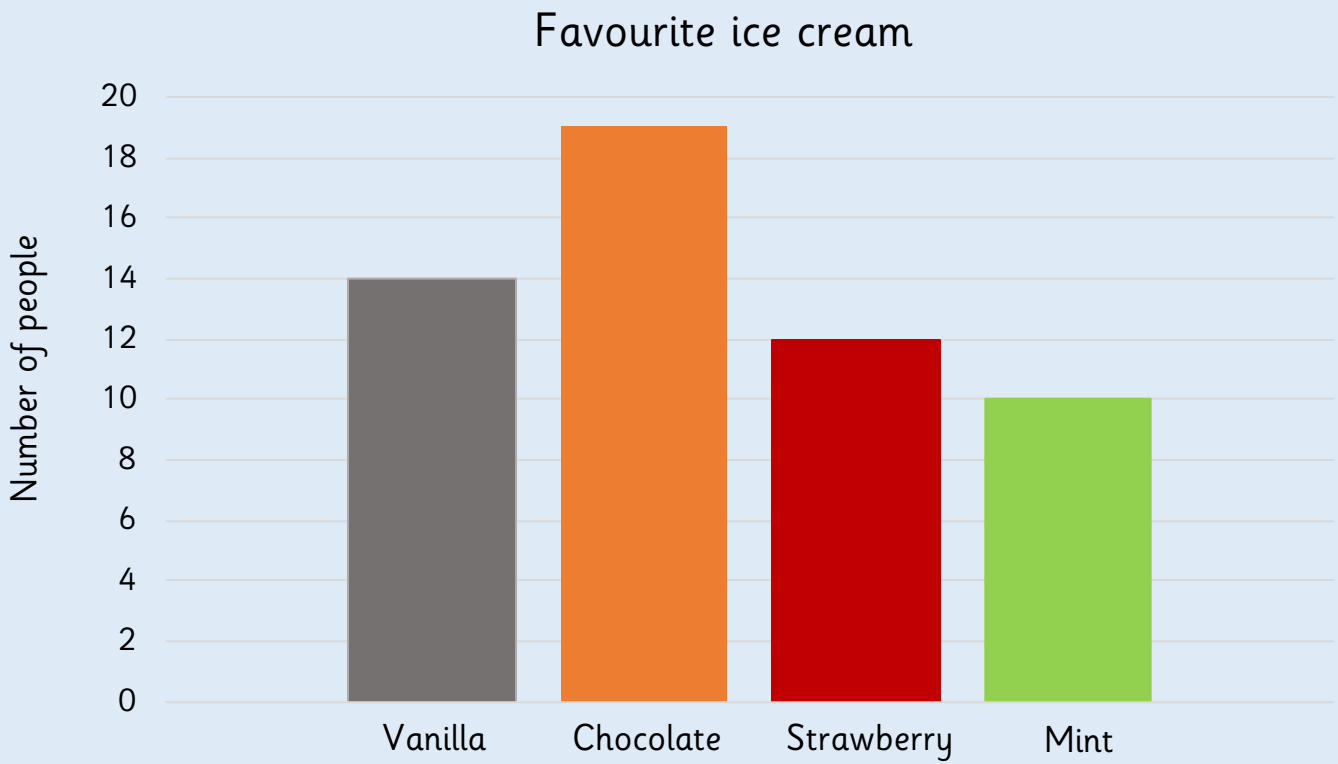
What data could we collect as a class?

Reasoning 1

Comparison, Sum & Difference

Tia

We asked 45 people altogether.



Can you spot Tia's mistake?

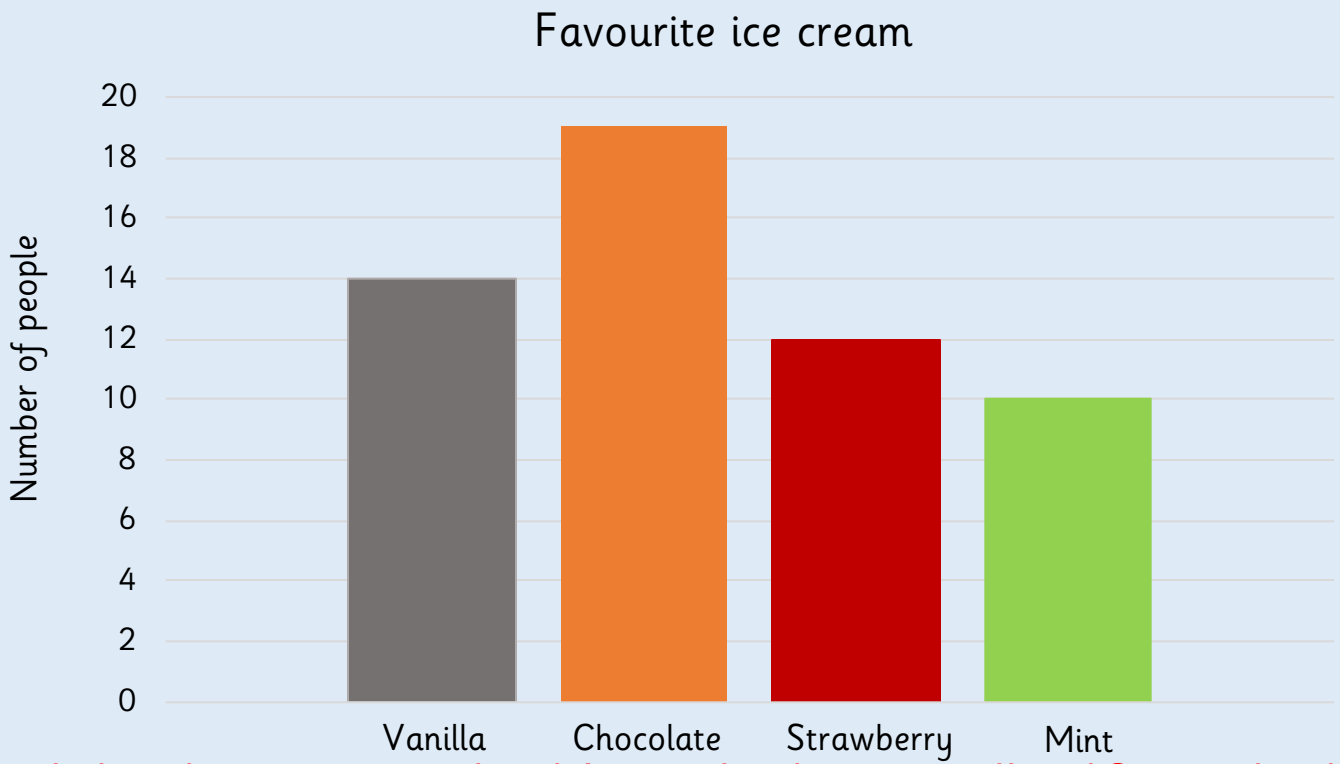
How many people were asked altogether?

Reasoning 1

Comparison, Sum & Difference

Tia

We asked 45 people altogether.



Tia has read the chart incorrectly. 14 people chose vanilla, 19 people chose chocolate, 12 people chose strawberry, and 10 people chose mint.

That means 55 people were asked altogether.

Reasoning 2 Comparison, Sum & Difference

Attraction	Number of visitors on Saturday	Number of visitors on Sunday
Animal Zoo World	1,828	3,656
Maltings Castle	1,820	2,045
Primrose Park	1,325	1,952
Film Land Cinema	1,595	2,054

True or False?

- The same number of people visited Maltings Castle as Film Land Cinema on Saturday.
- Double the number of people visited Animal Zoo World on Sunday than Saturday.
- The least popular attraction of the weekend was Primrose Park.

Reasoning 2 Comparison, Sum & Difference

Attraction	Number of visitors on Saturday	Number of visitors on Sunday
Animal Zoo World	1,828	3,656
Maltings Castle	1,820	2,045
Primrose Park	1,325	1,952
Film Land Cinema	1,595	2,054

True or False?

