Statistics

This week we will learn to interpret and present discrete and continuous data. Please read the pages and complete all the questions in your book.

Remember to change the colour for the Self Assessment.

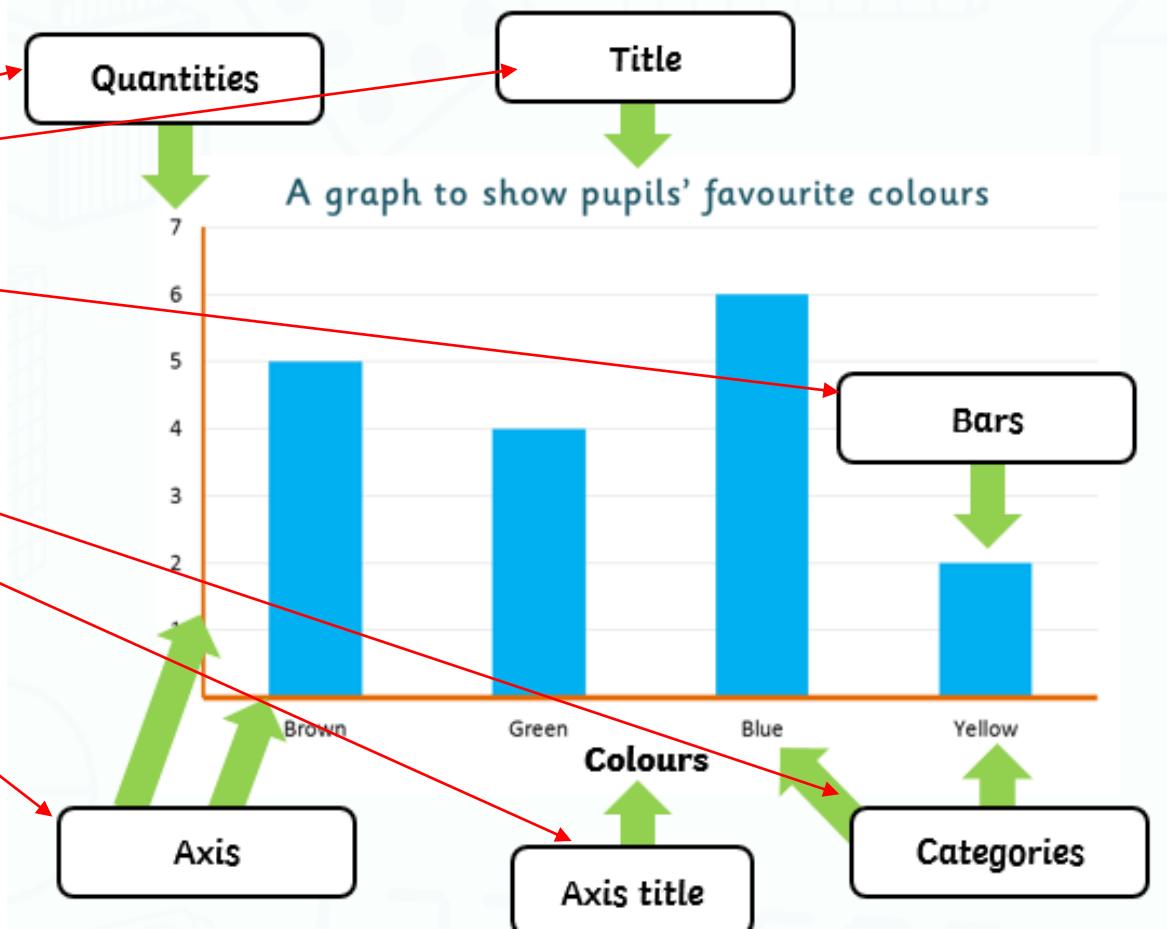
Additional practise sheets have the answers at the back, please do the Self Assessment too.

Data is very useful because it can be used to show patterns.

Data is used in every day life. For example: shops look at data to know how much of their stock sells at each time of the year. They use this information to predict how much they will need at certain points of the next year, or when busier periods might be.

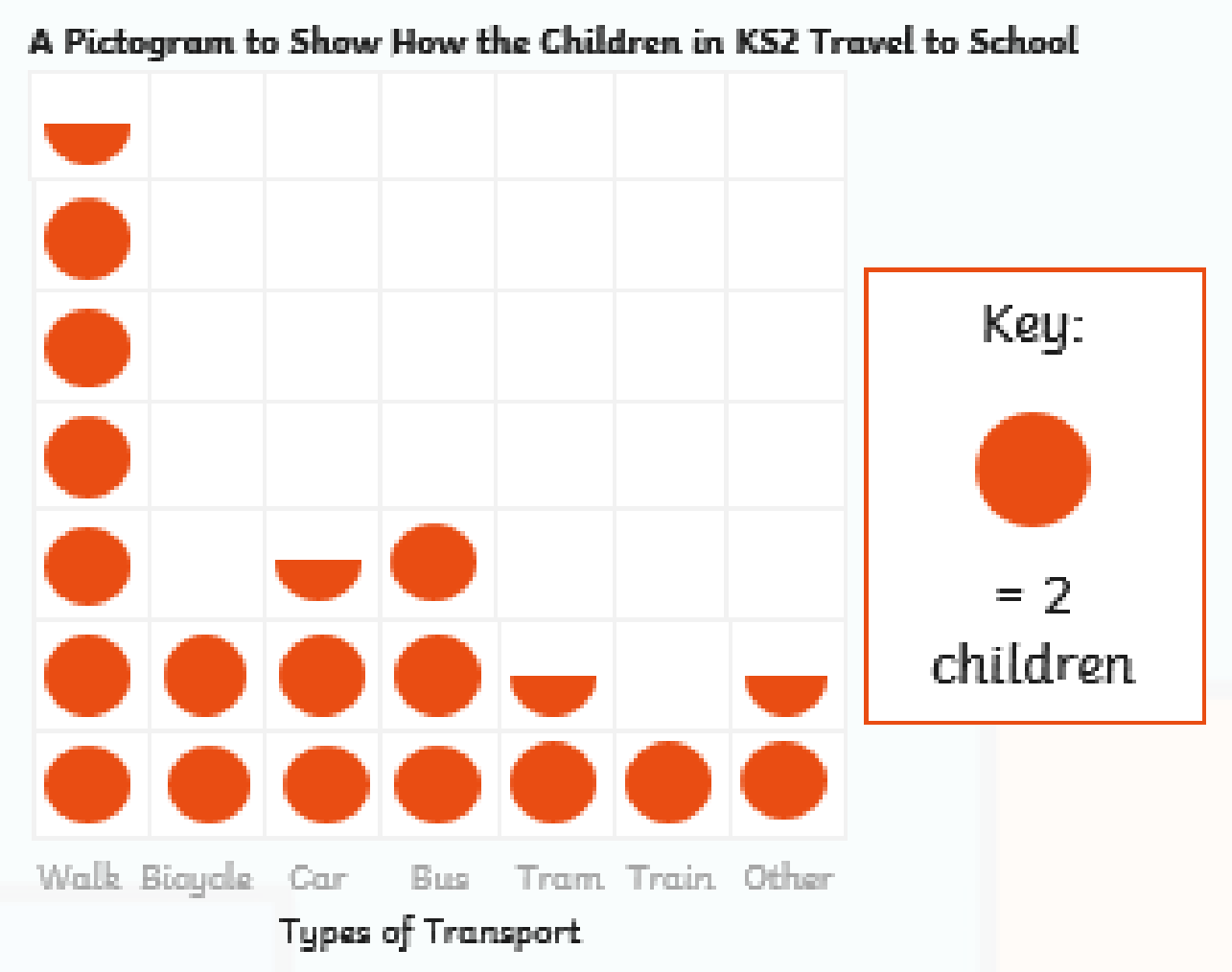
RECAP

What are the features of a graph?



