Lesson Printables

Be a rockstar and only print what you need!

Planners: 2-3

Graphs
Sunlight: 4-7
Twilight: 8-12
Midnight: 13-17

Extras
Optional Recording Log: 18
Sunlight Answers: 19-22
Twilight Answers: 23-27
Midnight Answers: 28-32

**Printing in the US? Scale to 'fit to printable area' in order to get the best print.*

LESSON 1: Data Handling/Probability - Interpreting bar graphs, line graphs, line plots and pie graphs

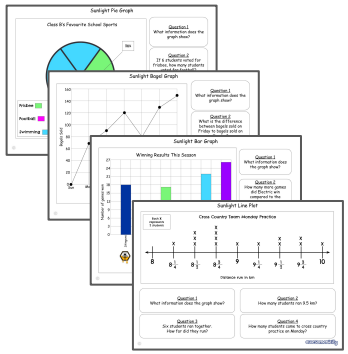
Starter	Main Activity and Input: Interpreting bar graphs, line graphs, line plots and bar graphs.	Plenary
Duck Count: How many ducks could be in the 3 bathtubs? Students should estimate first and then click 3 times to reveal clues that will help them find an exact answer. (Click one at a time and discuss the information as a class.) **To support:** 1. What do students notice about the sizes of the bathtubs? How could this influence their estimations? 2. Review the meaning of factor. **To challenge:** 1. What are some other ways students could divide the ducks into 3 tubs? Is it possible to have 3 odd totals? Can each total be a multiple of 3?	**Input:** 1. Slide 6 shows animals who are training for the Olympics and have been gathering data from their training sessions. What do students already know about data? What are some ways data can be presented? Discuss and share ideas as a class. 2. Slide 7 shows a graph. What do students remember about this type of data? Elicit from students that it is a double bar graph. It shows information about male and female athletes on the Latvian Olympic team. Slide 8 asks students to identify the x and y axis labels, the title and the scale of the graph. Invite students to answer one or more of the data handling questions connected to the graph and then share answers as a class. 3. This process repeats on slides 9 and 10 with a double line graph. What do students notice about the graph? Slide 10 explains that line graphs show change over time. What change is being shown here? Elicit from students that the graph shows how many kilometers the frogs swam during training. Give students time to answer and share answers to questions about the graph. 4. Slide 11 introduces a new graph. What do students notice? Slide 12 explains this form of data is called a line plot. The graph shows how far individual students have run during training. Give students time to answer one or all of the questions connected to the graph. *Note, line plots might not be used in the curriculum that you follow. You could treat these graphs similar to pictograms and ask students to make observations and solve the data handling questions or skip over these slides.* 5. Slide 13 introduces a pie graph. What do students notice? Slide 14 explains pie graphs show data in the form of 'pie slices'. They show fractions of a whole and often show percentages. Note, we go further into detail on pie graphs in future lessons. Slide 14 asks students to answer questions related to the graph. **Activity: Interpreting data and answering related questions.** 1. Print graphs (choose the ones most appropriate for your curriculum) for each learning zone. You could print several copies and stick them up around your classroom. Students could work in pairs or individually. They should pick a graph and record the data that it shows. Students could use the optional recording logs found in the printables to record the information. 2. Students could also answer the questions that relate to each graph. Students do not need to complete questions for all of the graphs within their learning zone. **To support:** 1. Print out recording logs so that students can organise their thinking. 2. Sunlight Zone uses single bar graphs and single line graphs. **To challenge:** 1. Twilight and Midnight Zone graphs have a variety of scales and include double bar graphs and double line graphs. 2. Students could create their own question that connects to the graph they are investigating.	**Best Pick:** Look at the scenarios on the board. Which type of graph would best be used to show the data? **Discuss:** 1. As a class, discuss if a bar graph, line graph, line plot or pie graph is most appropriate for each scenario. Answers could vary. E.g. The sandwich sales data could be shown using all 4 types of graphs.

Things that might be useful for this lesson:

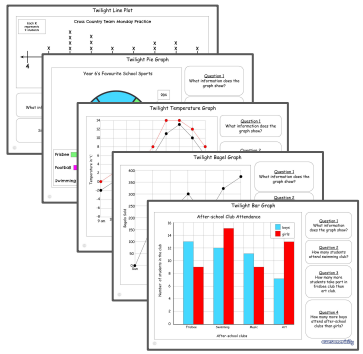
- Individual whiteboards:
  - ➔ Help students to record their thinking and share ideas with others.
- Rulers:
  - ➔ Help students to follow between the scale and the plots.

Peek at the Printables:

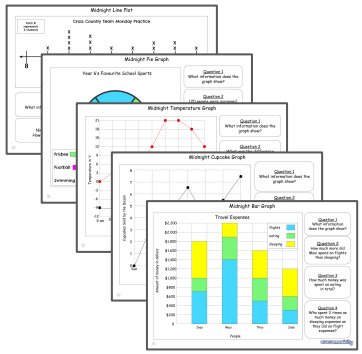
Sunlight Zone



Twilight Zone



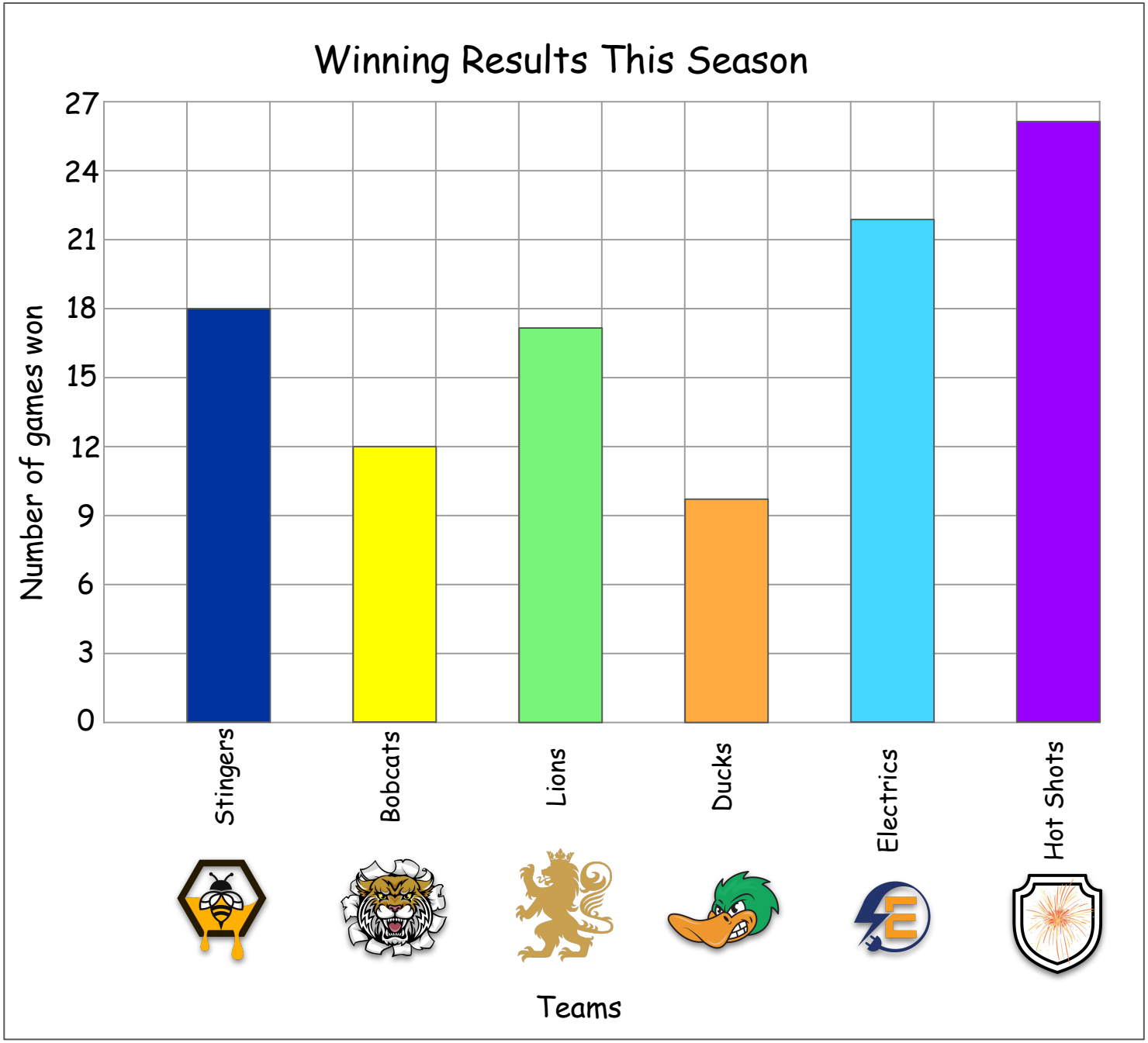
Midnight Zone



Greener Alternatives:

➔ Print graphs and place them in stations. Students can record their findings in their books.

Sunlight Bar Graph



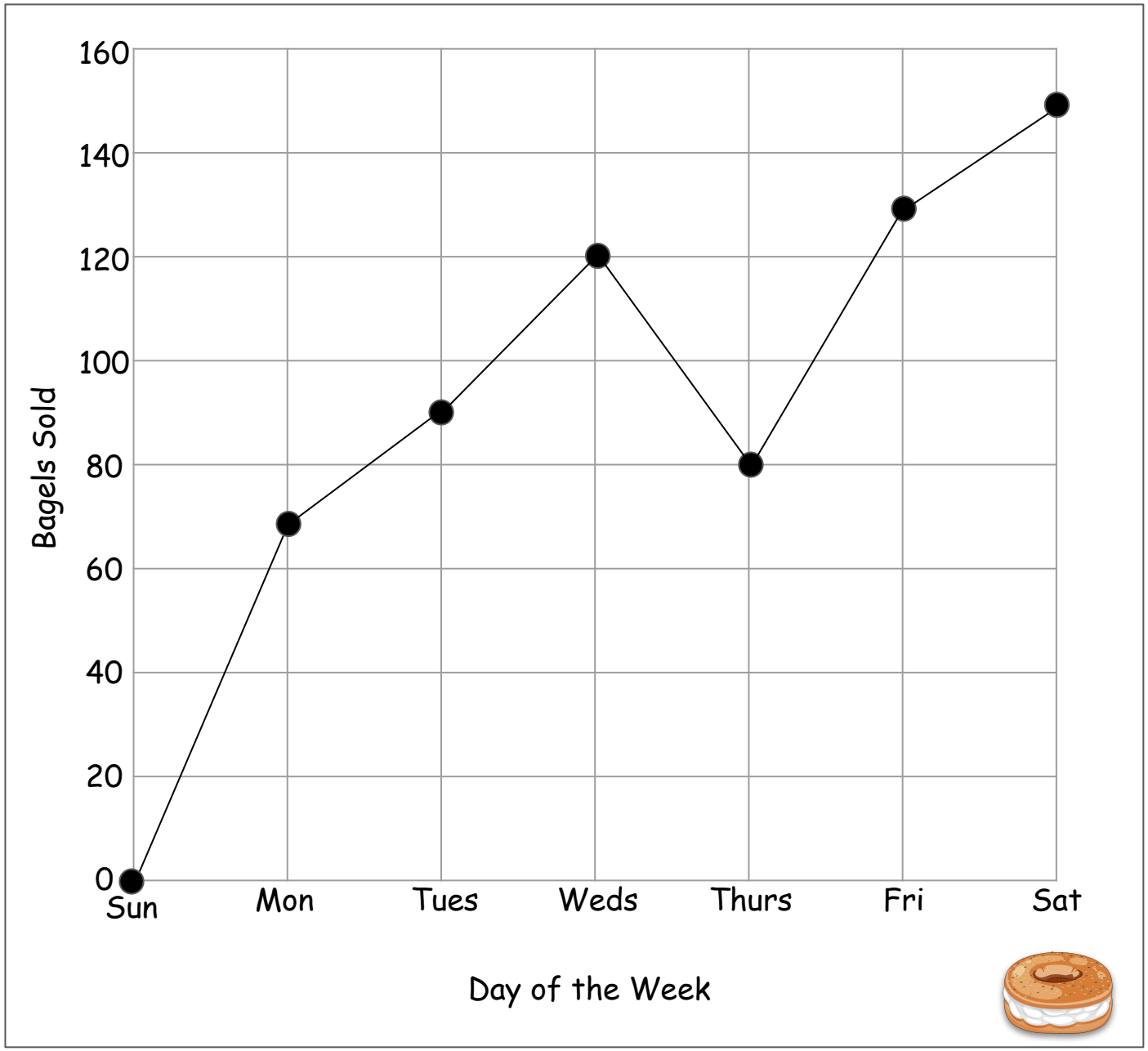
Question 1
What information does the graph show?