- The same number of people visited Maltings Castle as Film Land Cinema on Saturday. False, Maltings Castle had 225 more visitors.
- Double the number of people visited Animal Zoo World on Sunday than Saturday. True, 1,828 doubled is 3,656.
- The least popular attraction of the weekend was Primrose Park. True.

Discussion

Comparison, Sum & Difference

What does a full circle represent in the pictogram?
What does half/quarter/three-quarters of the circle represent?

What other questions could we ask about the pictogram?
What other questions could we ask about the table?

What data could we collect as a class?

What questions could we ask about the data?

Introducing Line Graphs

4

Fluency & Reasoning Teaching Slides

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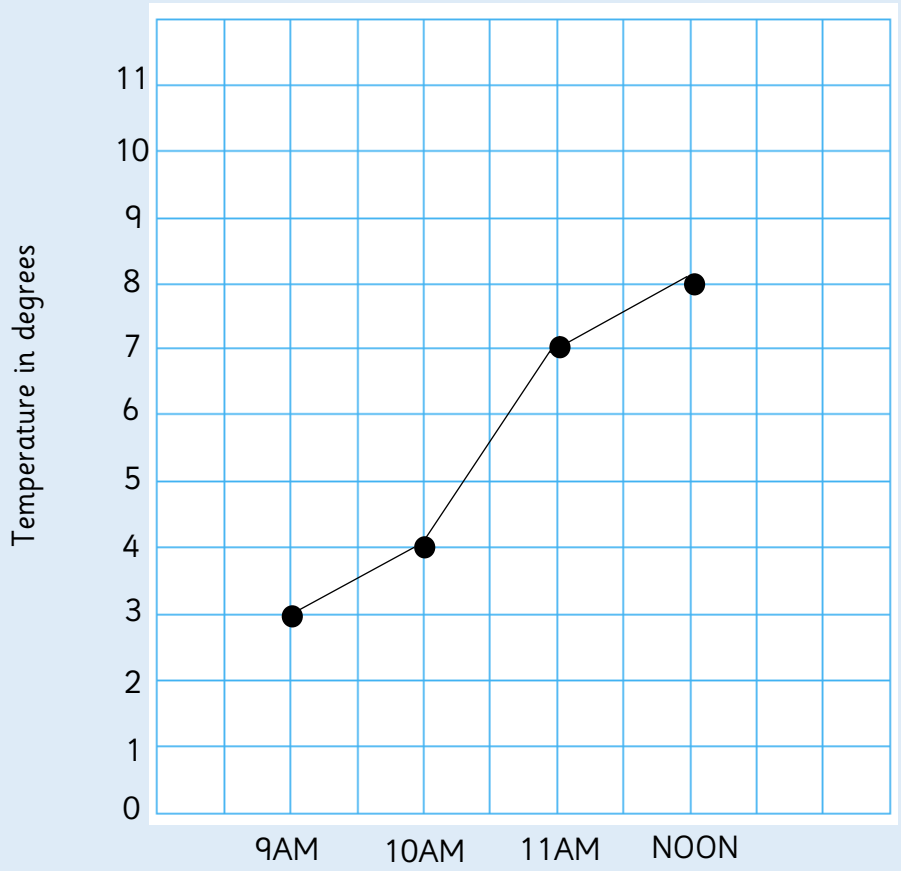
Activity 1 Introducing Line Graphs

The graph shows the temperature in the playground during a morning in March.



The temperature at 10 a.m. is _____ degrees

The warmest time is _____

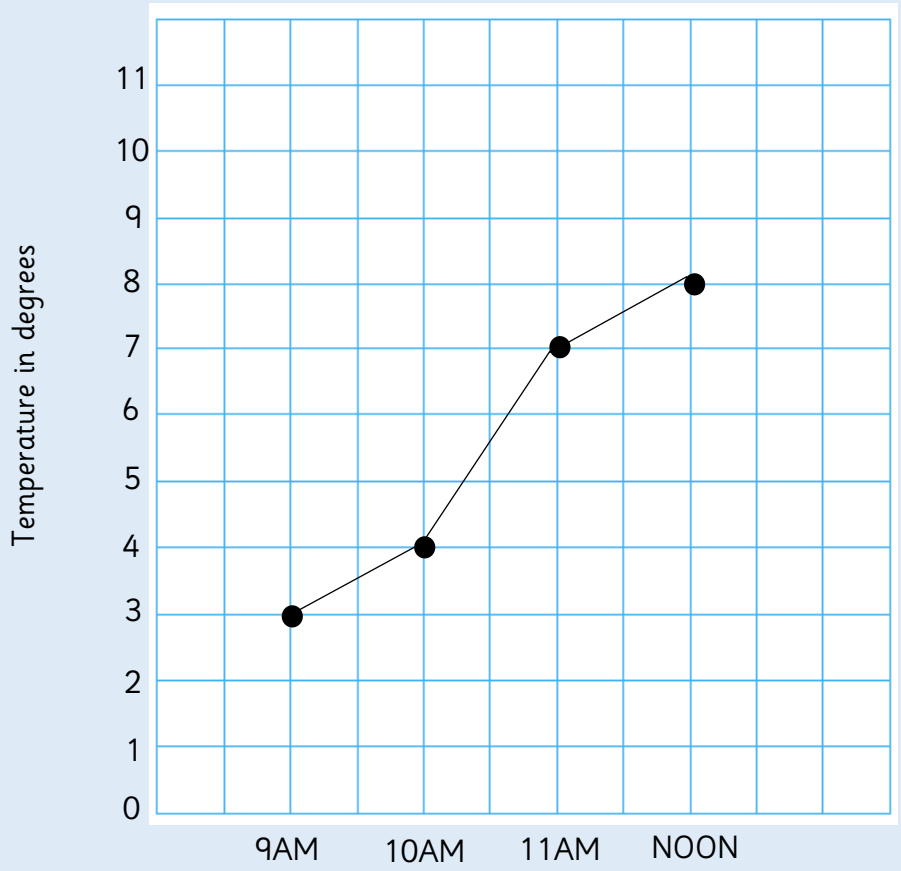
The coldest time is _____

How would you work out what time it was when the temperature was 5 degrees?

How would you read the temperature at 11:30?

Activity 1 Introducing Line Graphs

The graph shows the temperature in the playground during a morning in March.



The temperature at 10 a.m. is 4 degrees

The warmest time is noon

The coldest time is 9 a.m.

How would you work out what time it was when the temperature was 5 degrees?

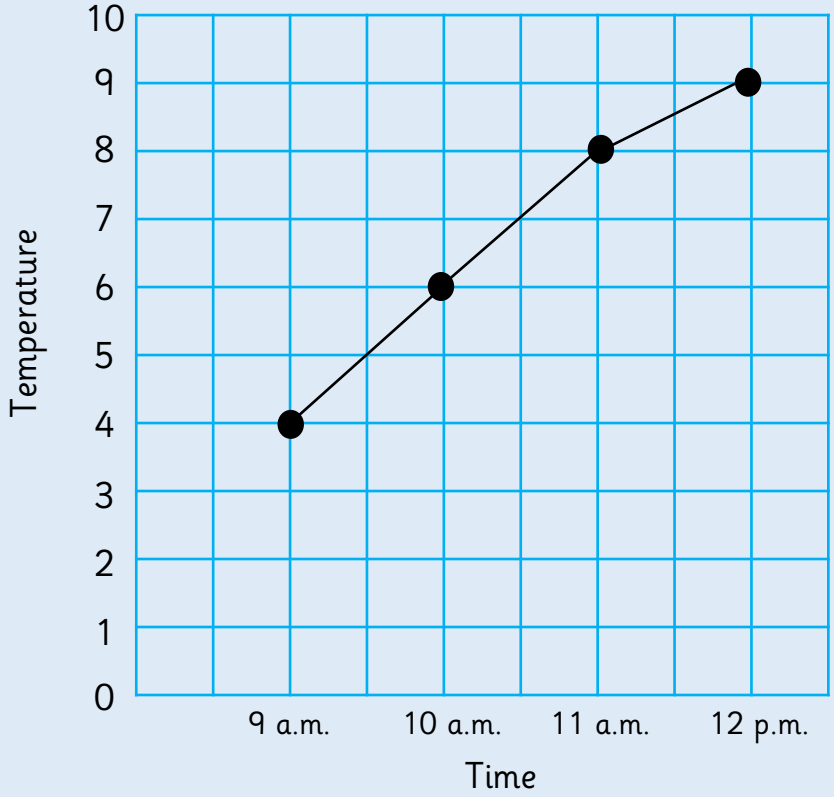
Find where 5 degrees on the y axis meets the time on the x axis.