Lets' RECAP types of graphs or charts.

Pictograms



A pictogram uses pictures or symbols to represent discrete data.

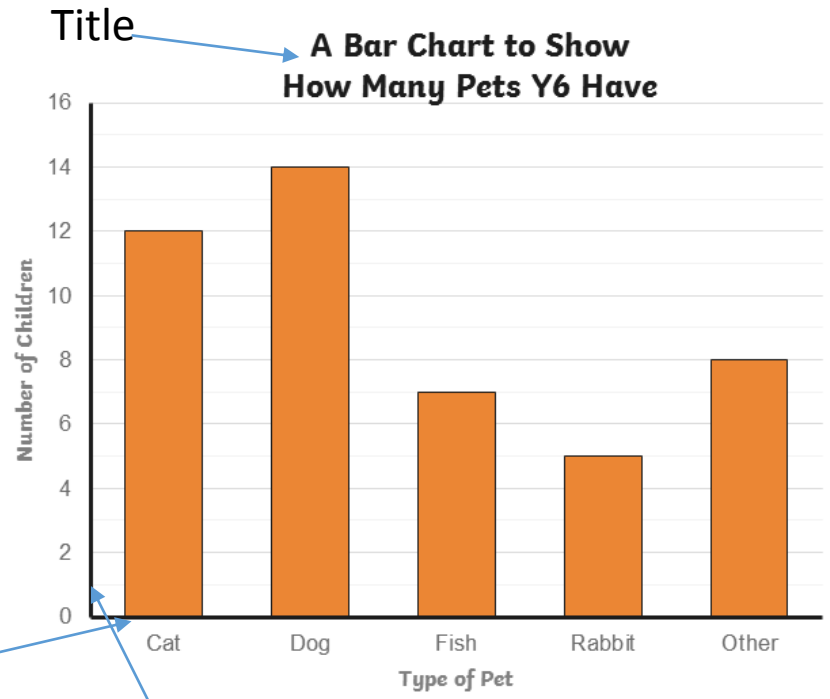
A key shows the value represented by one picture or symbol.

It is important to identify the value of the whole picture or symbol in a pictogram, as part symbols are often used to show different values.

Bar Charts

Important to know:
Data that is counted and has no in-between value is called discrete data. Discrete data is usually collected in a frequency table and then presented as a bar chart.

Pet	Number of Children
Cat	12
Dog	14
Fish	7
Rabbit	5
Other	8



A bar chart has a horizontal axis and a vertical axis.

A bar chart must always have a title explaining what it shows.

Bars must be carefully drawn to show the data.

There must be a gap between each bar.

Each bar must be the same width.

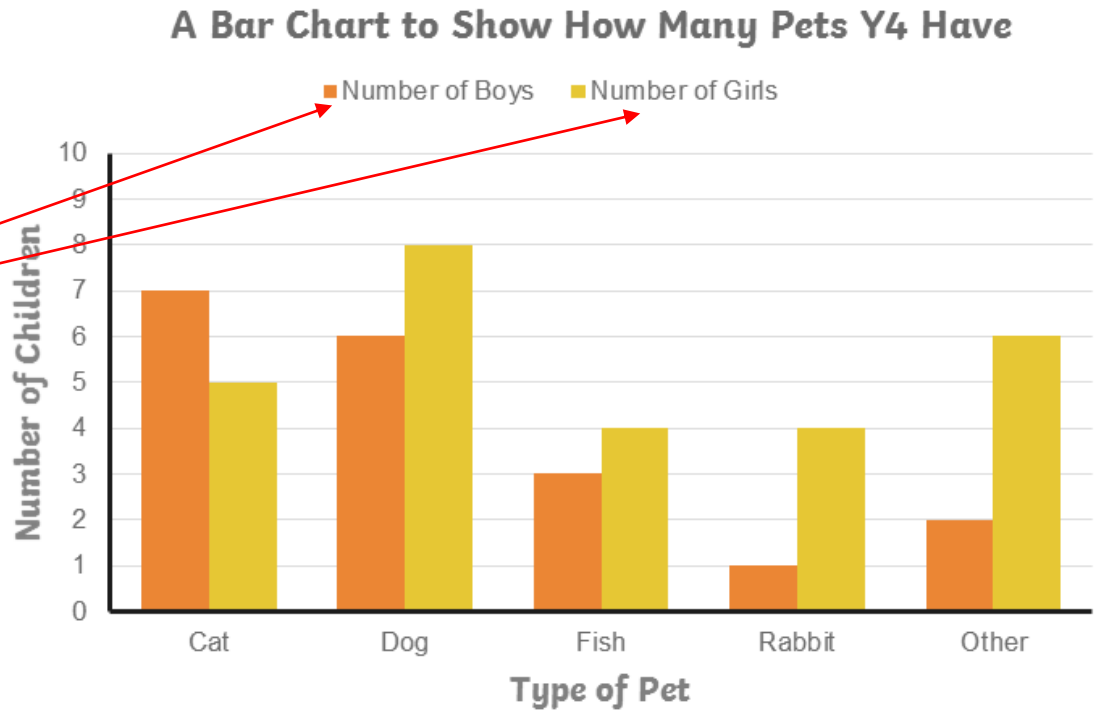
Discrete data in each category can also be represented in subcategories:

Previously we had only number of children.

Pet	Number of Children
Cat	12
Dog	14
Fish	7
Rabbit	5
Other	8

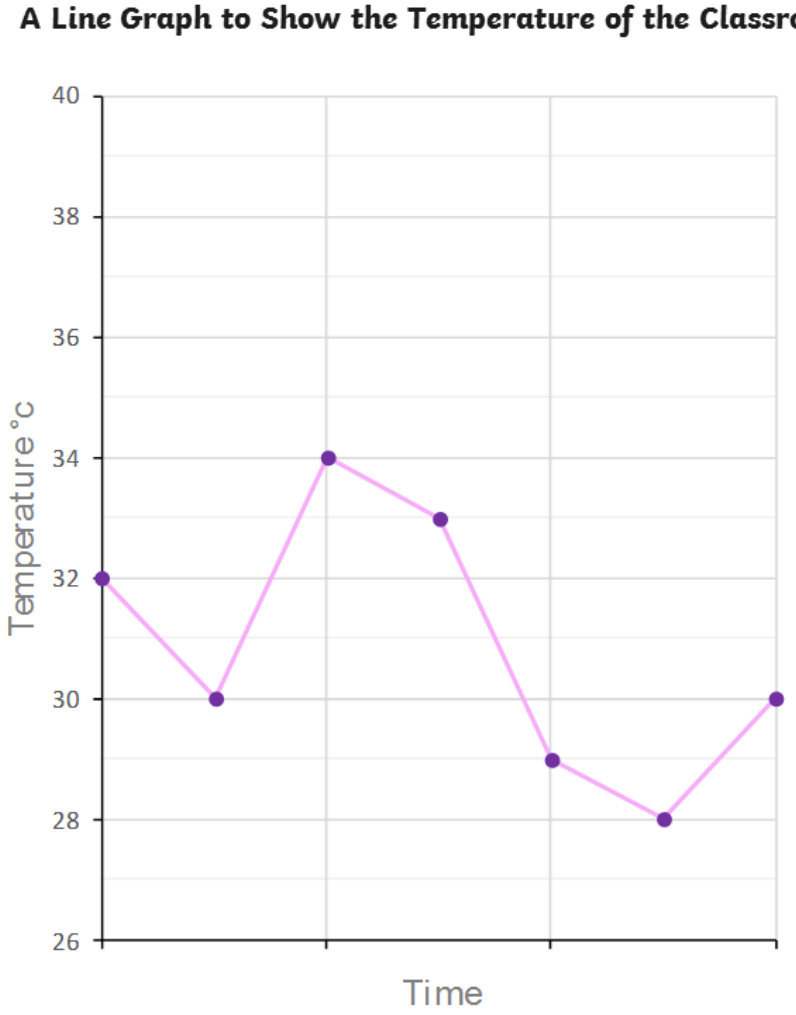
Pet	Number of Boys	Number of Girls
Cat	7	5
Dog	6	8
Fish	3	4
Rabbit	1	4
Other	2	6

We can draw a grouped bar chart to show this data. In this bar chart, each category has more than one bar, because we have subcategories. A key is used to identify the subcategories of the data.