Question 2
How many more games did Electric win compared to the Bobcats?

Question 3
If a win earns a team 3 points, how many points have the Hot Shots earned this season?

Question 4
If each team played 36 games this season, how many games did the Lions lose?
(Teams can only win or lose a game.)

Sunlight Bagel Graph



Question 1
What information does the graph show?

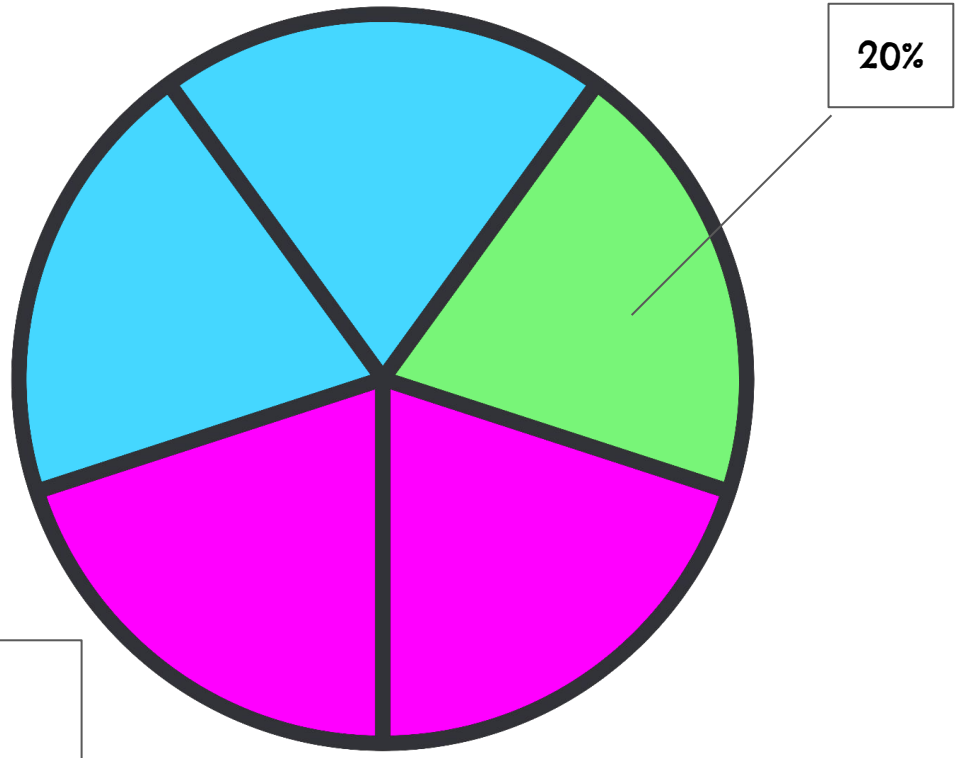
Question 2
What is the difference between bagels sold on Friday to bagels sold on Monday?

Question 3
How many bagels were sold between Monday and Wednesday?

Question 4
If a bagel costs $3, what is the difference between the amount of money made on Tuesday compared to Saturday?

Sunlight Pie Graph

Class B's Favourite School Sports



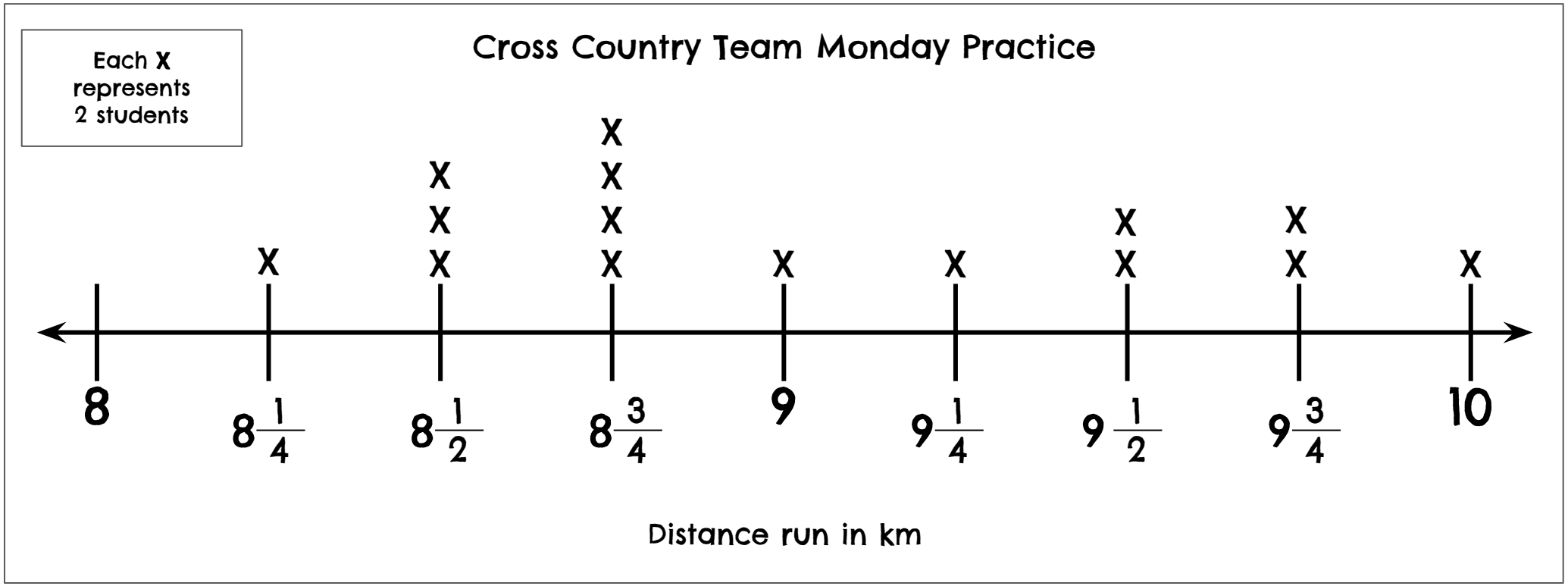
Question 1
What information does the graph show?

Question 2
If 6 students voted for frisbee, how many students voted for football?

Question 3
How many students voted for swimming and football in total?

Question 4
What fraction of students voted for frisbee? Swimming? Football?

Sunlight Line Plot



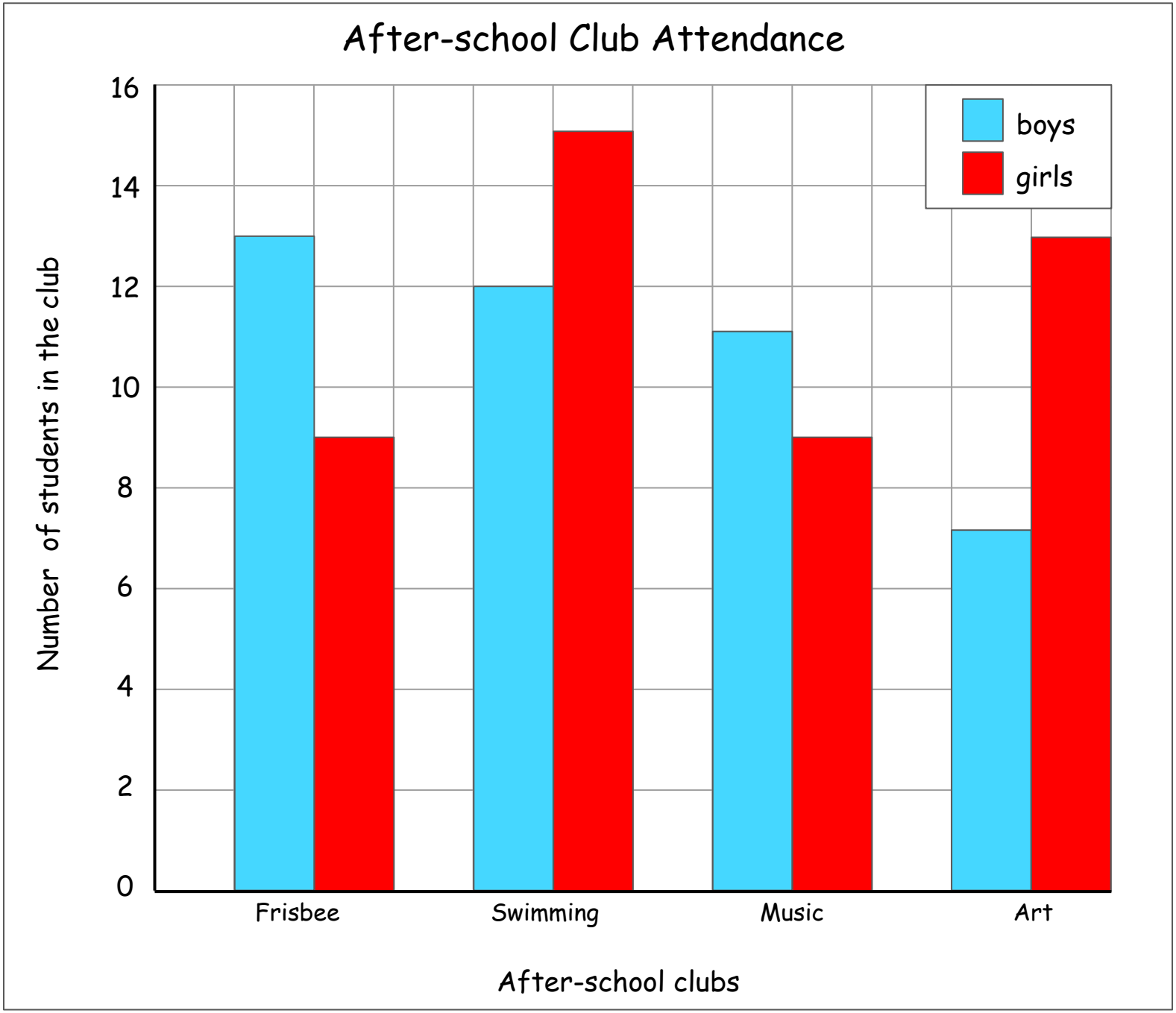
Question 1
What information does the graph show?

Question 2
How many students ran 9.5 km?

Question 3
Six students ran together.
How far did they run?

Question 4
How many students came to cross country practice on Monday?