How would you read the temperature at 11:30?

Find where 11.30 on the x axis meets the temperature on the y axis.

Activity 1 Introducing Line Graphs

The graph shows the temperature in the playground during a morning in April.



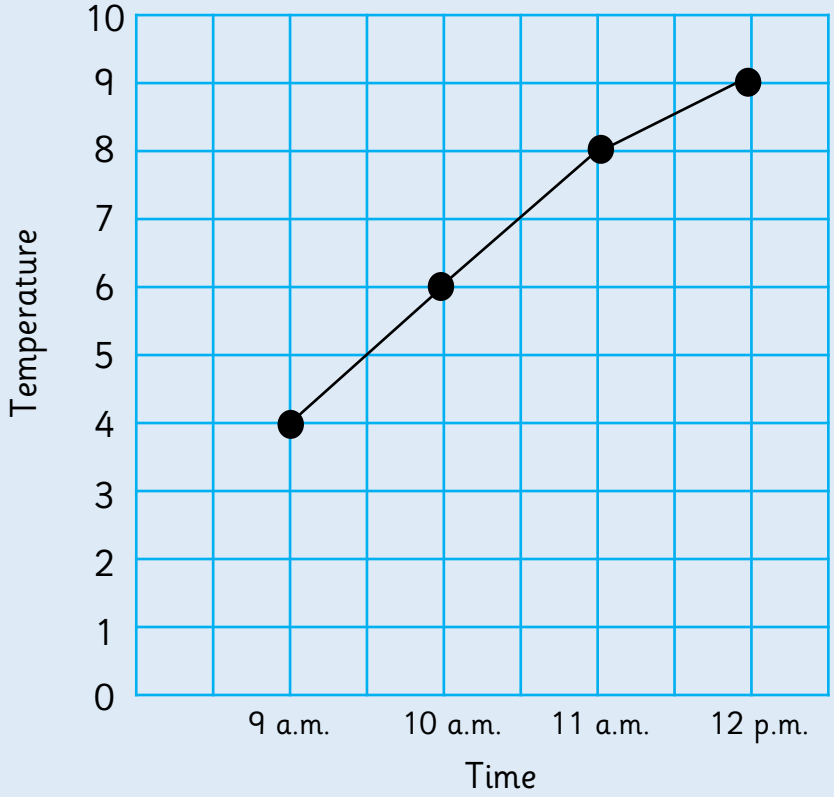
The temperature at 9 a.m. is _____ degrees.

The warmest time of the day shown is _____.

How is a line graph different to a bar chart?

Activity 1 Introducing Line Graphs

The graph shows the temperature in the playground during a morning in April.



The temperature at 9 a.m. is 4 degrees.

The warmest time of the day shown is 12 p.m.

Activity 2

Introducing Line Graphs

Class 4 grew a plant. They measured the height of the plant every week for six weeks.
The table shows the height of the plant each week.

Week 1	Week 2	Week 3	Week 4	Week 5	Week 6
4 cm	7 cm	9 cm	12 cm	14 cm	17 cm

Create a line graph to represent this information.
What scale would you use on the x and y axes?
Between which two weeks did the plant reach a height of 10 cm?

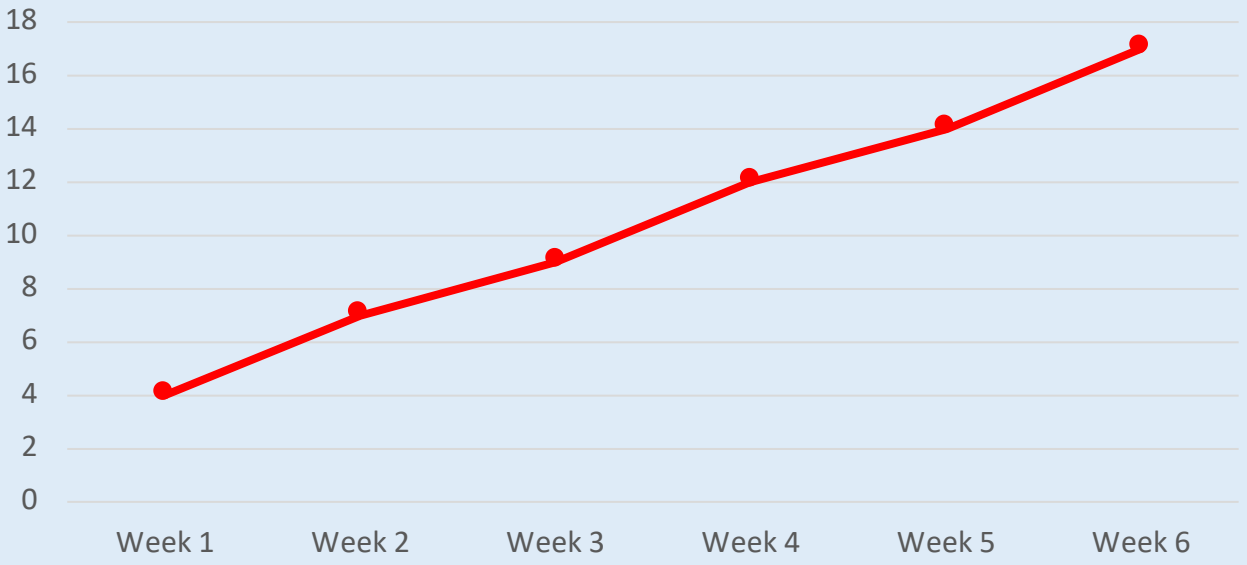
Which axis is the x axis and which is the y axis? What do they represent?

Activity 2

Introducing Line Graphs

Class 4 grew a plant. They measured the height of the plant every week for six weeks.
The table shows the height of the plant each week.

Week 1	Week 2	Week 3	Week 4	Week 5	Week 6
4 cm	7 cm	9 cm	12 cm	14 cm	17 cm



Activity 2 Introducing Line Graphs

Class 4 grew a plant. They measured the height of the plant every week for six weeks. The table shows the height of the plant each week.

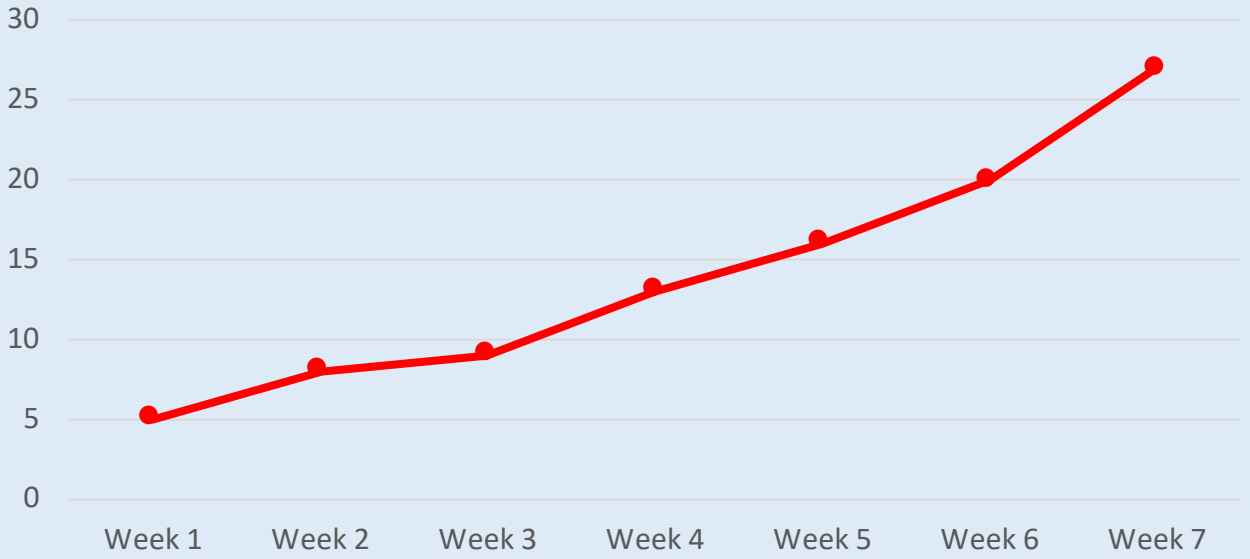
Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7
5 cm	8 cm	9 cm	13 cm	16 cm	20 cm	27 cm

Create a line graph to represent this information.
What scale would you use on the x and y axes?
Between which two weeks did the plant reach a height of 10 cm?