Line Graphs

Line graphs are used to show changes to a measurement over time. They show continuous data.



Remember that data is plotted on to a line graph in the same way as a coordinate grid. These data plots (dots) are then joined with straight lines using a ruler.

We can use the line of the graph to describe general trends in the change of the measurement over time, or to find precise measurements at a given time.

Pie Charts

Pie charts show discrete data as proportional sectors of a circle.

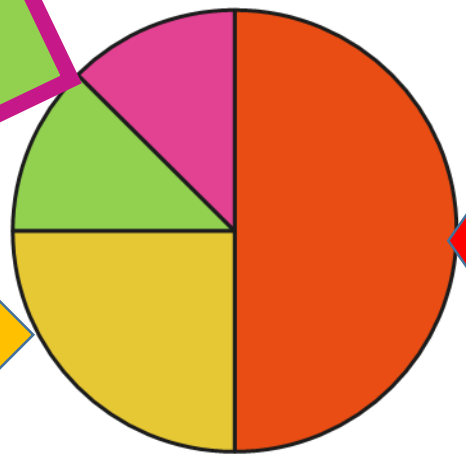
Every sector of a pie chart is a proportion of the whole.

You can explain what each sector represents using an angle, fraction or percentage.

Being able to convert between fractions, percentages and angles is a key skill for answering questions about data presented in a pie chart☺

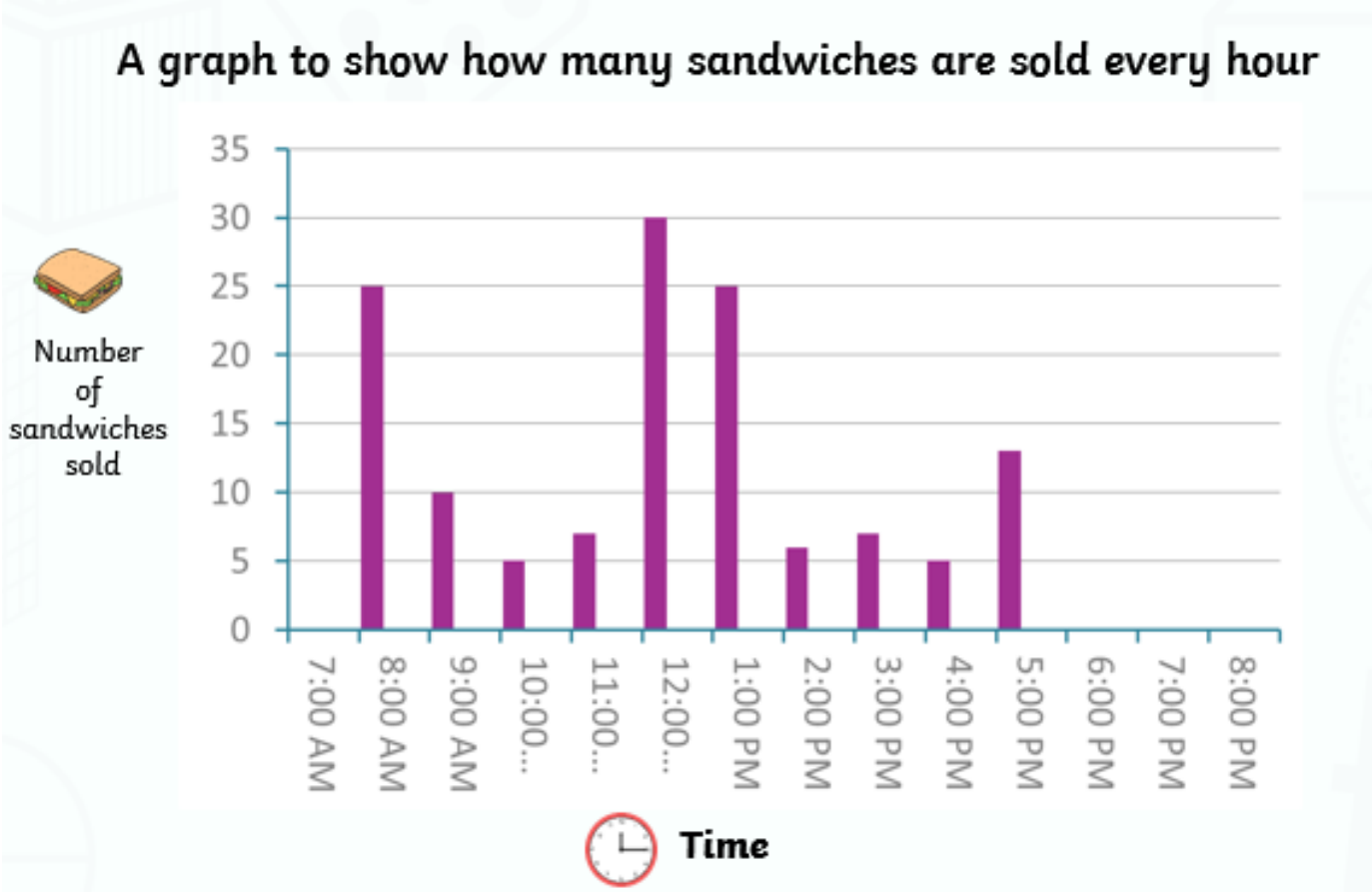
The data in these two sectors is 1/8 of the whole amount. It is 12.5% and 45 degrees.

The data in this sector is $\frac{1}{4}$ of the whole amount. It is 25% and 90 degrees.



The data in this sector is $\frac{1}{2}$ of the whole amount. It is also 50% and 180 degrees.

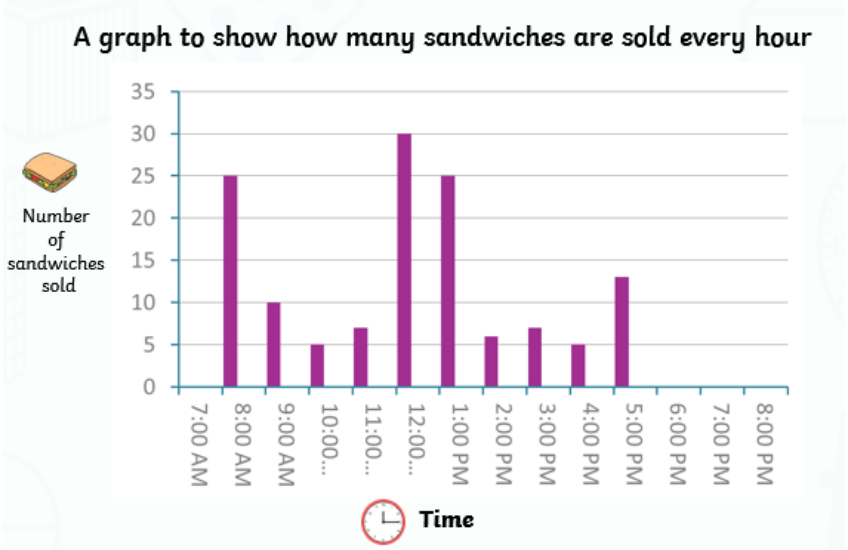
Let's practise to interpret data (write your answers in your book):



From just looking at the data this graph represents, you managed to answer the first 4 questions by interpreting the data. The graph itself did not show these answers.