Twilight Bar Graph



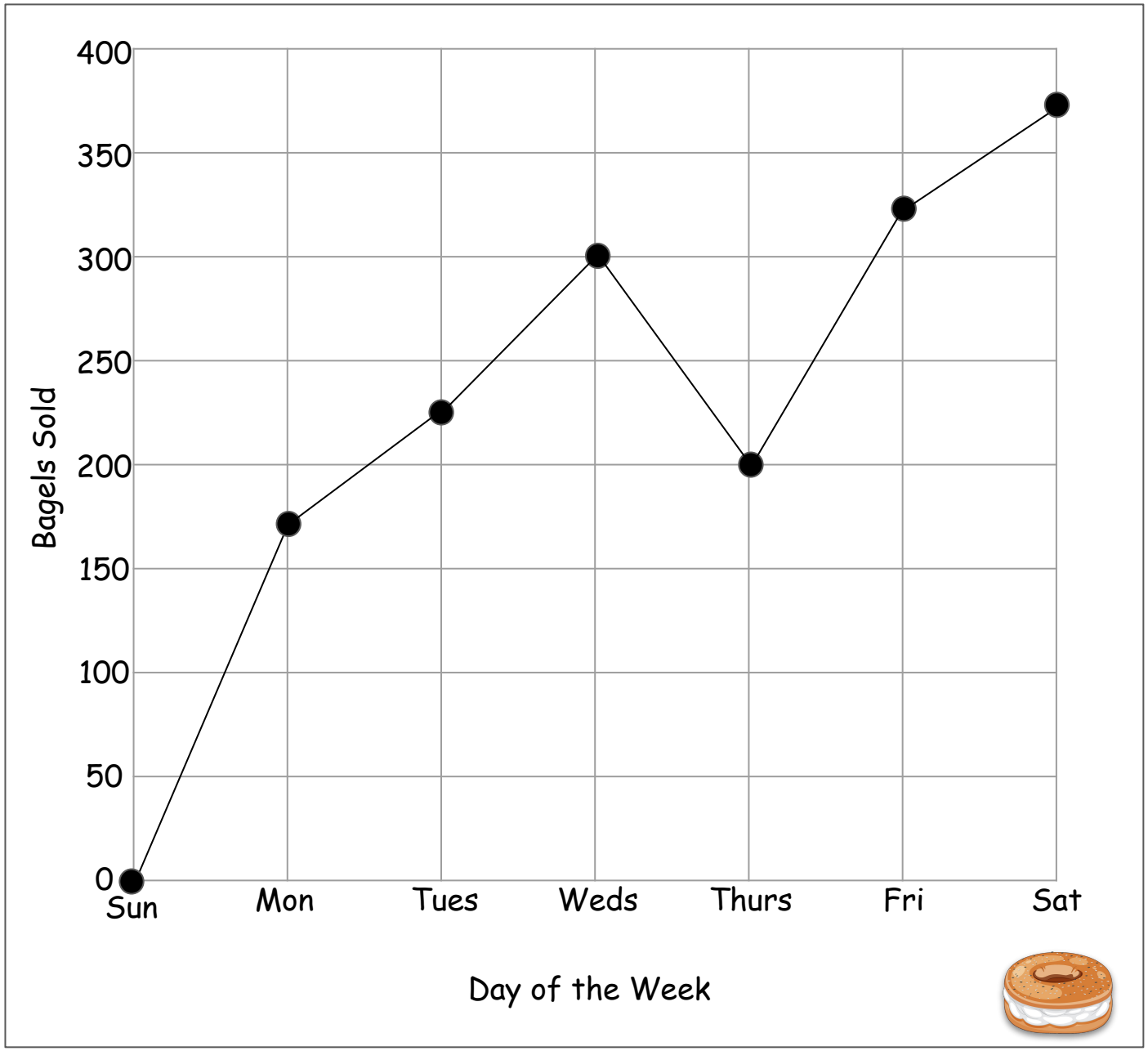
Question 1
What information does the graph show?

Question 2
How many students attend swimming club?

Question 3
How many more students take part in frisbee club than art club?

Question 4
How many more boys attend after-school clubs than girls?

Twilight Bagel Graph



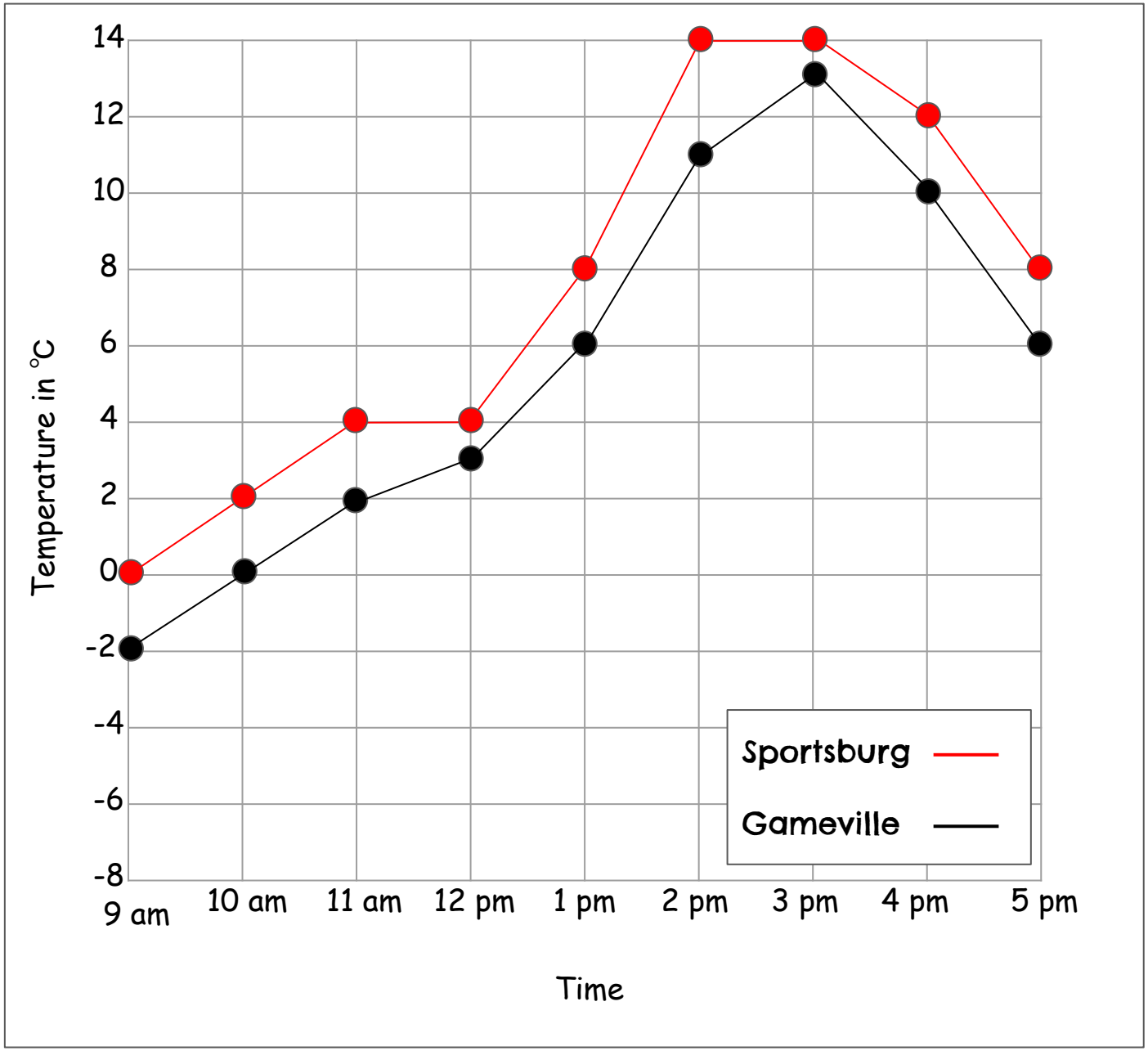
Question 1
What information does the graph show?

Question 2
What is the difference between bagels sold on Friday to bagels sold on Monday?

Question 3
How many bagels were sold between Monday and Wednesday?

Question 4
If a bagel costs $2.50, what is the difference between the amount of money made on Tuesday compared to Saturday?

Twilight Temperature Graph



Question 1
What information does the graph show?

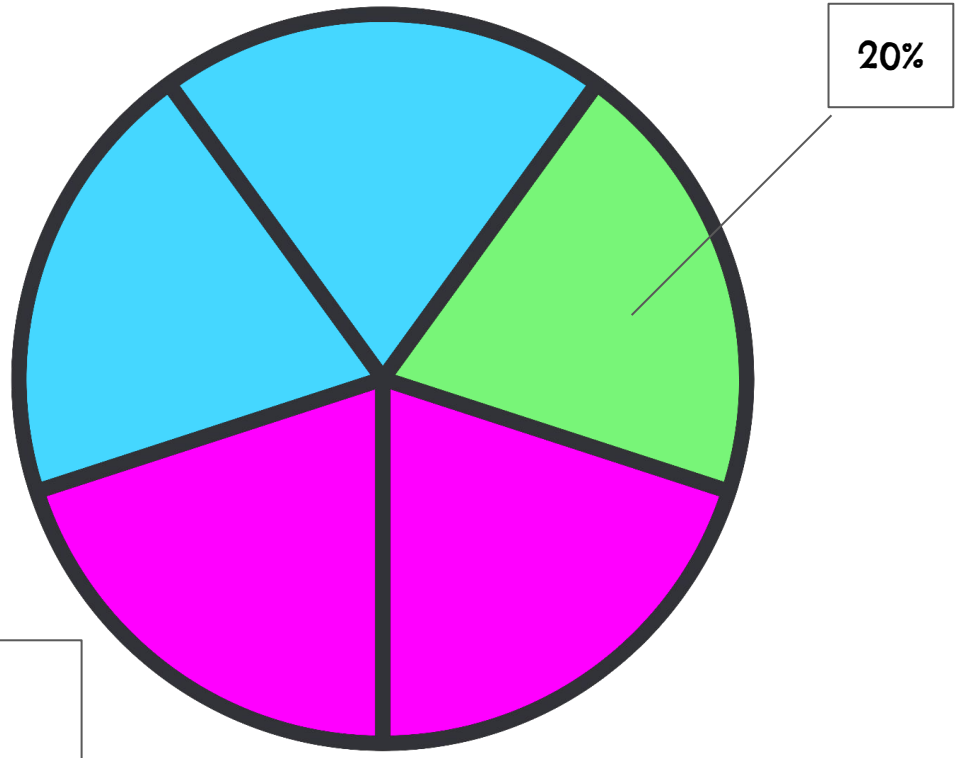
Question 2
What was the temperature in both towns at 9am?

Question 3
What time was the hottest temperature recorded in Sportsburg? In Gameville?

Question 4
What is the difference between the hottest temperature and the coldest temperature recorded in Gameville?