Activity 2 Introducing Line Graphs

Class 4 grew a plant. They measured the height of the plant every week for six weeks. The table shows the height of the plant each week.

Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7
5 cm	8 cm	9 cm	13 cm	16 cm	20 cm	27 cm

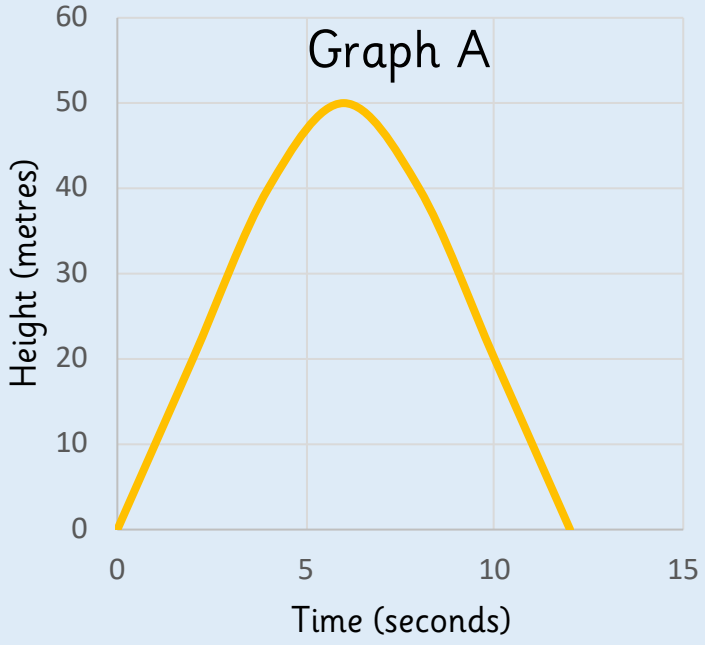


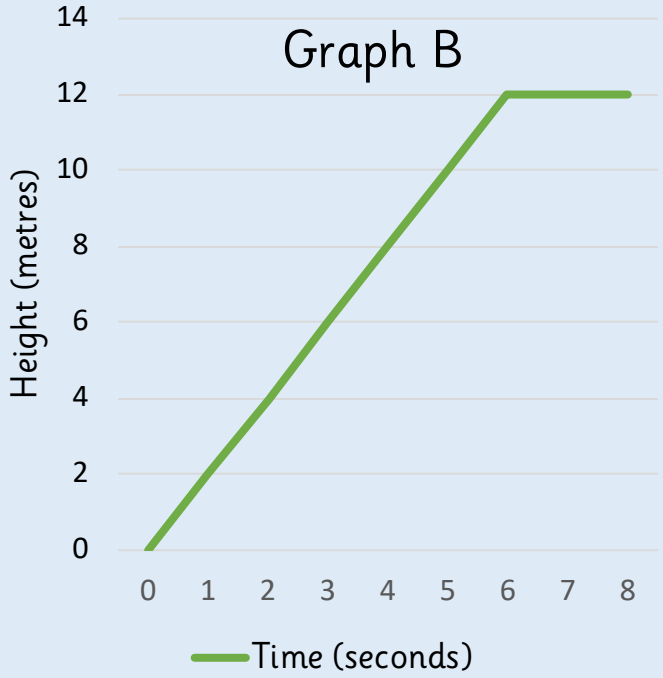
Reasoning 1

Introducing Line Graphs

Rosie launched a toy rocket into the sky. After six seconds the rocket fell to the ground.

Which graph shows this? Explain how you know.





Make up your own story for the other graph.

Reasoning 1 Introducing Line Graphs

Rosie launched a toy rocket into the sky. After six seconds the rocket fell to the ground.

Graph A

The height of the rocket increases then decreases quickly again, returning to a height of 0 at 12 seconds.

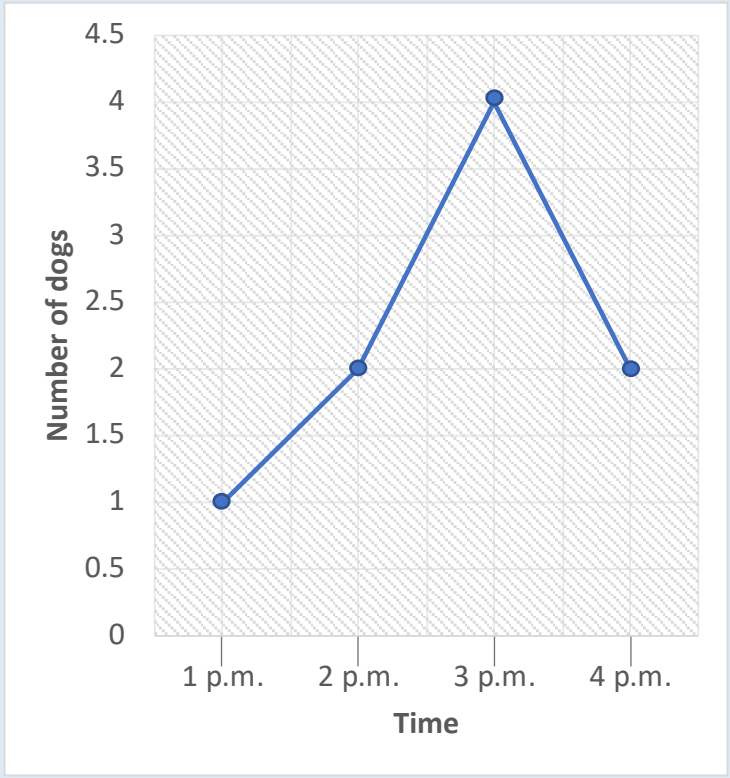
Example story:

A bird flew up from the ground. It continued to fly upwards for 6 seconds then flew at the same height for another 2 seconds.

Reasoning 2

Introducing Line Graphs

Leanna created a line graph to show the number of dogs walking in the park one afternoon.



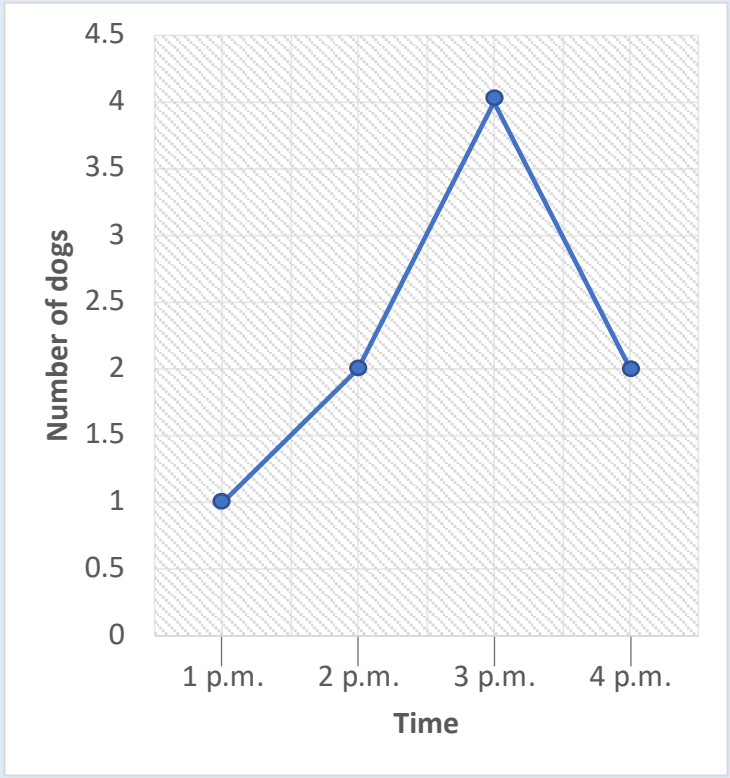
Leanna

At 2:15, there were 2.5 dogs in the park.