1. How many sandwiches are sold between 8:00am and 9:00pm?
2. How many more sandwiches are sold between 12:00pm and 1:00pm than between 9:00am and 10:00am ?
3. Which times of the day are most sandwiches sold? Why do you think this is?
4. Looking at the graph, what time do you think the sandwich shop opens?
5. Looking at the graph, what time do you think the sandwich shop closes?
6. Why do you think there is a sudden increase of sandwiches being sold at 5 o'clock?

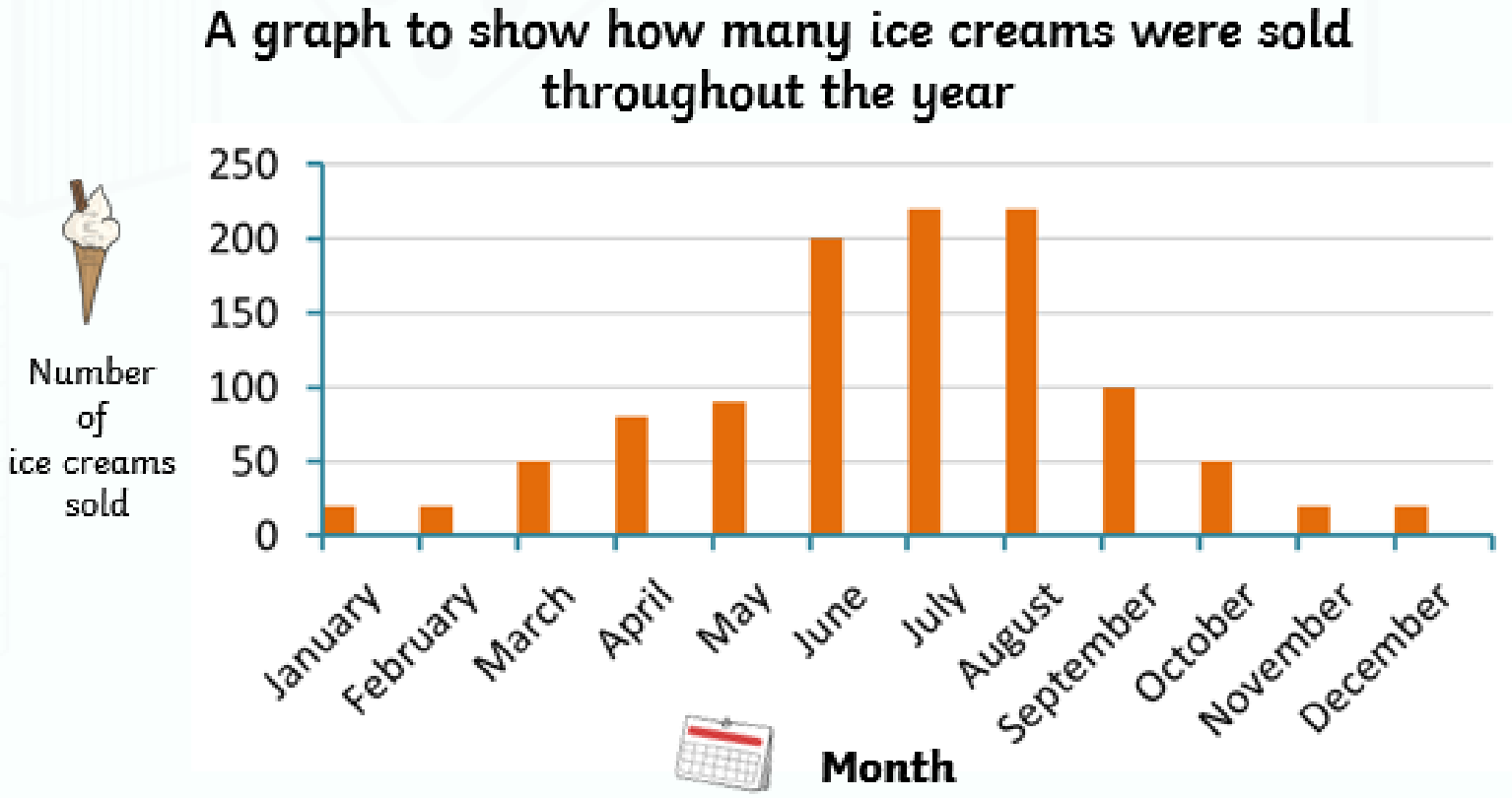
Self Assessment using different colour.



From just looking at the data this graph represents, you managed to answer the first 4 questions by interpreting the data. The graph itself did not show these answers.

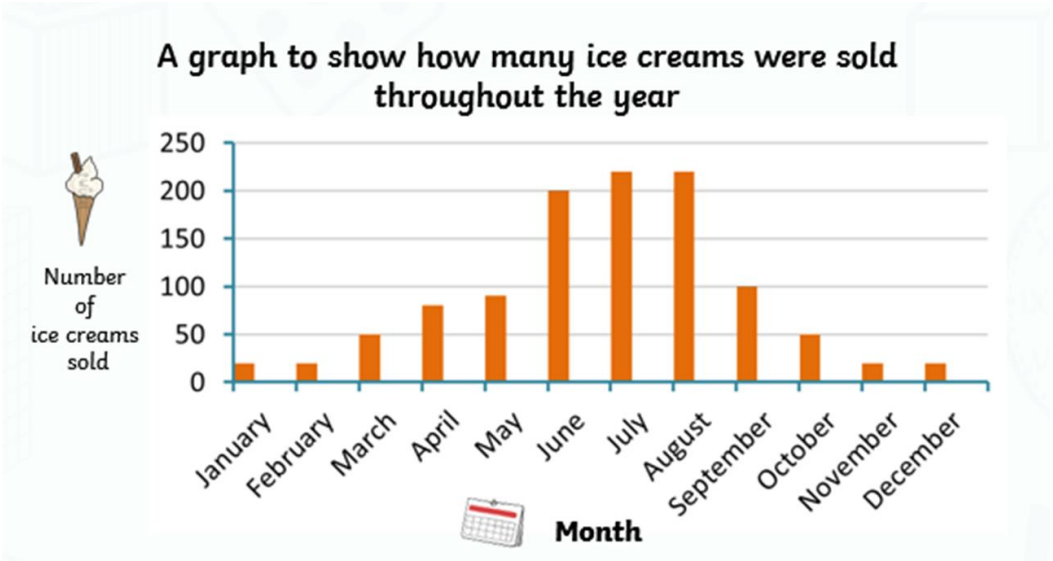
1. Between 8:00am and 9:00pm there are 35 sandwiches sold.
2. There are 40 more sandwiches sold between 12:00pm and 1:00pm than between 9:00am and 10:00am.
3. Most sandwiches are sold at 12, 1pm and 8am. People buy sandwiches before their work and during the lunch time break.
4. I think the sandwich shop opens at 8am.
5. I think the sandwich shop closes at 6, because they are still selling sandwiches at 5 pm.
6. I think there is a sudden increase of sandwiches being sold at 5 o'clock because people shop after work.

Answer the following questions in your book:



1. In which 3 months was the most ice cream sold?
2. Why do you think this is?
3. Why do you think July and August had the most ice cream sale?
4. When were the least ice creams sold? Why do you think this is?