Twilight Pie Graph

Year 6's Favourite School Sports



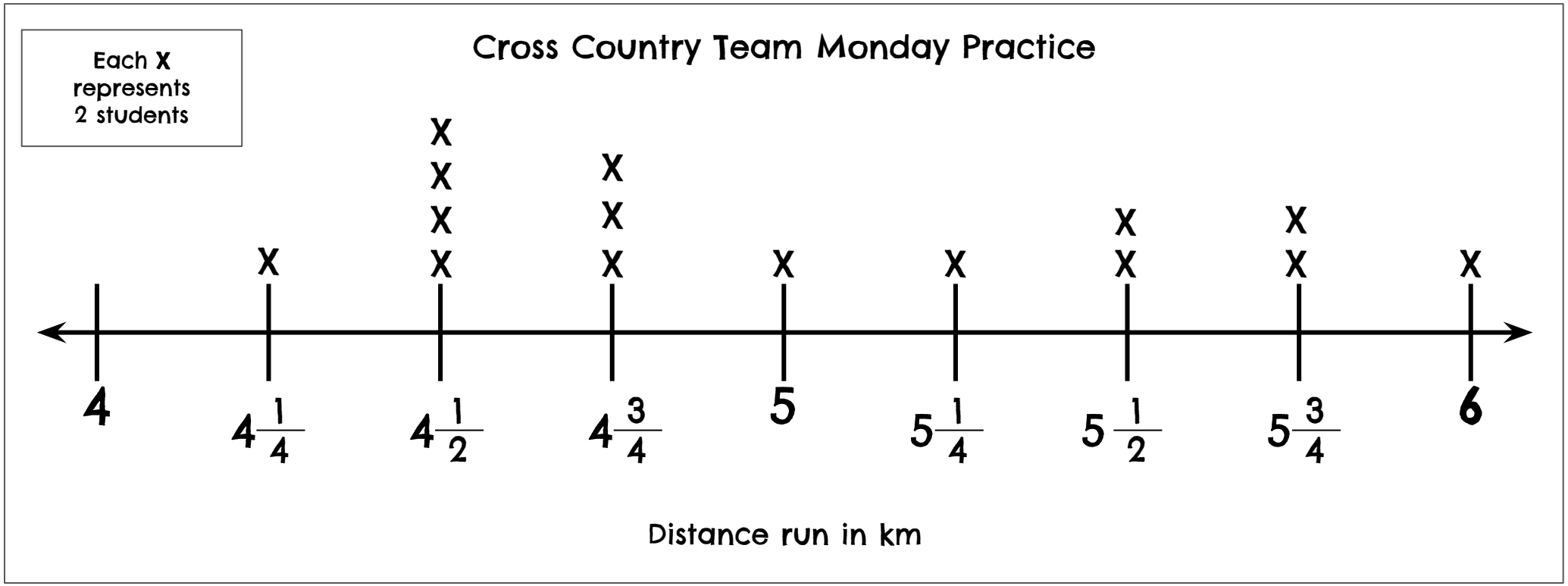
Question 1
What information does the graph show?

Question 2
If 12 people voted for frisbee, how many people voted for football?

Question 3
What fraction of students voted for swimming and football?

Question 4
How many students are in Year 6?

Twilight Line Plot



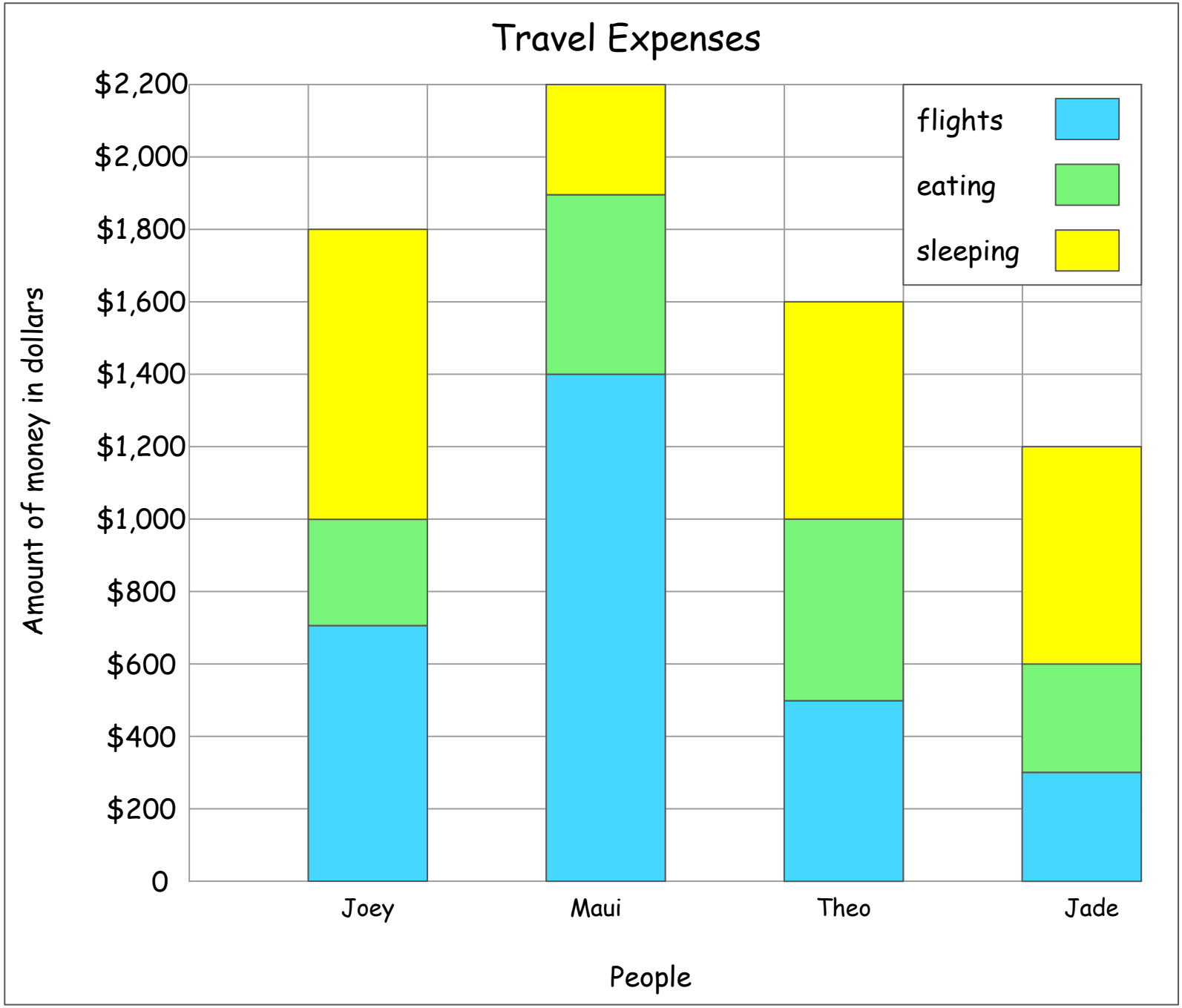
Question 1
What information does the graph show?

Question 2
How many students are 250 metres short of completing a 5 km run?

Question 3
How many more students ran 4.5 kilometres than 5.5 kilometres?

Question 4
How many students came to cross country practice on Monday?

Midnight Bar Graph



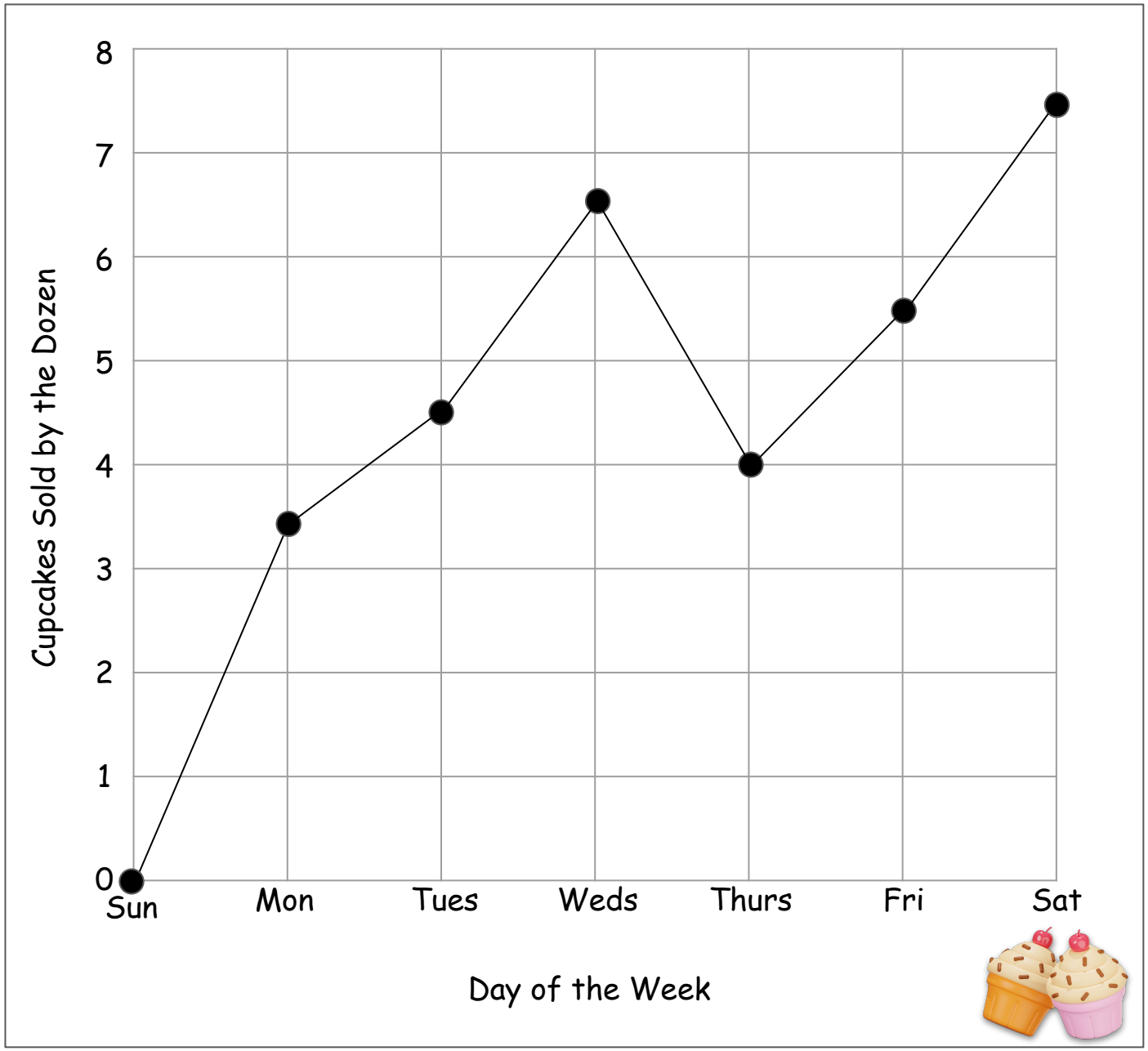
Question 1
What information does the graph show?

Question 2
How much more did Maui spend on flights than sleeping?

Question 3
How much money was spent on eating in total?

Question 4
Who spent twice as much money on sleeping expenses as they did on flight expenses?