Why is Leanna incorrect?
What would be a better way of representing this data?

Reasoning 2 Introducing Line Graphs

Leanna created a line graph to show the number of dogs walking in the park one afternoon.



Leanna

At 2:15, there were 2.5 dogs in the park.

Leanna is incorrect because you cannot have 2.5 dogs.

A better way of presenting this data would be using a bar chart, pictogram or table because the data is discrete.

Discussion

Introducing Line Graphs

How is the line graph different to a bar chart?

Which axis is the x axis and which is the y axis? What do they represent?

How would you estimate the temperature at 9:30 a.m.?

How would you estimate what time it was when the temperature was 7 degrees?

Line Graphs

4

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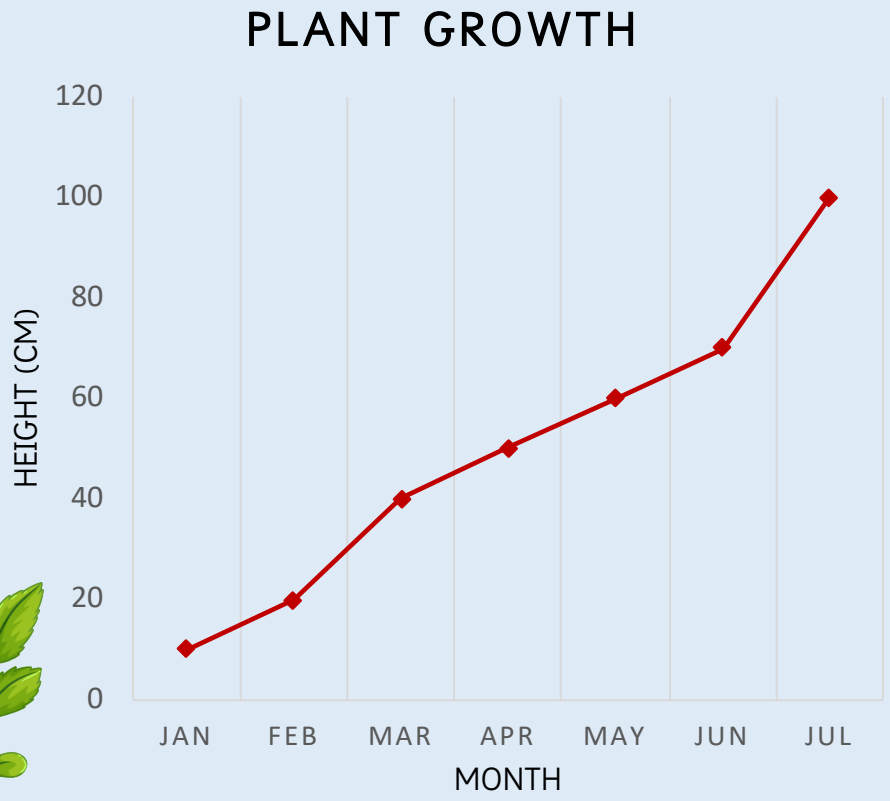
Activity 1 Line Graphs

The graph shows the growth of a plant over six months.

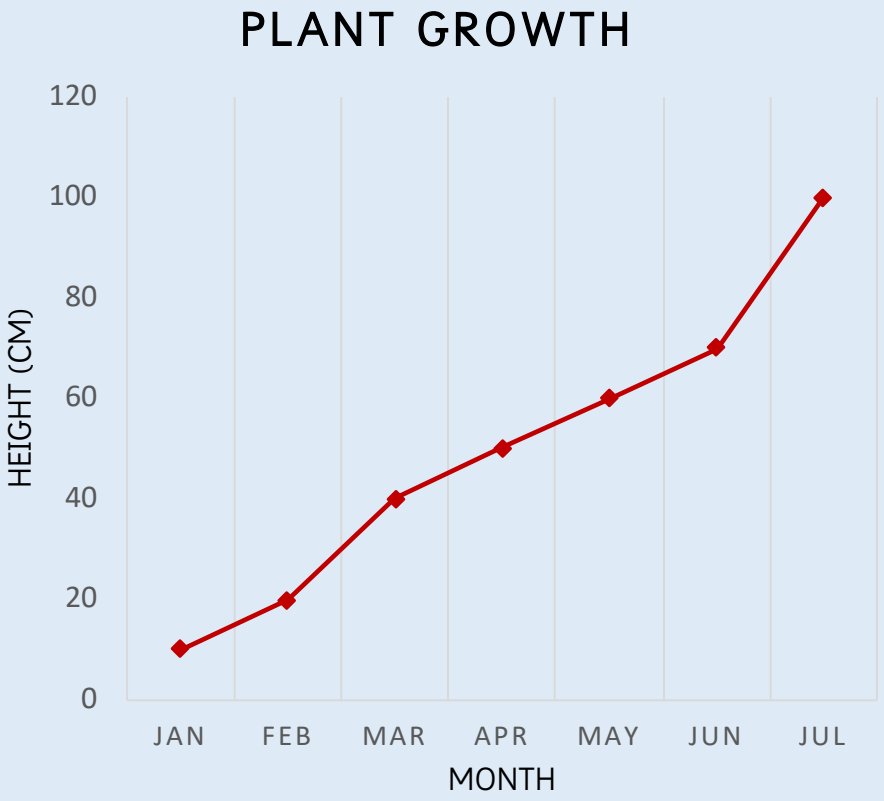
- How tall was the plant when it was measured in May?
- In what month did the plant first reach 50 cm?
- How many centimetres did the plant grow between March and July?
- What was the difference between the height of the plant in February and the height of the plant in April?



What do you notice about the scale of the graph?

Activity 1 Line Graphs

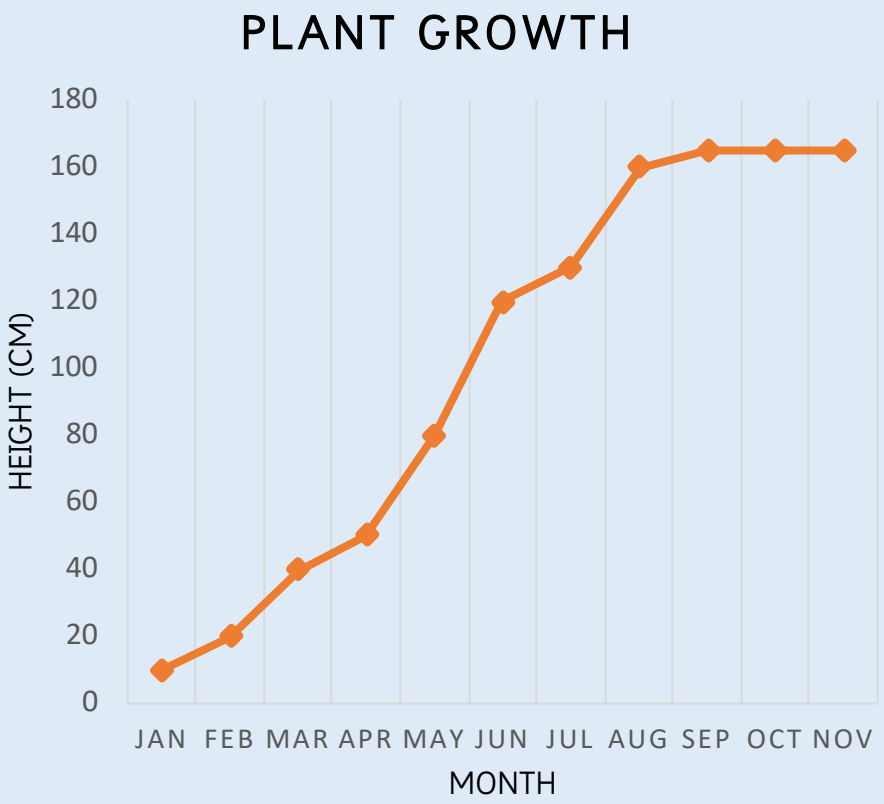
The graph shows the growth of a plant over six months.