Self Assessment using different colour.



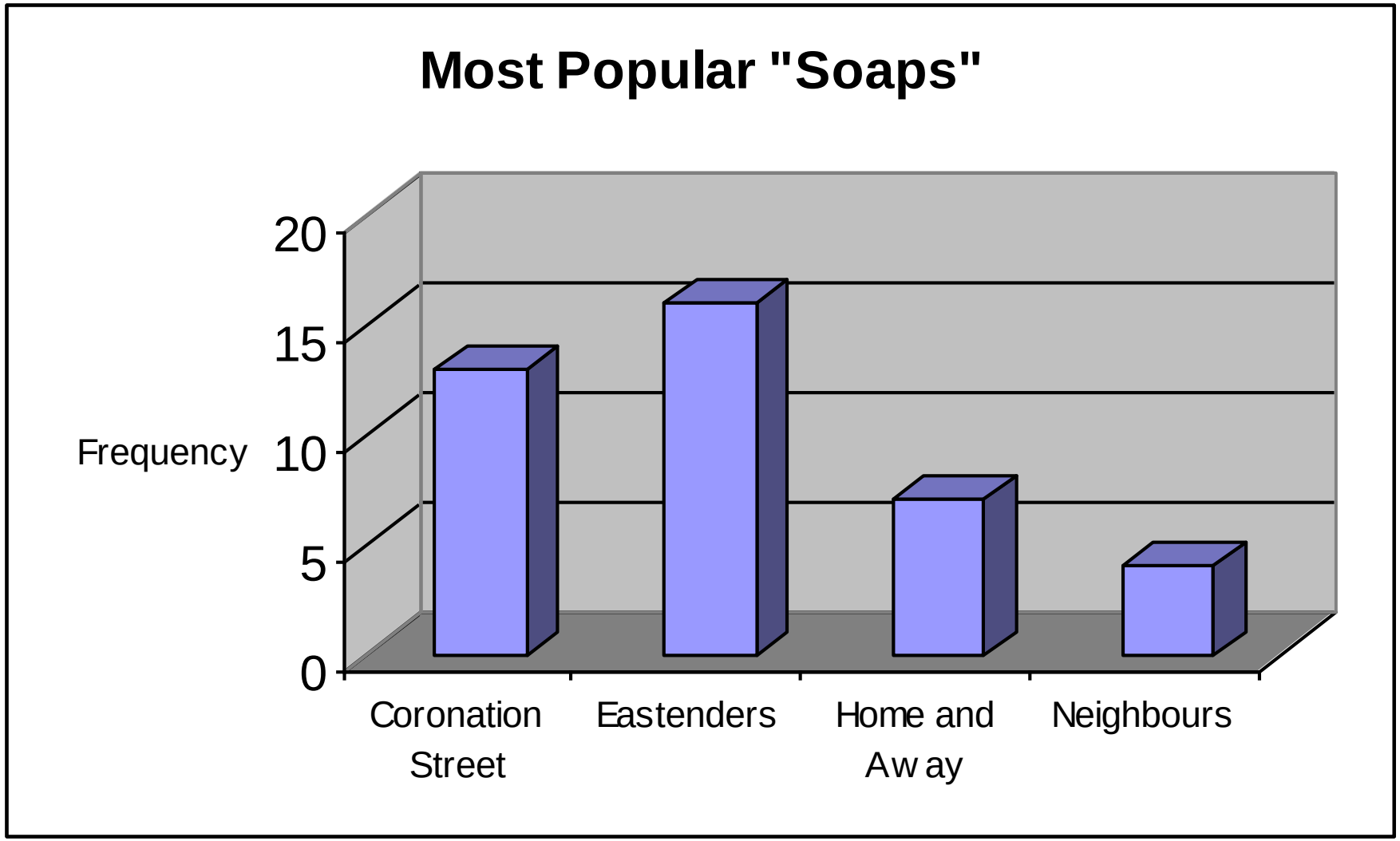
1.The most ice cream were sold in June, July and August.

2.It is the Summer season and people often go on holidays.

3.In July and August children have Summer holidays.

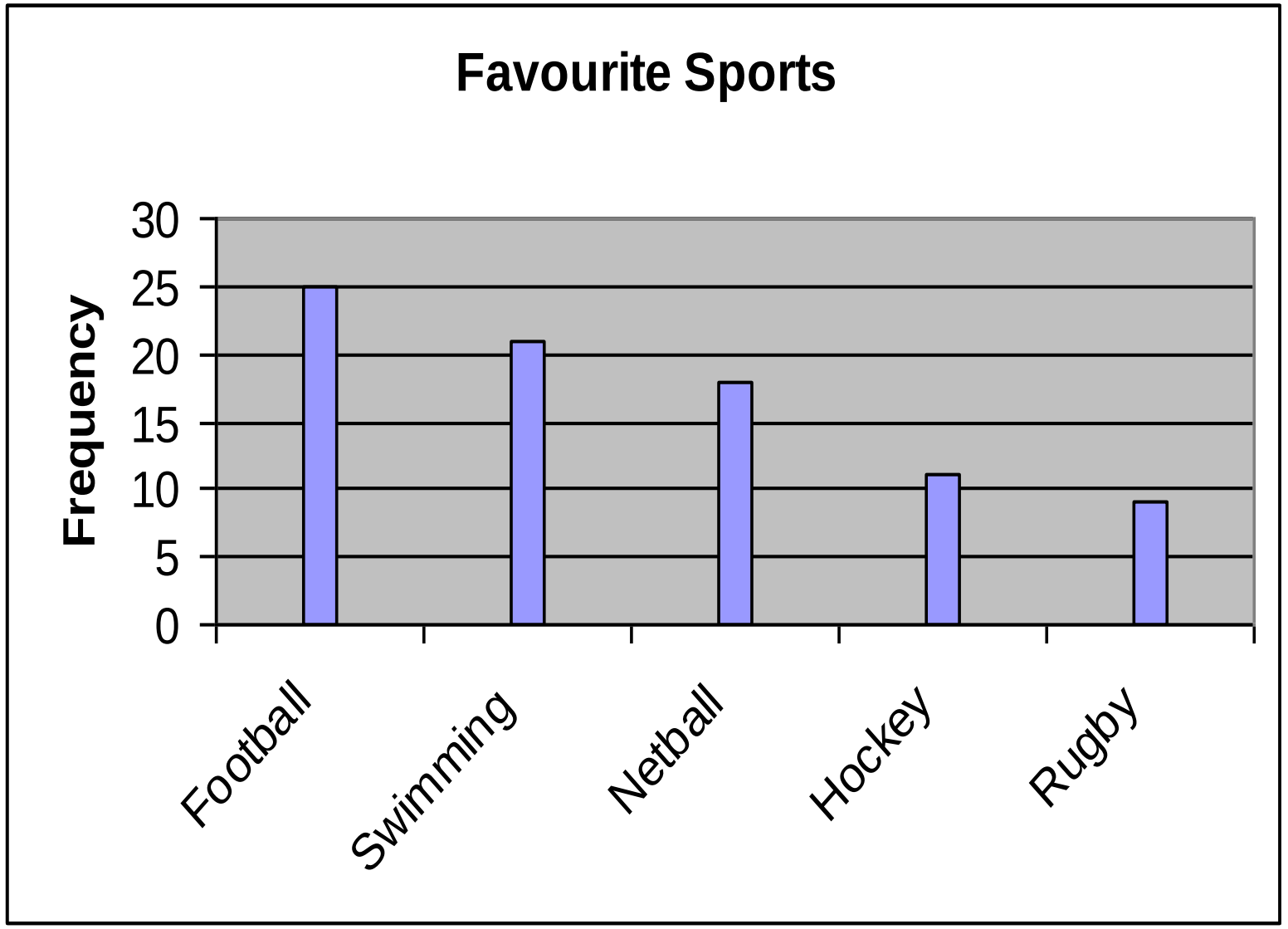
4. The least ice creams sold in November, December, January and February as the weather is cold.