Midnight Cupcake Graph



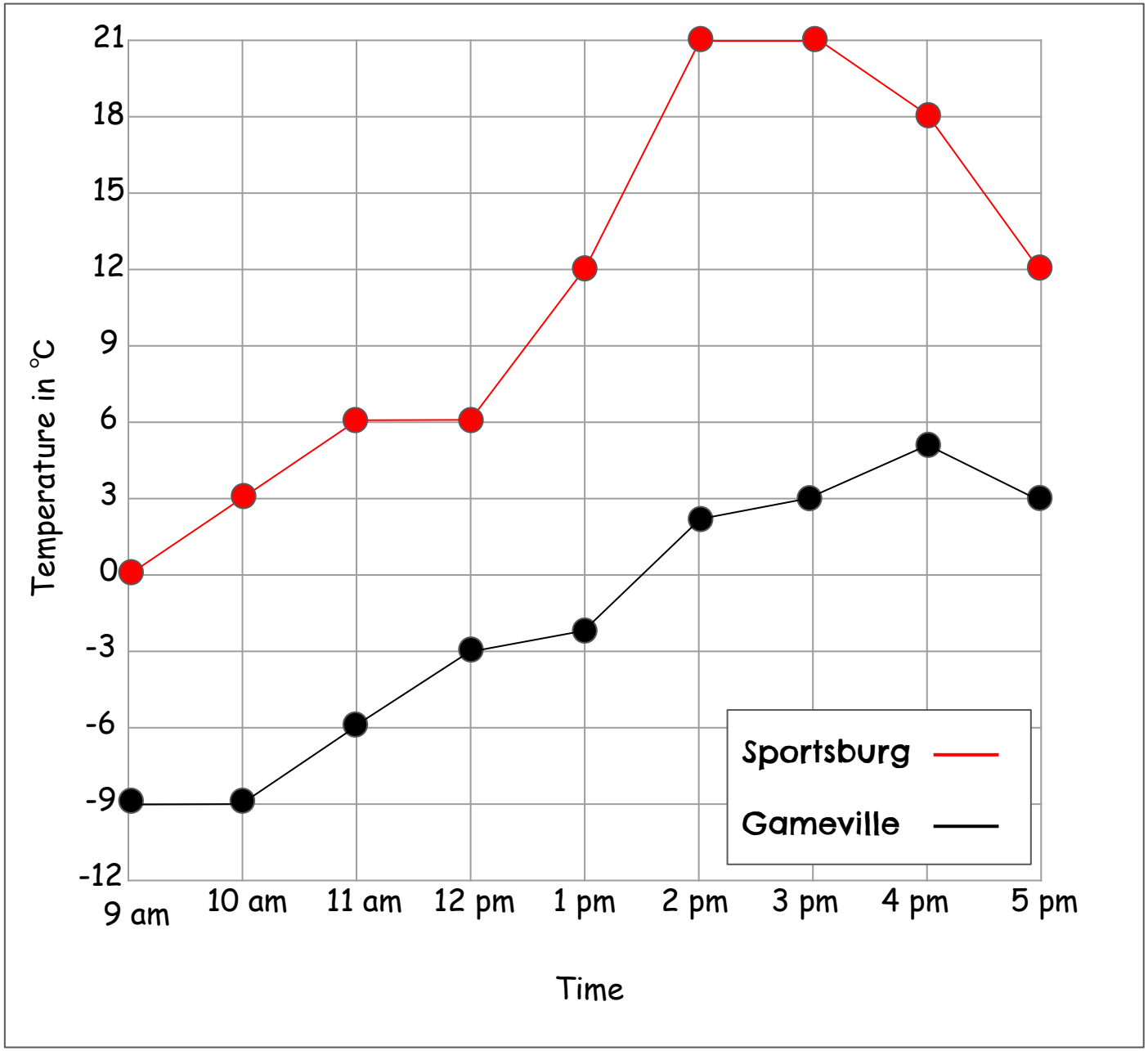
Question 1
What information does the graph show?

Question 2
What is the difference between cupcakes sold on Friday to cupcakes sold on Monday?

Question 3
How many cupcakes were sold between Monday and Wednesday?

Question 4
If a cupcake costs $2.75 what is the difference between the amount of money made on Thursday compared to Saturday?

Midnight Temperature Graph



Question 1
What information does the graph show?

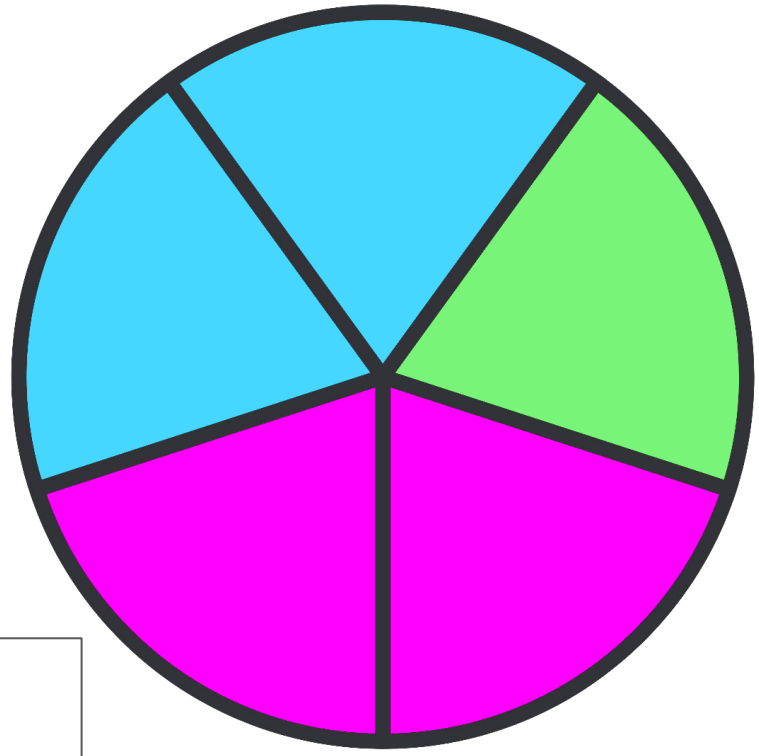
Question 2
What was the difference between the temperatures in both towns at 1pm?

Question 3
How many degrees hotter is Sportsburg compared to Gameville at the hottest time of day for both towns?

Question 4
What is the difference between the hottest temperature and the coldest temperature recorded in Gameville?

Midnight Pie Graph

Year 6's Favourite School Sports



Frisbee

Football

Swimming

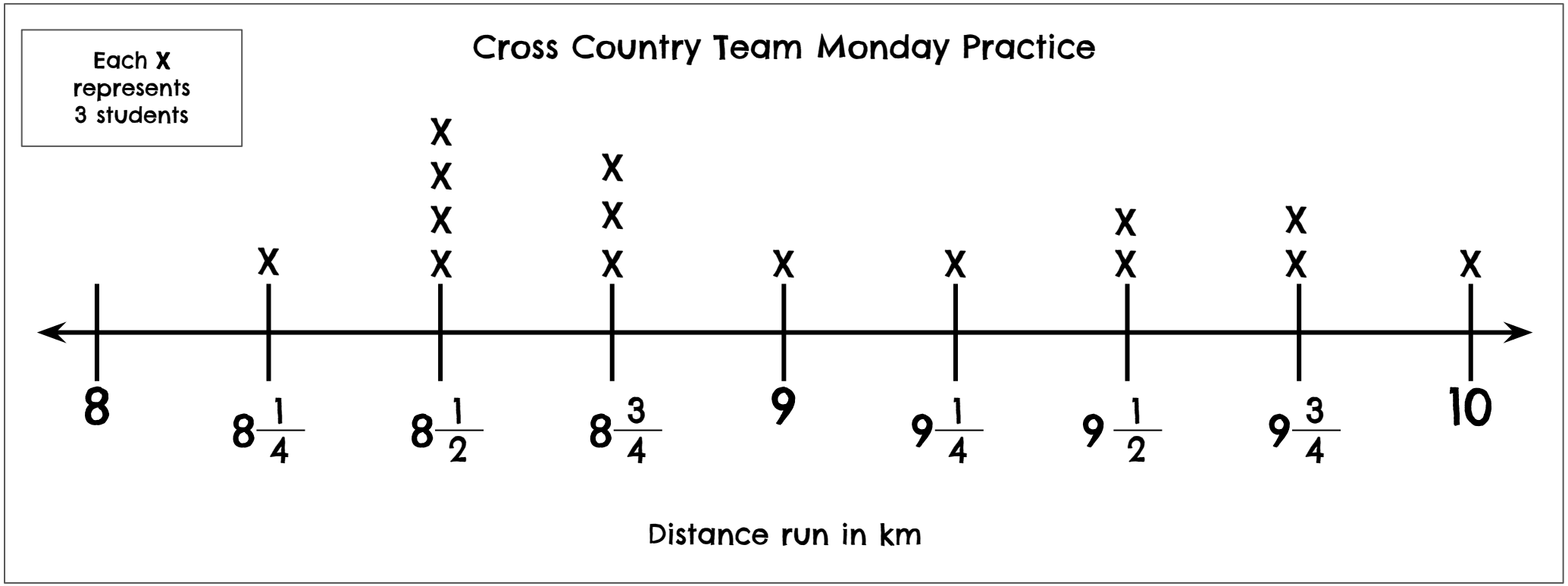
Question 1
What information does the graph show?

Question 2
120 people were surveyed. How many students chose frisbee?

Question 3
What percentage of students voted for football?

Question 4
What fraction of the pie chart represents students who voted for swimming and frisbee? How would you write this as a percentage?

Midnight Line Plot



Question 1
What information does the graph show?

Question 2
How many students are 0.25 metres short of completing a 10 km run?

Question 3
Nine students ran together.
How many *metres* did they run?

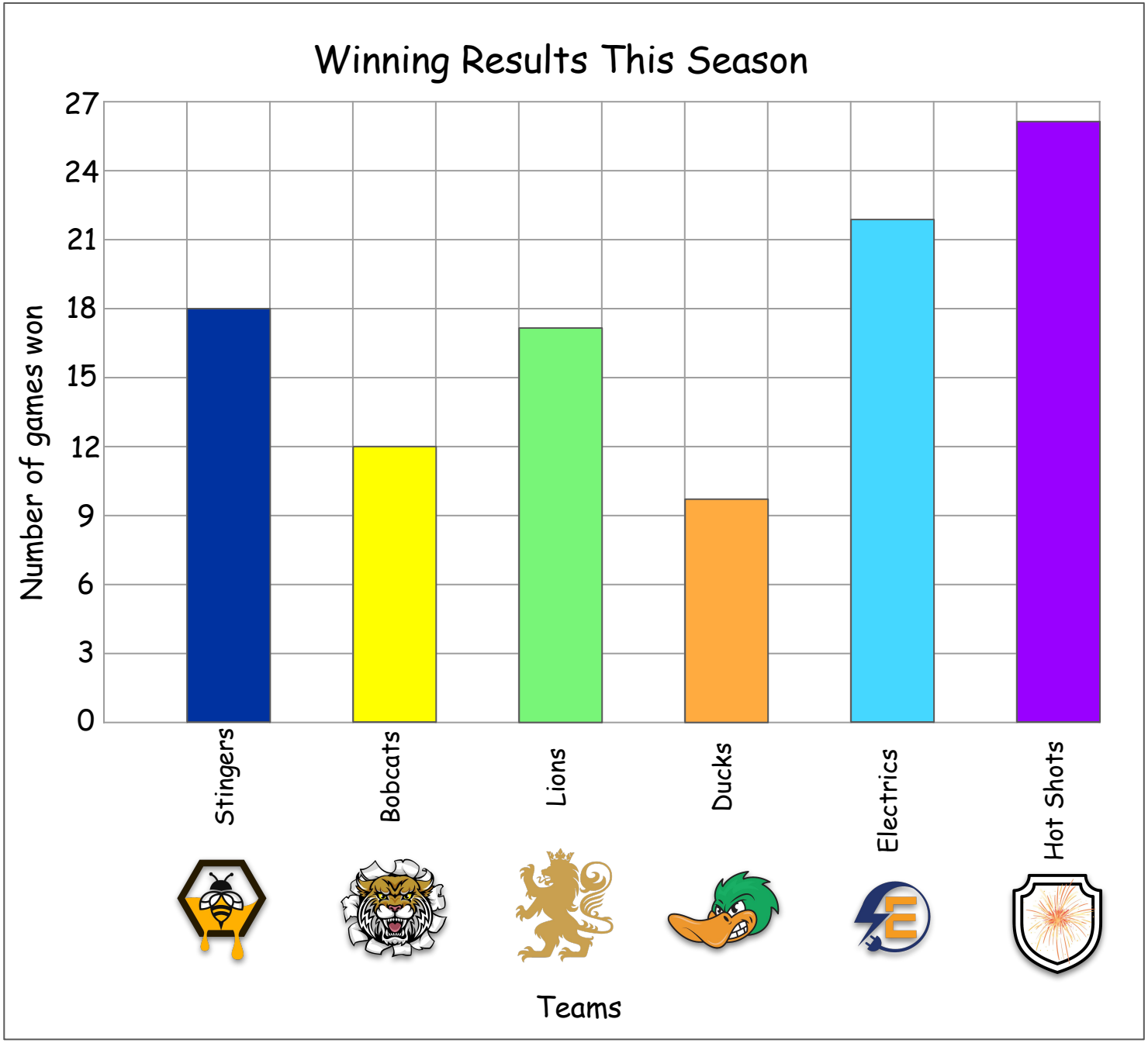
Question 4
How far did all of the students who ran more than 9 km run in total?
Hint: How could writing the fractions as decimals help you?