- The plant was 60 cm tall in May.
- The plant reached 50 cm in April.
- The plant grew 60 cm between March and July.
- The difference between the height of the plant in February and April is 30 cm.

Activity 1 Line Graphs

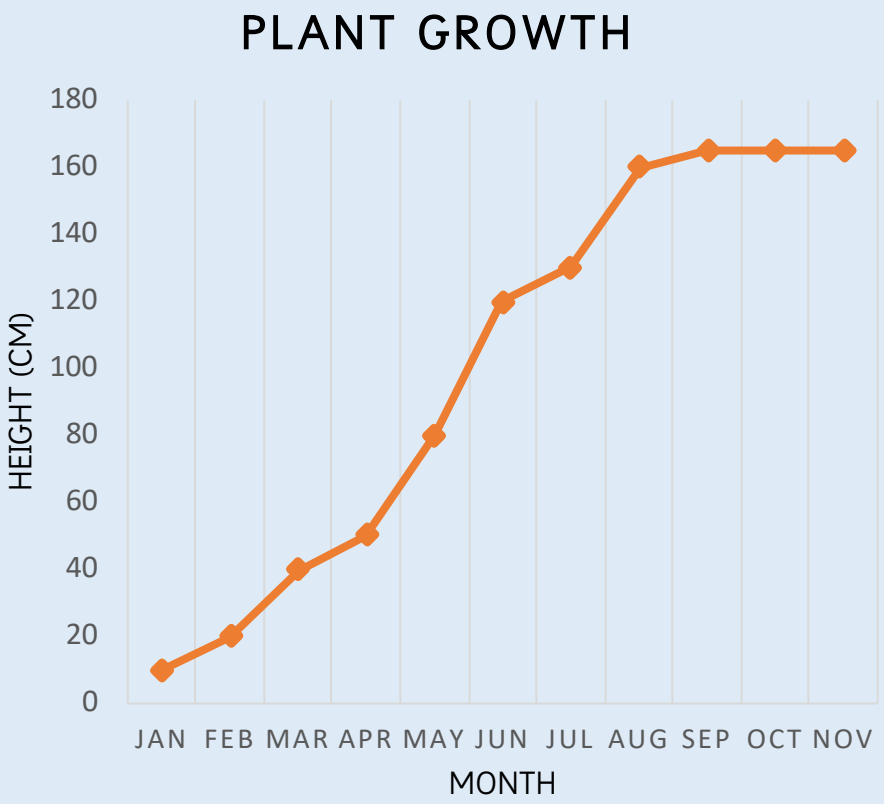
The graph shows the growth of a plant over 11 months.



- How tall was the plant in May?
- How tall was the plant in July?
- In what month did the plant first reach 50 cm?
- How many cm did the plant grow between May and July?
- What was the difference between the height of the plant in February and the height in May?

Activity 1 Line Graphs

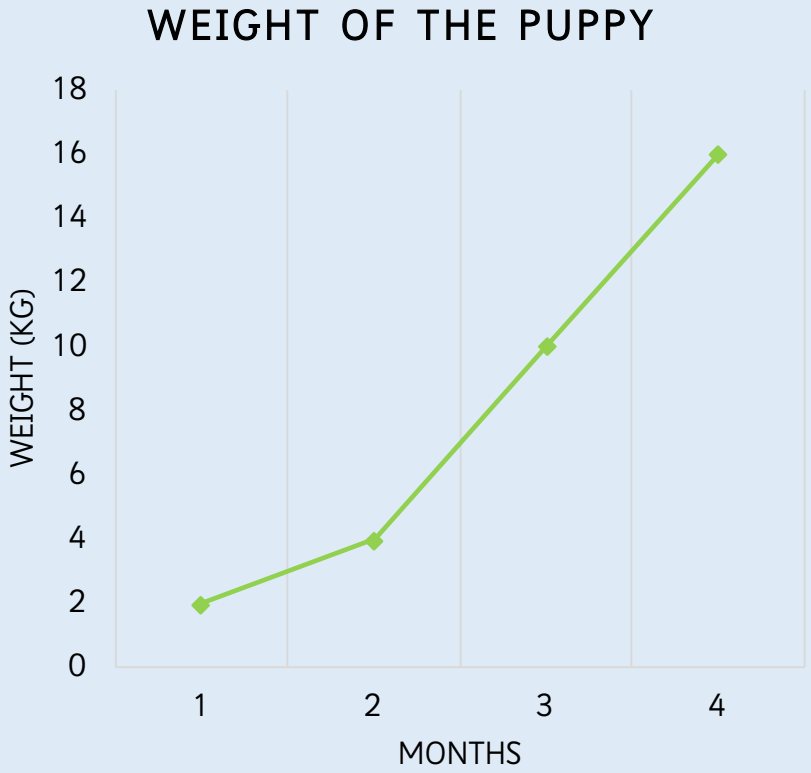
The graph shows the growth of a plant over 11 months.



- The plant was 80 cm tall in May.
- The plant was 130 cm tall in July.
- The plant first reached 50 cm in the month of April.
- The plant grew 50 cm between May and July.
- The difference between the height of the plant in February and in May is 60 cm.

Activity 2 Line Graphs

The graph shows the weight of the puppy as it grows.

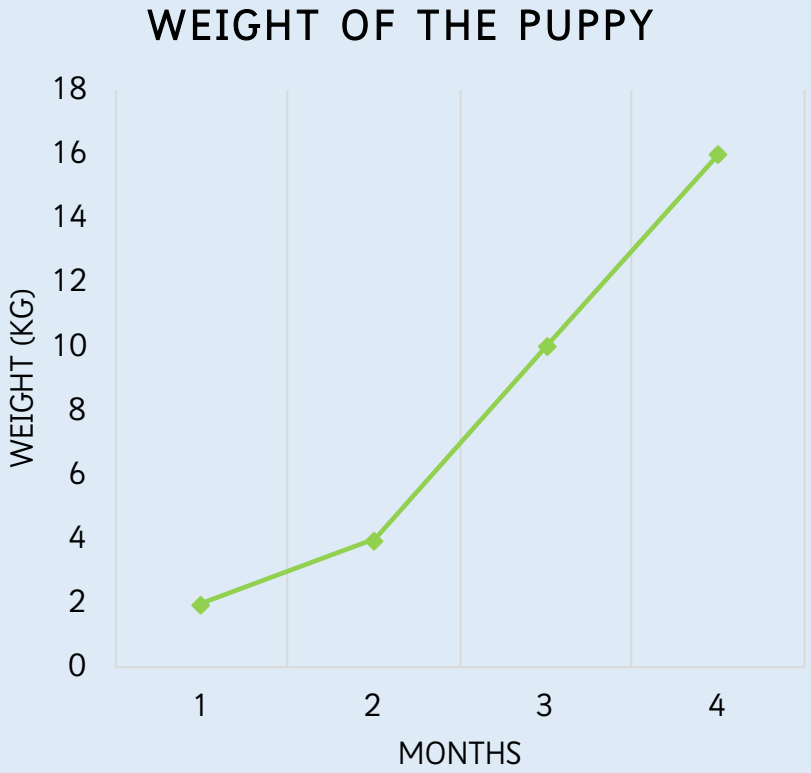


When the puppy is _____ months old, its weight is _____ kg. Between month _____ and month _____ the puppy increased by _____ kg.

How could you make sure you read the graph accurately?