Interpreting the bar chart answer the following question:



How many people participated in this survey, if half of the people surveyed prefer EastEnders?

Think how do we know this.



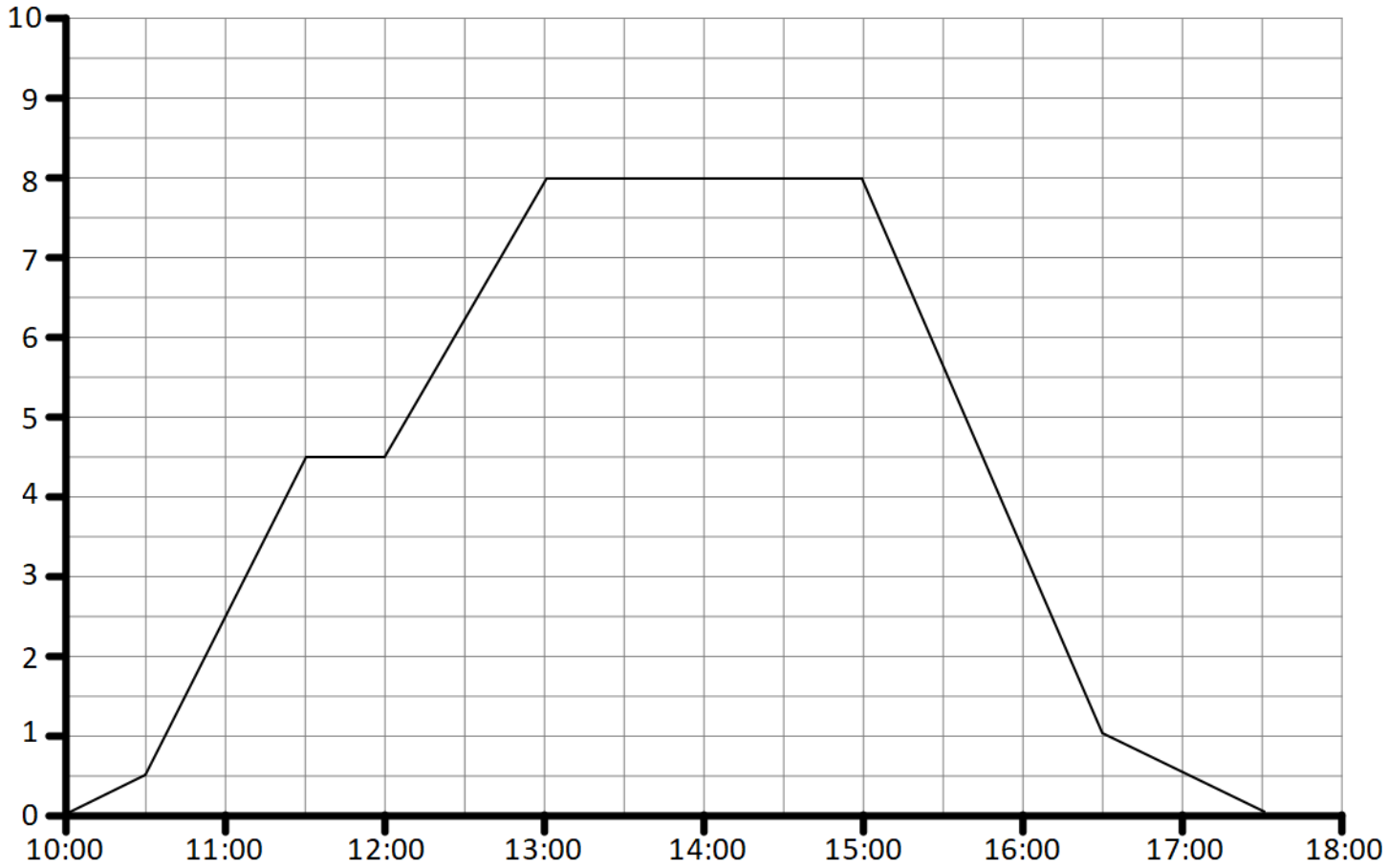
What is the least favourite sport?

How many more people choose football than netball?

What is the difference between swimming and rugby?

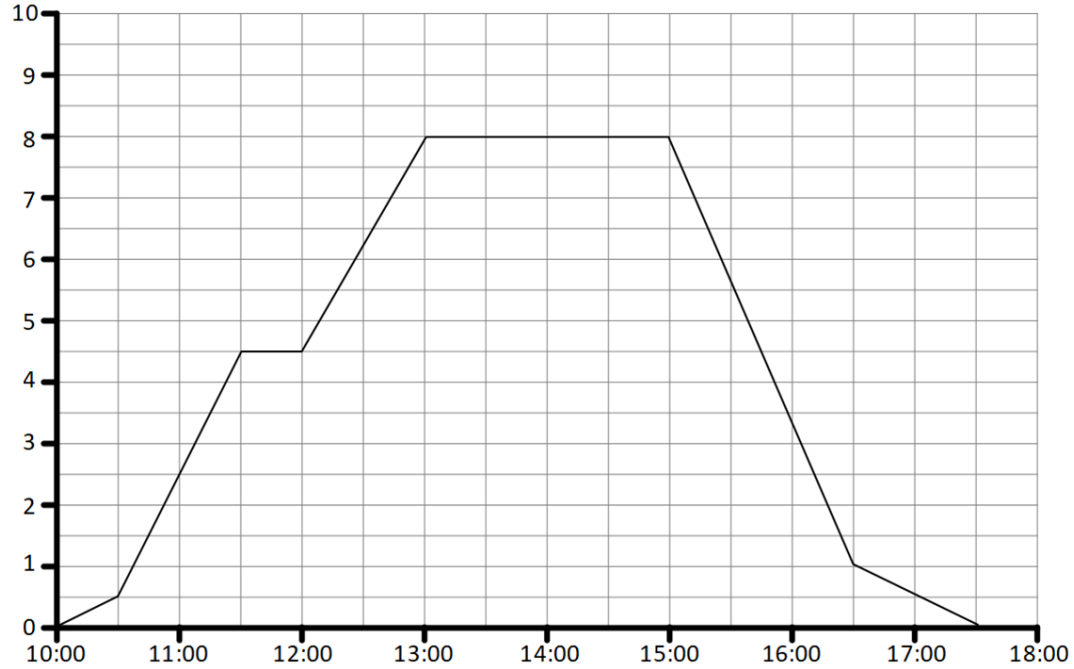
How many people participated in the survey? How do you know?

In your book write a short story to represent this time graph.



Self Assessment using different colour.