Optional Recording Logs

1.	1.
2.	2.
3.	3.
4.	4.

1.	1.
2.	2.
3.	3.
4.	4.

Sunlight Bar Graph Answers



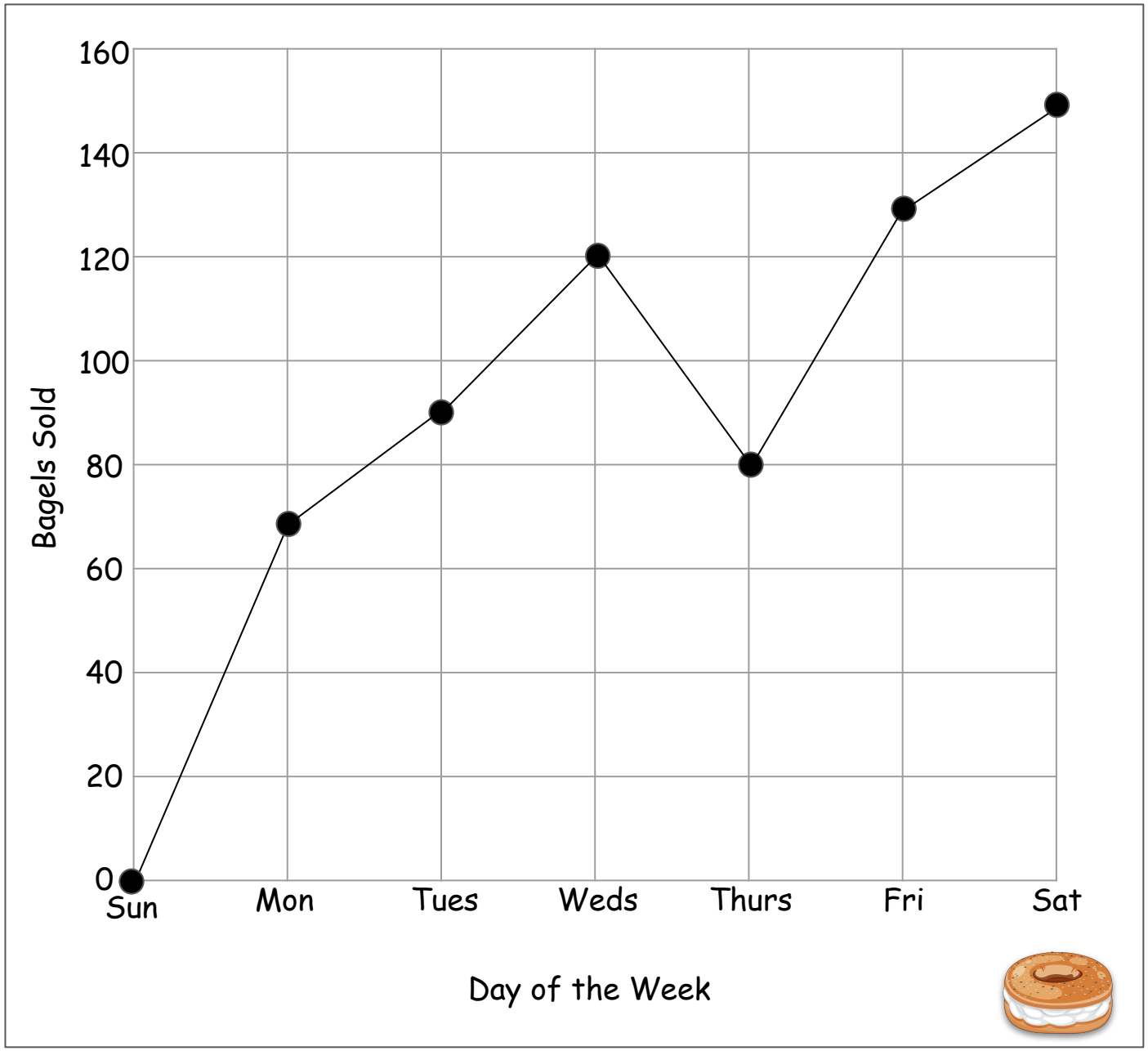
Question 1
What information does the graph show?
How many games 6 teams have won this season. (Answers could vary)

Question 2
How many more games did Electric win compared to the Bobcats?
22 - 12 = 10 games

Question 3
If a win earns a team 3 points, how many points have the Hot Shots earned this season?
26 x 3 = 78 points

Question 4
If each team played 36 games this season, how many games did the Lions lose?
36 - 17 = 19 games

Sunlight Bagel Graph Answers



Question 1
What information does the graph show?
How many bagels were sold in a week.
(Answers could vary)

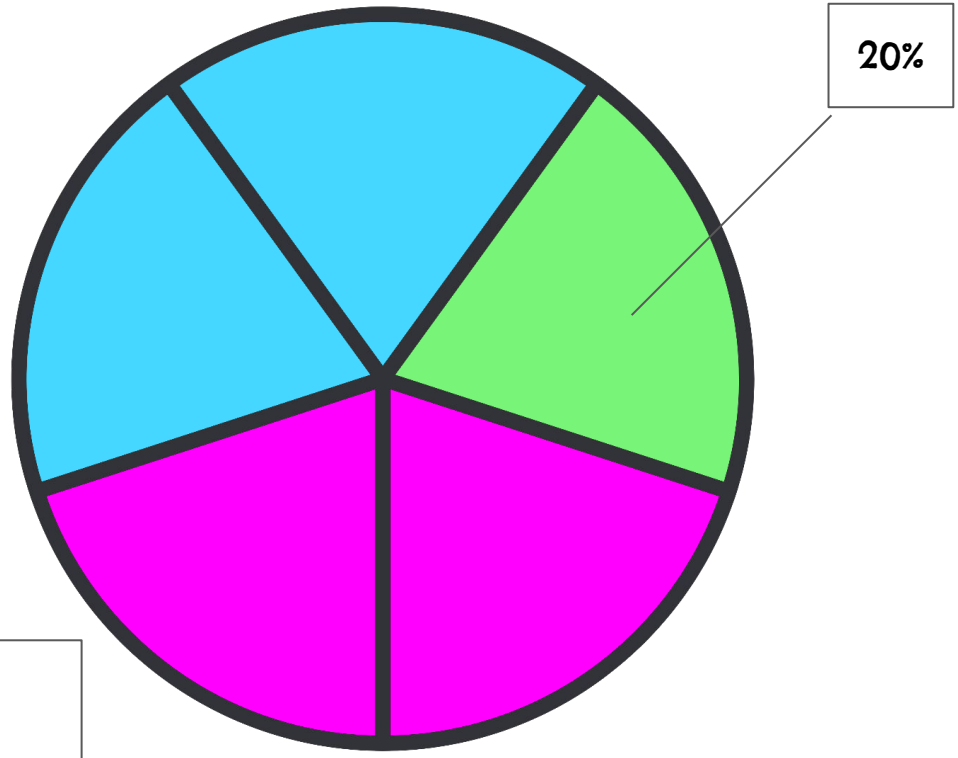
Question 2
What is the difference between bagels sold on Friday to bagels sold on Monday?
130 - 70 = 60

Question 3
How many bagels were sold between Monday and Wednesday?
70 + 90 + 120 = 280

Question 4
If a bagel costs $3, what is the difference between the amount of money made on Tuesday compared to Saturday?
Tuesday: 90 x 3 = 270
Saturday: 150 x 3 = 450
450 - 270 = $180 difference

Sunlight Pie Graph Answers

Class B's Favourite School Sports



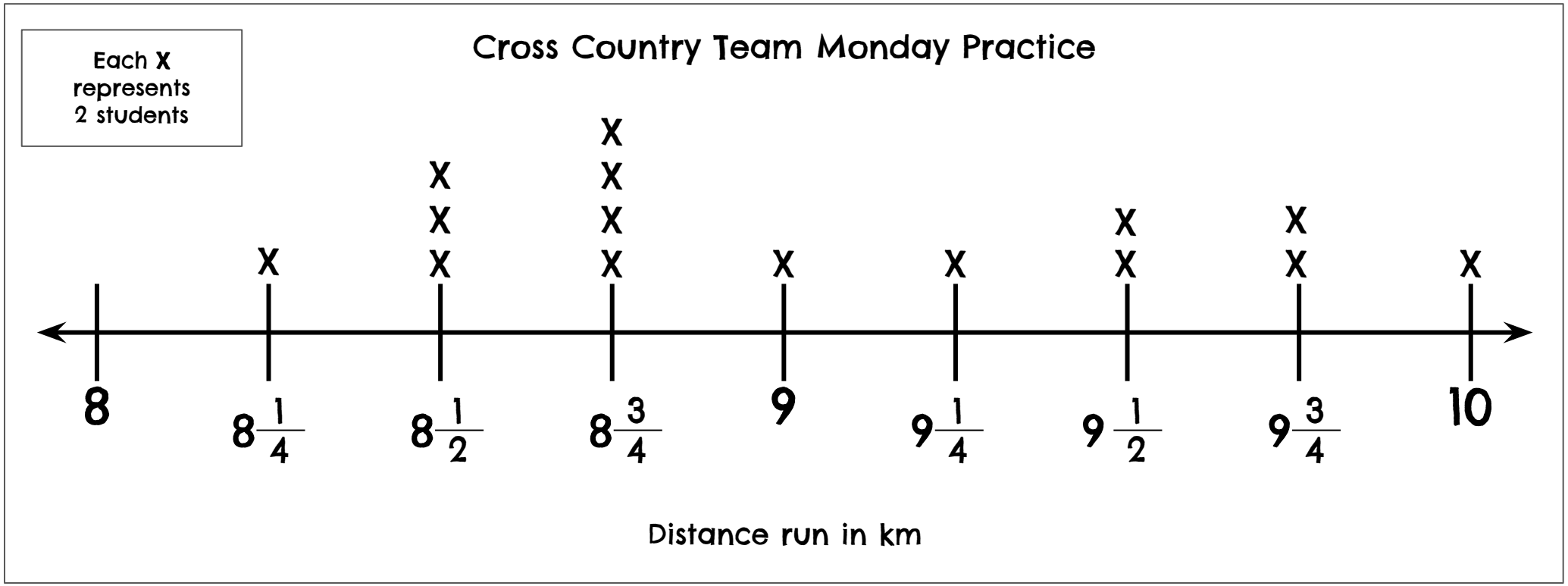
Question 1
What information does the graph show?
What percentage/fraction/part of Class B like a particular school sport. (Answers could vary)

Question 2
If 6 students voted for frisbee, how many students voted for football?
12

Question 3
How many students voted for swimming and football in total?
24

Question 4
What fraction of students voted for frisbee? Swimming? Football?
Frisbee: 1/5
Swimming: 2/5
Football: 2/5