Activity 2 Line Graphs

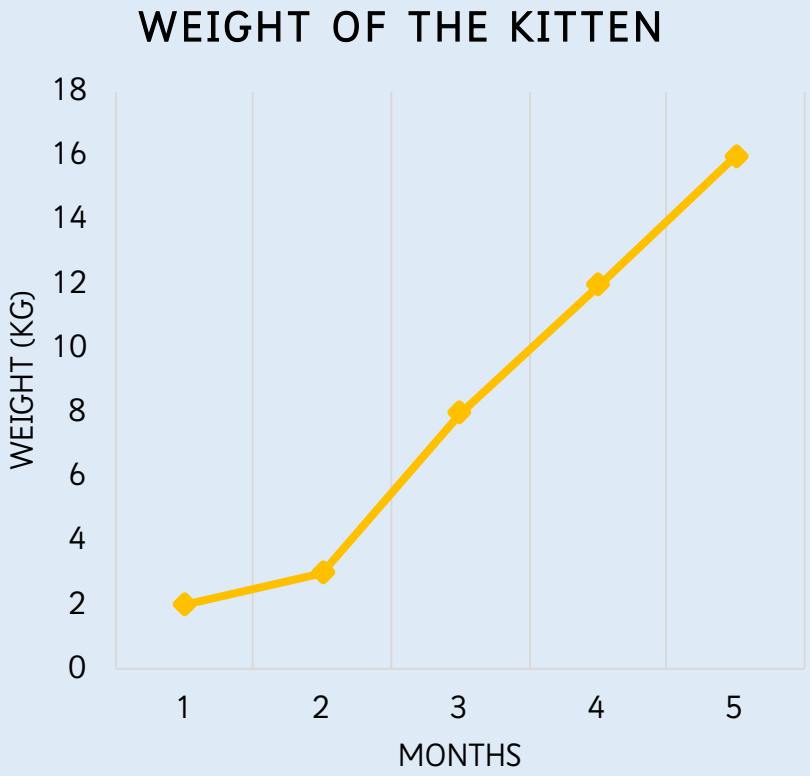
The graph shows the weight of the puppy as it grows.



When the puppy is 2 months old, its weight is 4 kg. Between month 2 and month 3 the puppy increased by 6 kg.

Activity 2 Line Graphs

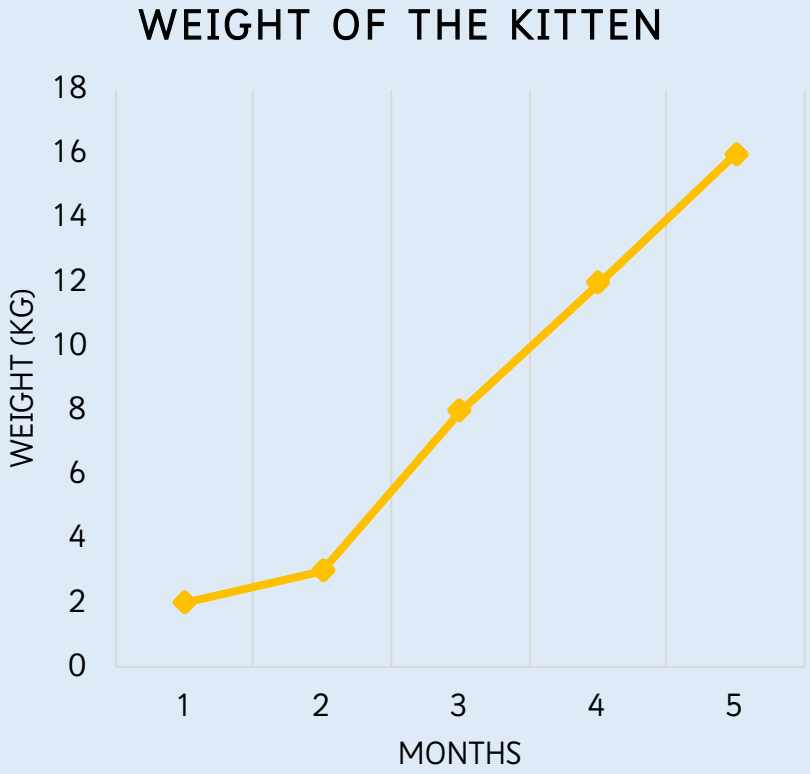
The graph shows the weight of the kitten as it grows.



When the kitten is _____ months old, its weight is _____ kg. Between month _____ and month _____ the kitten increased by _____ kg.

Activity 2 Line Graphs

The graph shows the weight of the kitten as it grows.



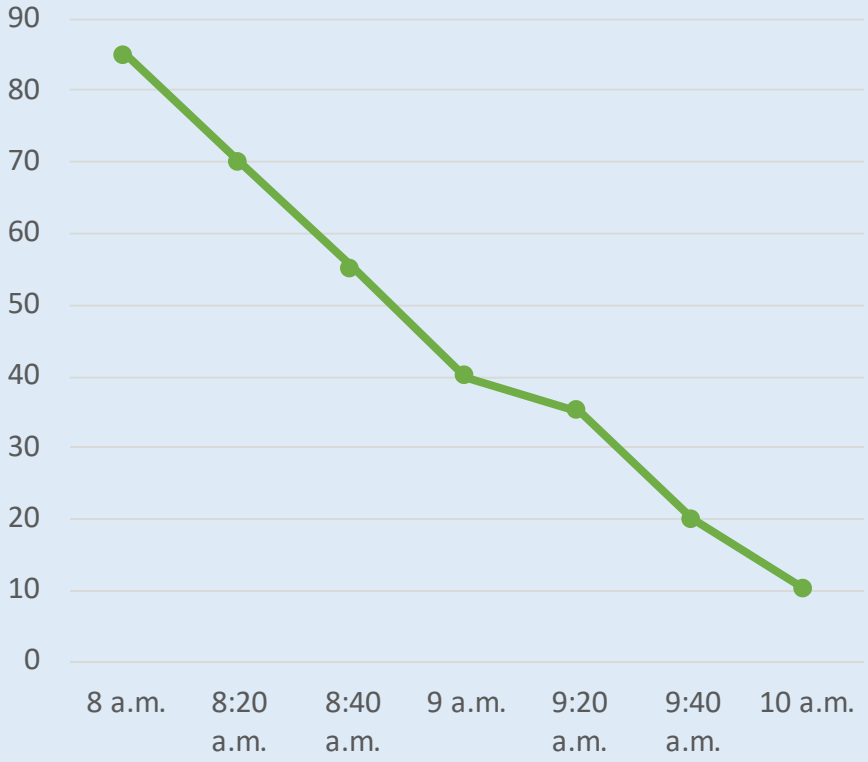
When the kitten is 3 months old, its weight is 8 kg. Between month 2 and month 4 the kitten increased by 9 kg.

Reasoning 1 Line Graphs

Tia measured the temperature of a cup of tea every 20 minutes for 2 hours.
The graph shows Tia's results.

Tia

In the first 40 minutes the temperature of the tea had dropped by 15 degrees.



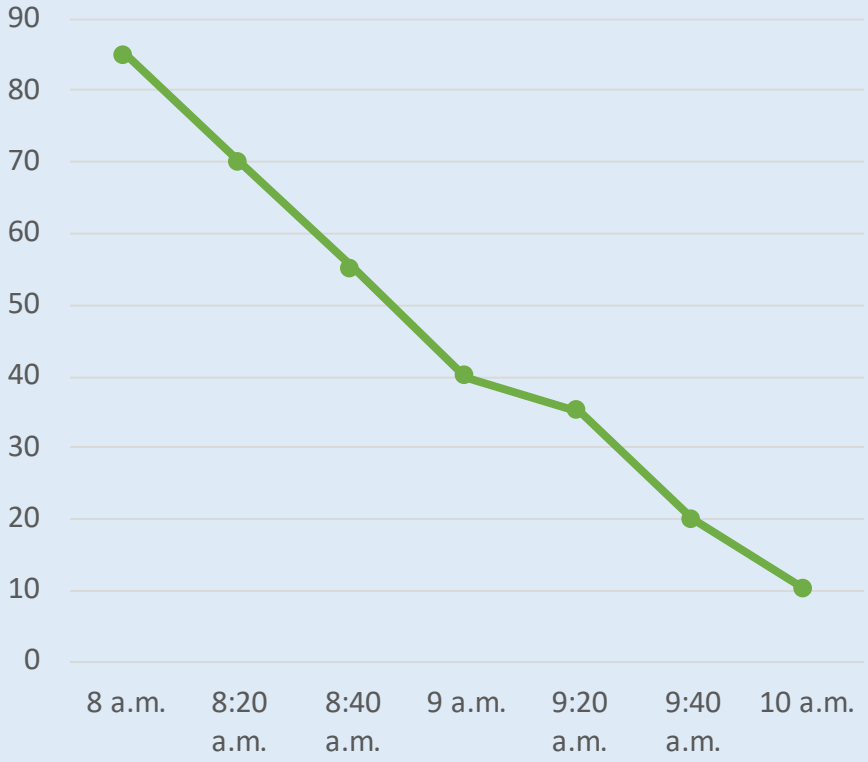
Do you agree with Tia?
Explain why

Reasoning 1 Line Graphs

Tia measured the temperature of a cup of tea every 20 minutes for 2 hours.
The graph shows Tia's results.