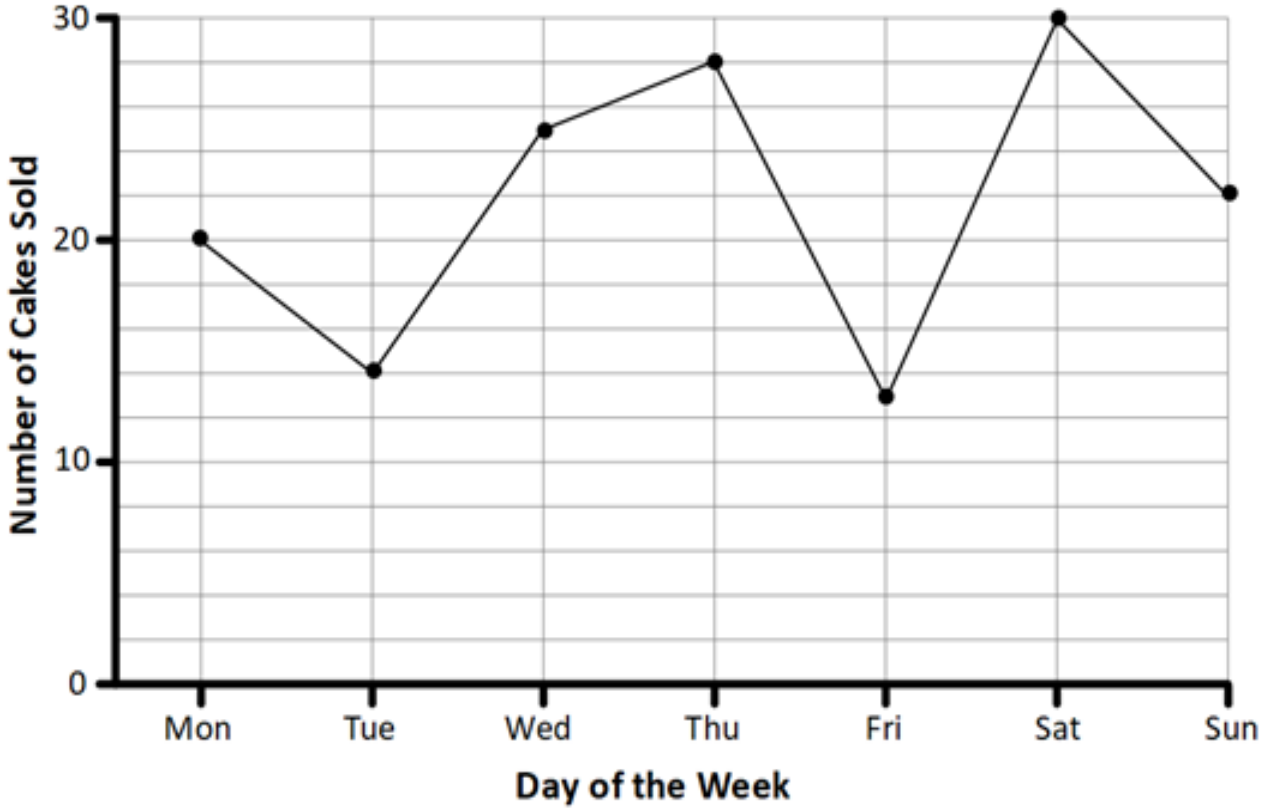
In your book write a short story to represent this time graph.



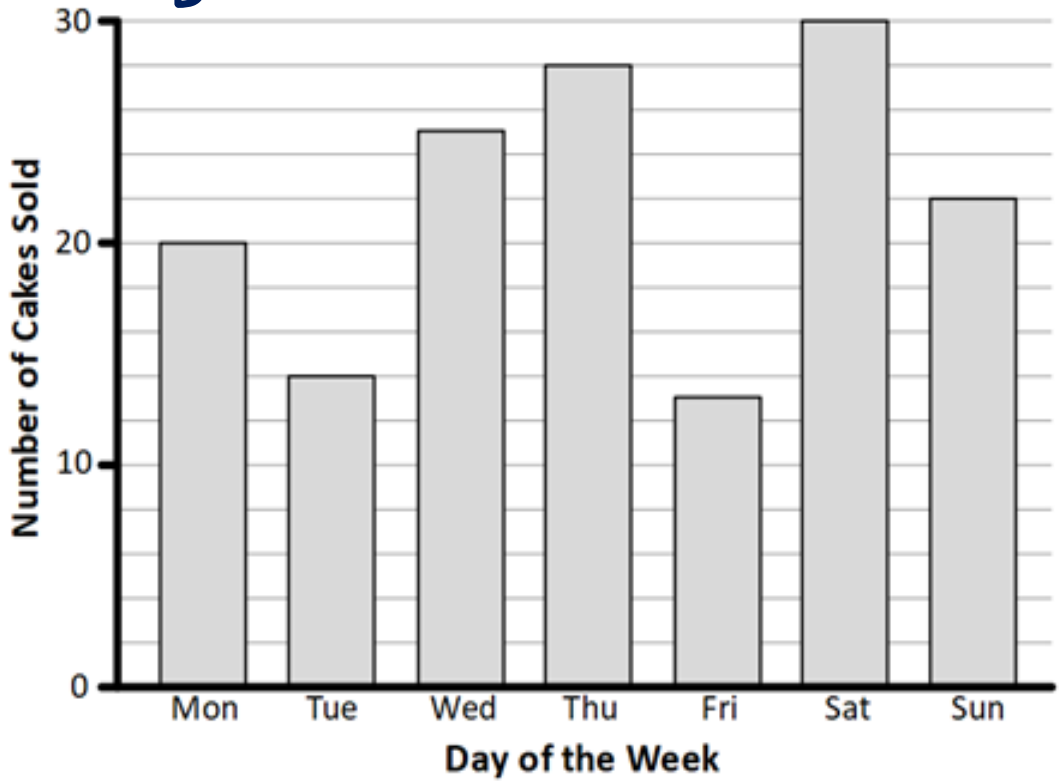
Answers will vary, but **should account for the distance travelled, the times when the distance didn't change and the return to the starting point.**

Let's compare data in graphs A & B in your books:

A



B

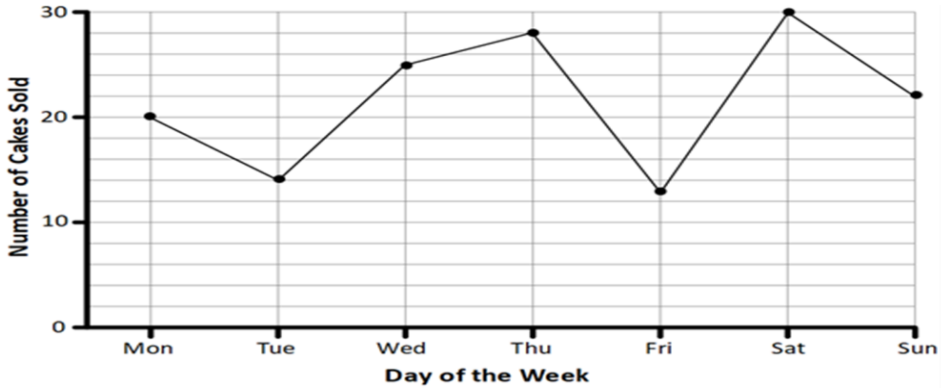


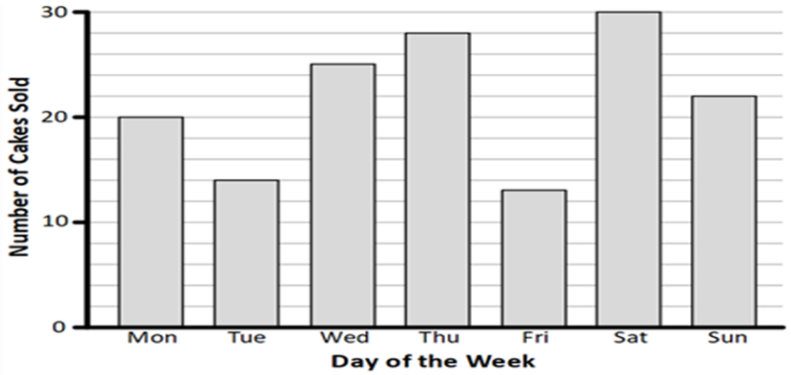
1. What's the **same**?
2. What's **different**?
3. Which graph do you think is **best** for the data?