Sunlight Line Plot Answers



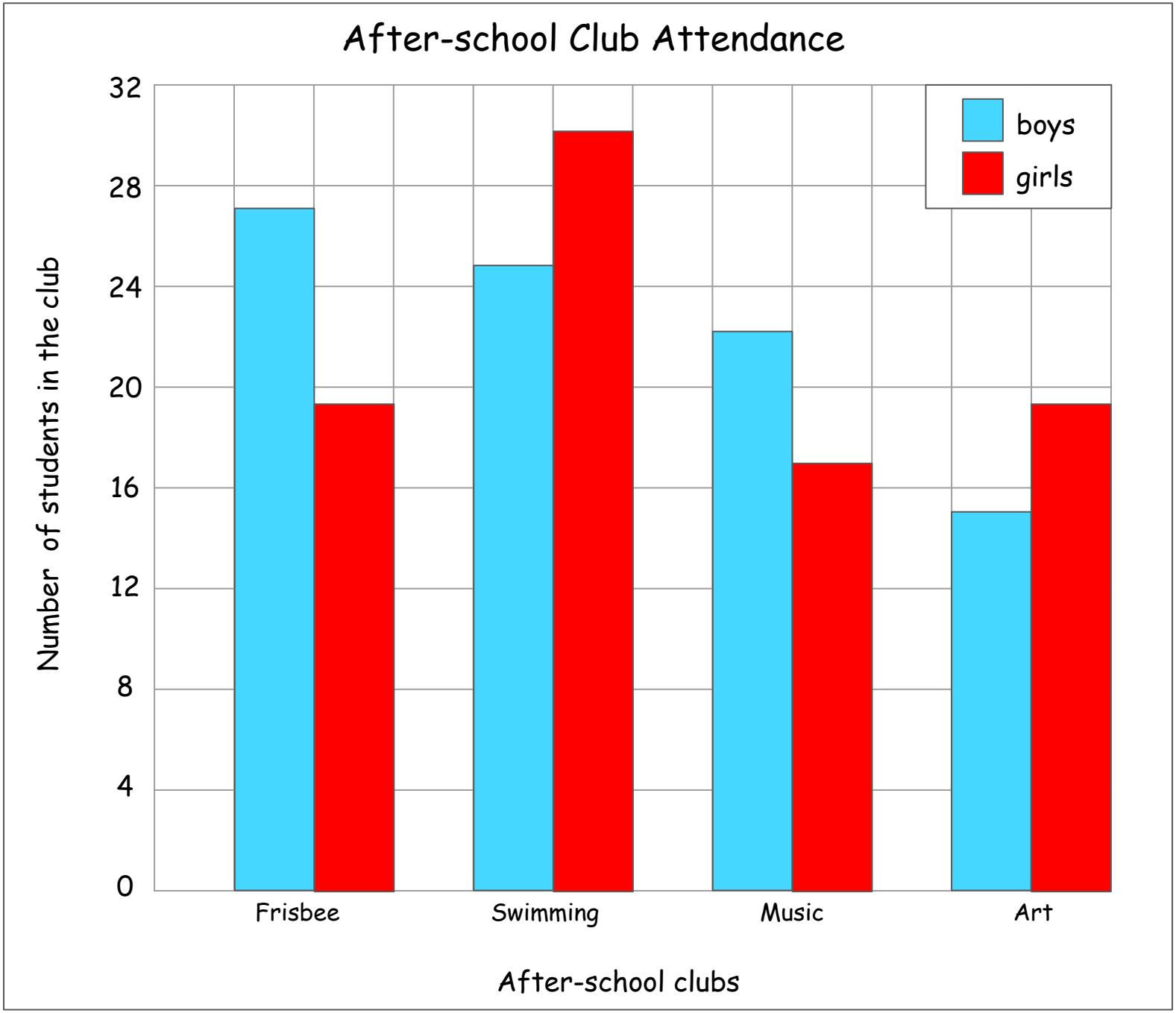
Question 1
What information does the graph show?
How far students ran at running practise on Monday.
(Answers could vary)

Question 2
How many students ran 9.5 km?
4

Question 3
Six students ran together.
How far did they run?
8 1/2 km

Question 4
How many students came to cross country practice on Monday?
30 students

Twilight Bar Graph Answers



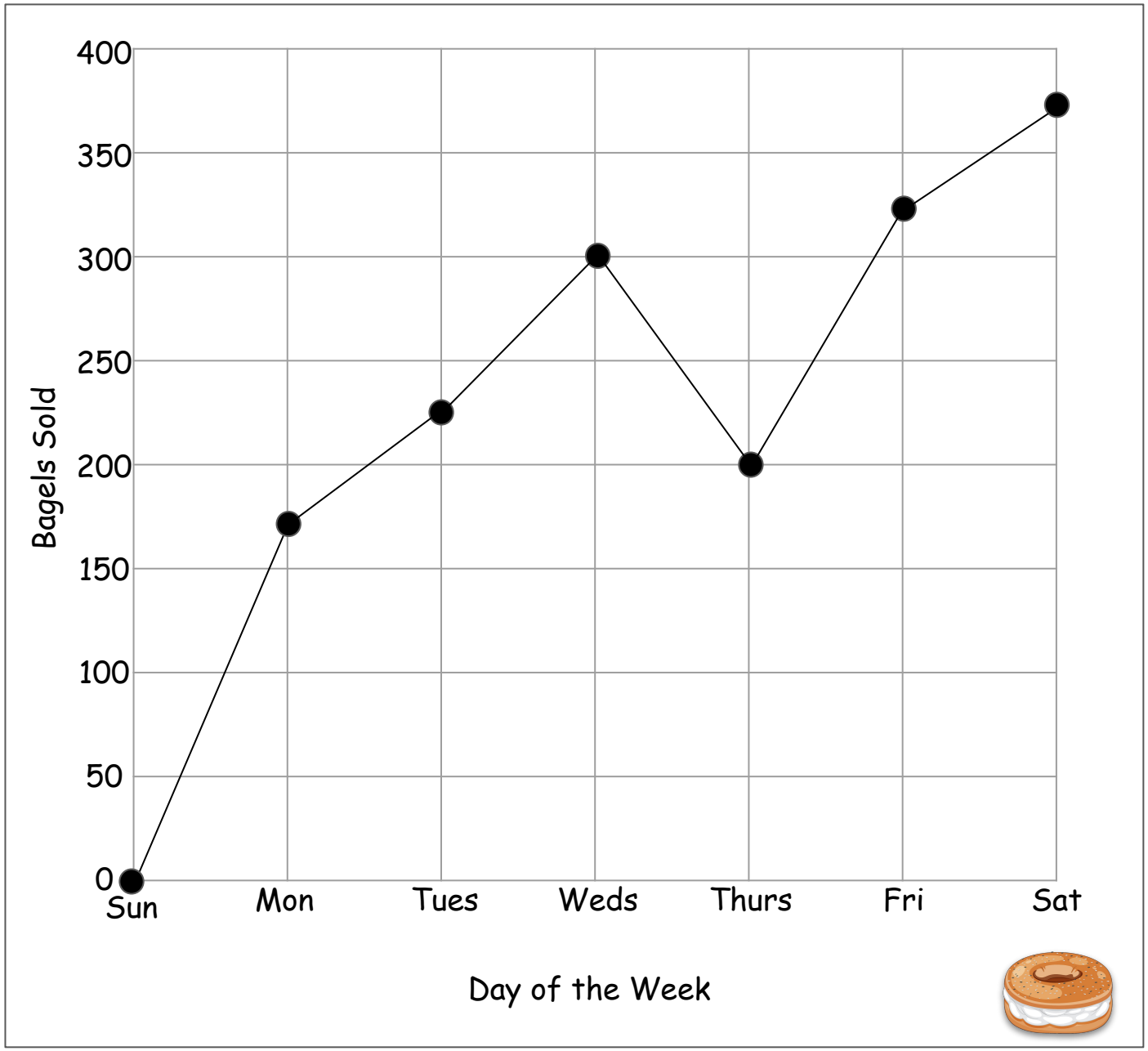
Question 1
What information does the graph show?
How many boys and girls attend after-school clubs.
(Answers could vary)

Question 2
How many students attend swimming club?
25 + 30 = 55

Question 3
How many more students take part in frisbee club than art club.
27 + 19 = 46
15 + 19 = 34
46 - 34 = 12 more students take part in frisbee club

Question 4
What how many more boys attend after-school clubs than girls?
27 + 25 + 22 + 15 = 89
19 + 30 + 17 + 19 = 85
4 more boys attend club than girls

Twilight Bagel Graph Answers



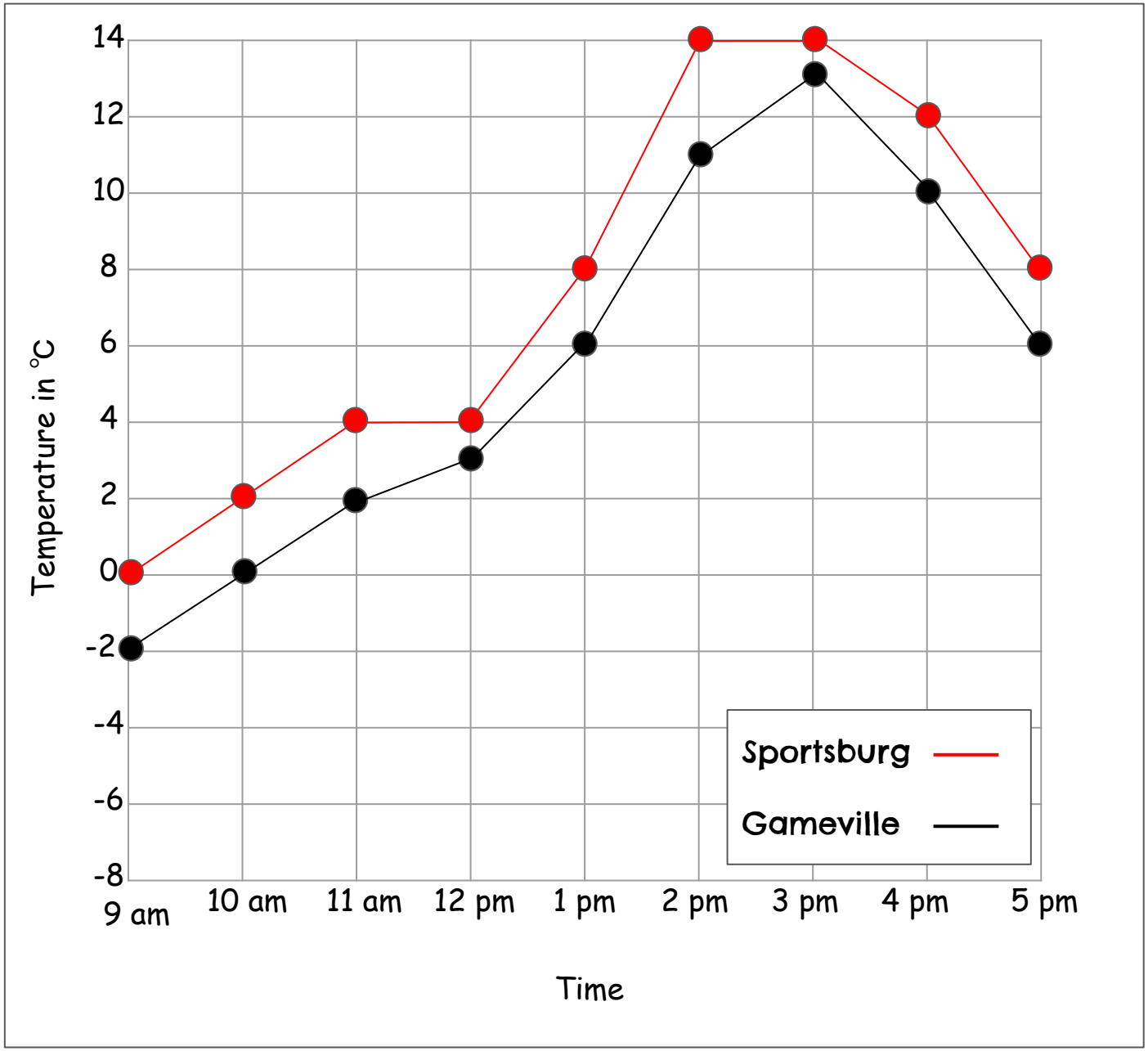
Question 1
What information does the graph show?
How many bagels were sold over the course of a week.
(Answers could vary)