Tia

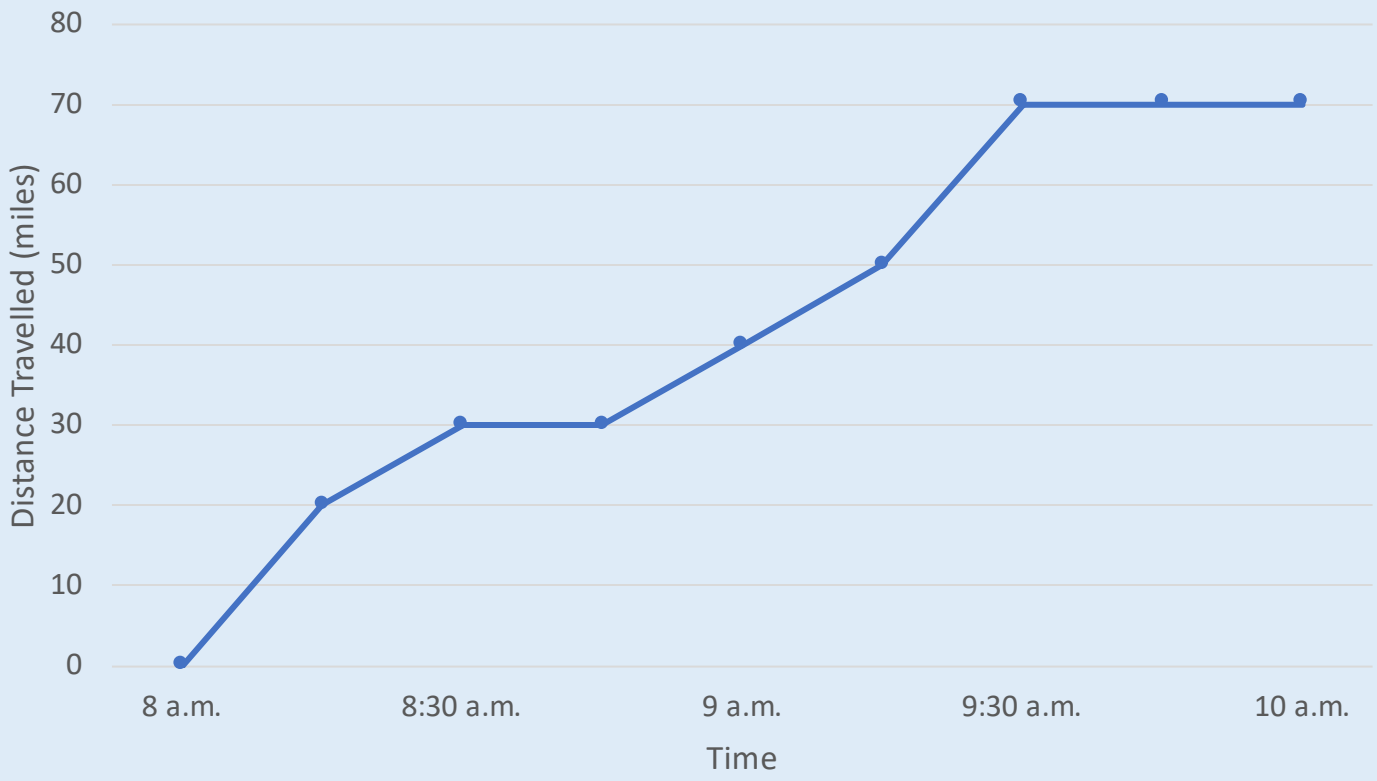
In the first 40 minutes the temperature of the tea had dropped by 15 degrees.



I do not agree with Tia. At 8:00 a.m. the temperature was 85 degrees and at 8:40 a.m. the temperature was 55 degrees, so it had dropped 30 degrees not 15 degrees.

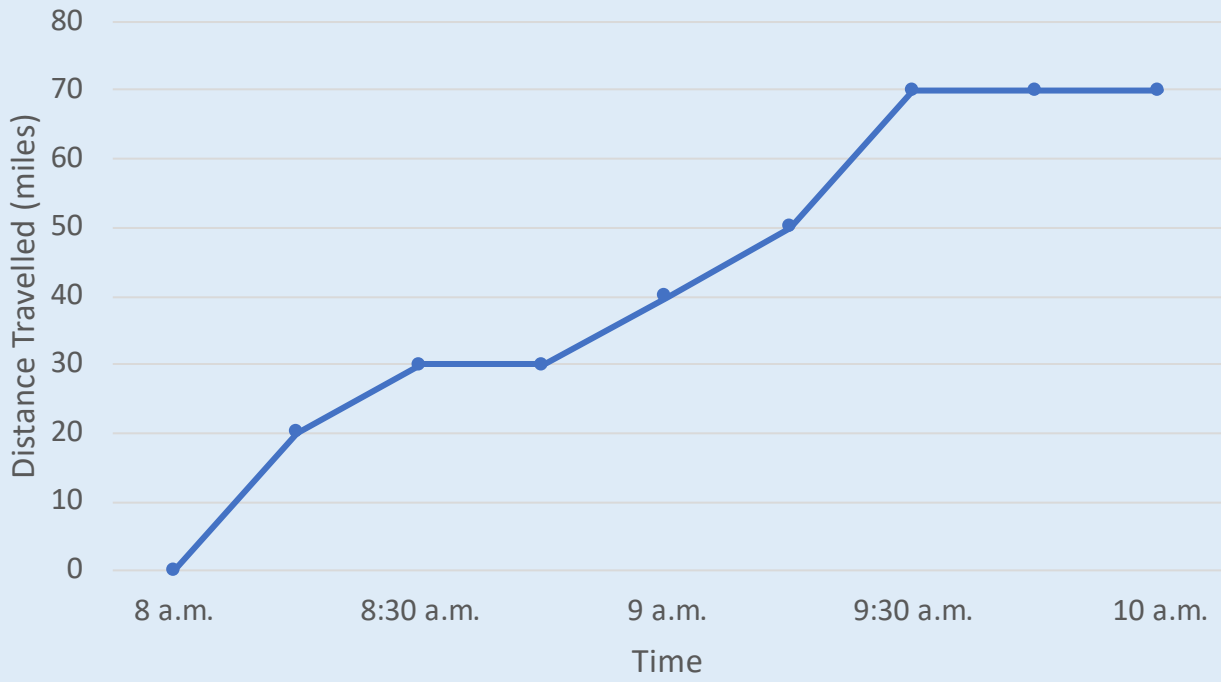
Reasoning 2 Line Graphs

Write a story to match the graph.



Reasoning 2 Line Graphs

Write a story to match the graph.



Example story:

Zach drove 30 miles in his car. At half past 8 he had a 15 minute rest then drove for another 40 miles until he reached his destination at 9:30 a.m.

Discussion

Line Graphs

Is this discrete or continuous data? How do you know?

What do you notice about the scale of the graph?

How could you make sure you read the graph accurately?

What other questions could you ask about the graph?

How many different ways can you fill in the stem sentences?