Explain your reasoning in your book.

Self Assessment using different colour.

Let's compare data in graphs A & B:





1. The date represents the number of cakes sold during the week.
2. Different representation of sale numbers (line graph and a bar chart).
3. Answers will vary. Some of you may note that the bar chart is easier to read and that most of the points along line graph have no meaning due to the data being discrete rather than continuous.

Sam, Jen, Charley and Jo surveyed the **ages** of people who were in a local park on a Saturday afternoon. They recorded the data in this **table:**

Age in Years	0-5	6-18	19-29	30-39	40-49	50-59	60+
Number of People	7	65	12	9	10	5	8

Sam We should represent the data in a **bar chart**

Jen We should just *leave* the data in a **table**

Charley We should represent the data in a **tally chart**

Jo We should represent the data in a **pictogram**

Who do you agree with?
Explain your reasoning in your book.

Self Assessment using different colour.

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Jo – We should represent the data in a **pictogram**

Who do you agree with?
Explain your reasoning in your book.

Answers will vary. However, you should note that the large number of people in the 6-18 age range will make any visual representation of the data look strange and make the scale/key harder to decide upon – best left in a table☺

Jo asked the children in her school what is their **favourite colour**. She recorded her results in the table below:

Favourite Colour	red	blue	green	pink	yellow	purple	orange
Number of Children	17	14	21	11	15	8	13

Jo decided to represent her data in a pictogram using a key so that  = 5 children.

Do you think this is a good idea? Explain your answer in your book.

How would you represent the data and why?

Self Assessment using different colour.

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Favourite Colour	red	blue	green	pink	yellow	purple	orange
Number of Children	17	14	21	11	15	8	13

Jo decided to represent her data in a pictogram using a key so that ★ = 5 children.

Do you think this is a good idea? Explain your answer in your book.

How would you represent the data and why?

No. Trying to represent (e.g) 19 children would be impossible. I would use a ★ = 2 key so I could represent all the numbers including a half star symbol for odd numbers.

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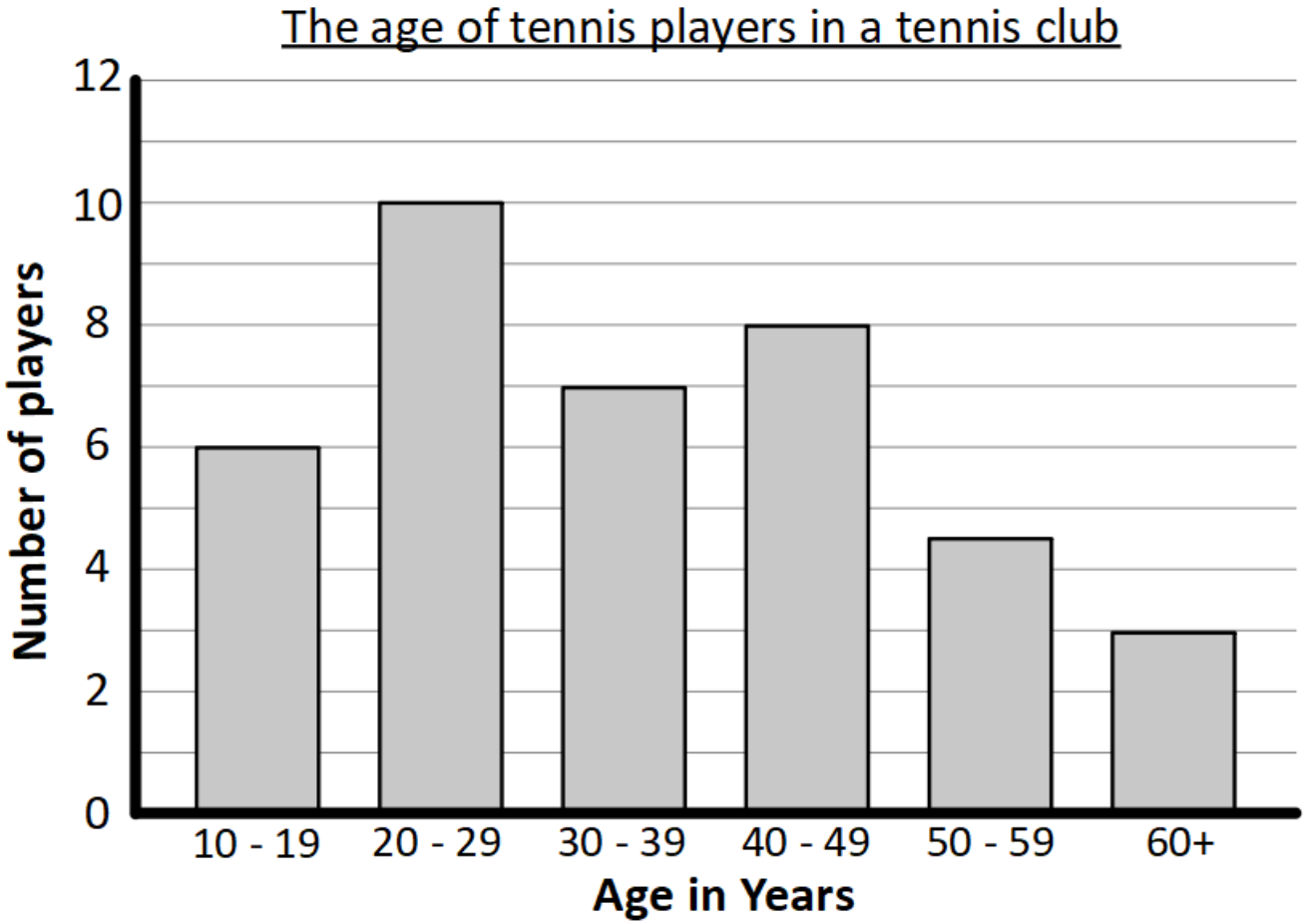
Look at this bar graph. Which bar must be incorrect?
Explain your reasoning in your book.



Sam says: 'There are 6 fifteen-year olds in the tennis club.'
Do you agree with his statement? Explain your reasoning in your book.

Self Assessment using different colour.

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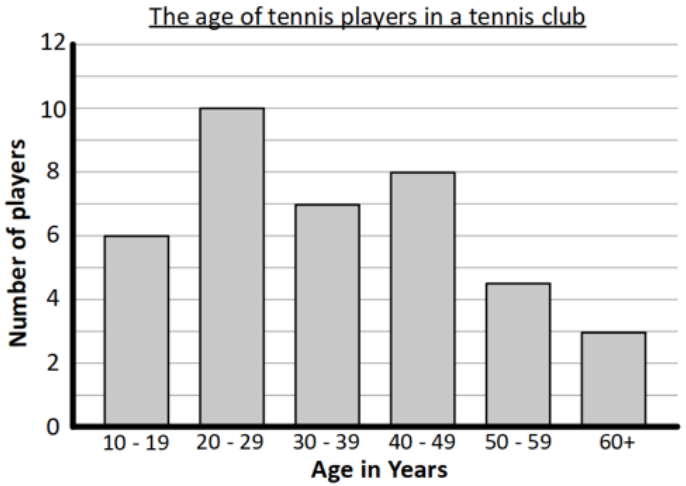

Sam says: 'There are 6 fifteen-year olds in the tennis club.'
Do you agree with his statement? Explain your reasoning in your book.

The 50-59 bar must be incorrect because you can't have 4 $\frac{1}{2}$ people.

There is no way of knowing how many 15 year olds there are from the data. There could be six or none in that age group.

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