Question 2
What is the difference between bagels sold on Friday to bagels sold on Monday?
325 - 175 = 150

Question 3
How many bagels were sold between Monday and Wednesday?
175 + 225 + 300 = 700

Question 4
If a bagel costs $2.50, what is the difference between the amount of money made on Tuesday compared to Saturday?
Tuesday: 225 x 2.50 = $562.50
Saturday: 375 x 2.50 = $937.50
937.50 - 562.50 = $375

Twilight Temperature Graph Answers



Question 1
What information does the graph show?
The change in temperature of two different towns in one day. (Answers could vary)

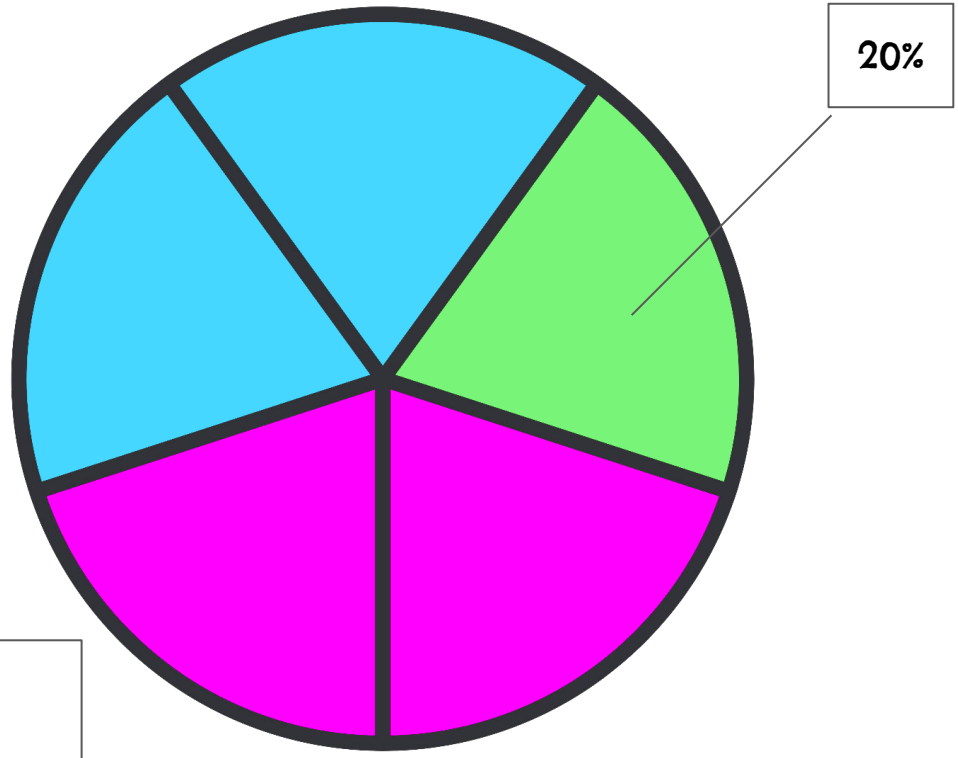
Question 2
What was the temperature in both towns at 9 am?
Sportsburg: 0 Celsius
Gameville: -2 Celsius

Question 3
What time was the hottest temperature recorded in Sportsburg? In Gameville?
Sportsburg: 2pm to 3pm
Gameville: 3pm

Question 4
What is the difference between the hottest temperature and the coldest temperature recorded in Gameville?
13 - (-2) = 15 degrees difference

Twilight Pie Graph Answers

Year 6's Favourite School Sports



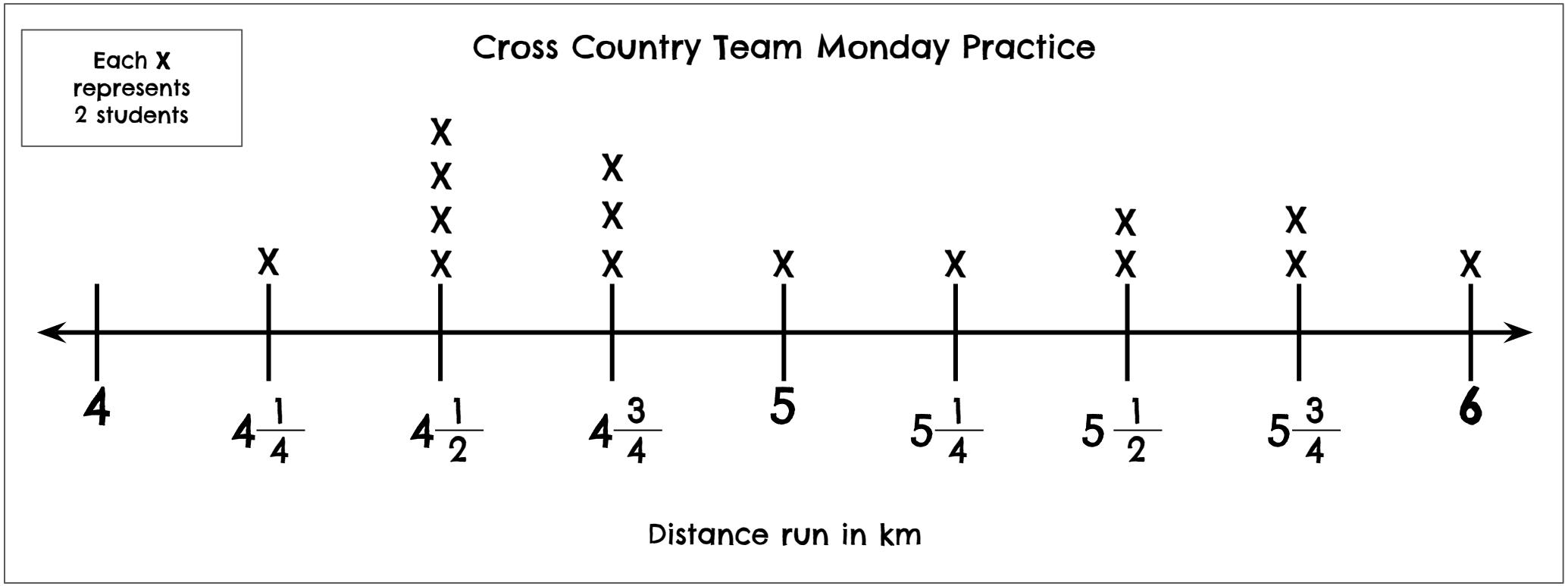
Question 1
What information does the graph show?
What percentage/fraction/part of Year 6 like a particular school sport.
(Answers could vary)

Question 2
If 12 people voted for frisbee, how many people voted for football?
24

Question 3
What fraction of students voted for swimming and football?
2/5 + 2/5 = 4/5

Question 4
How many students are in Year 6?
60

Twilight Line Plot Answers



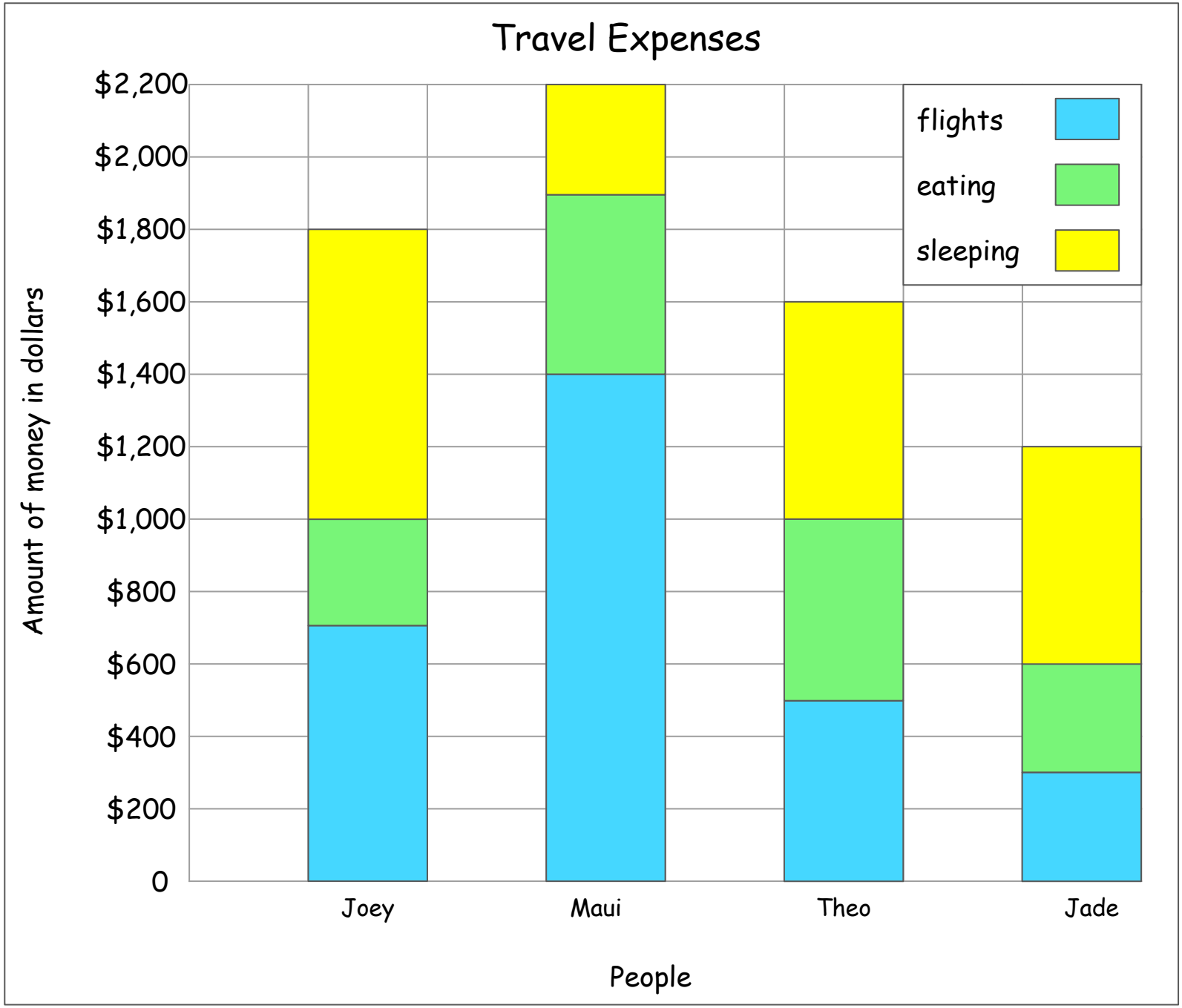
Question 1
What information does the graph show?
The distance individual students ran during running practice.
(Answers could vary)

Question 2
How many students are 250 metres short of completing a 5km run?
6 students

Question 3
How many more students ran 4.5 kilometres than 5.5 kilometres?
4 more students ran 4.5 km

Question 4
How many students came to cross country practice on Monday?
2 x 15 = 30 students

Midnight Bar Graph Answers



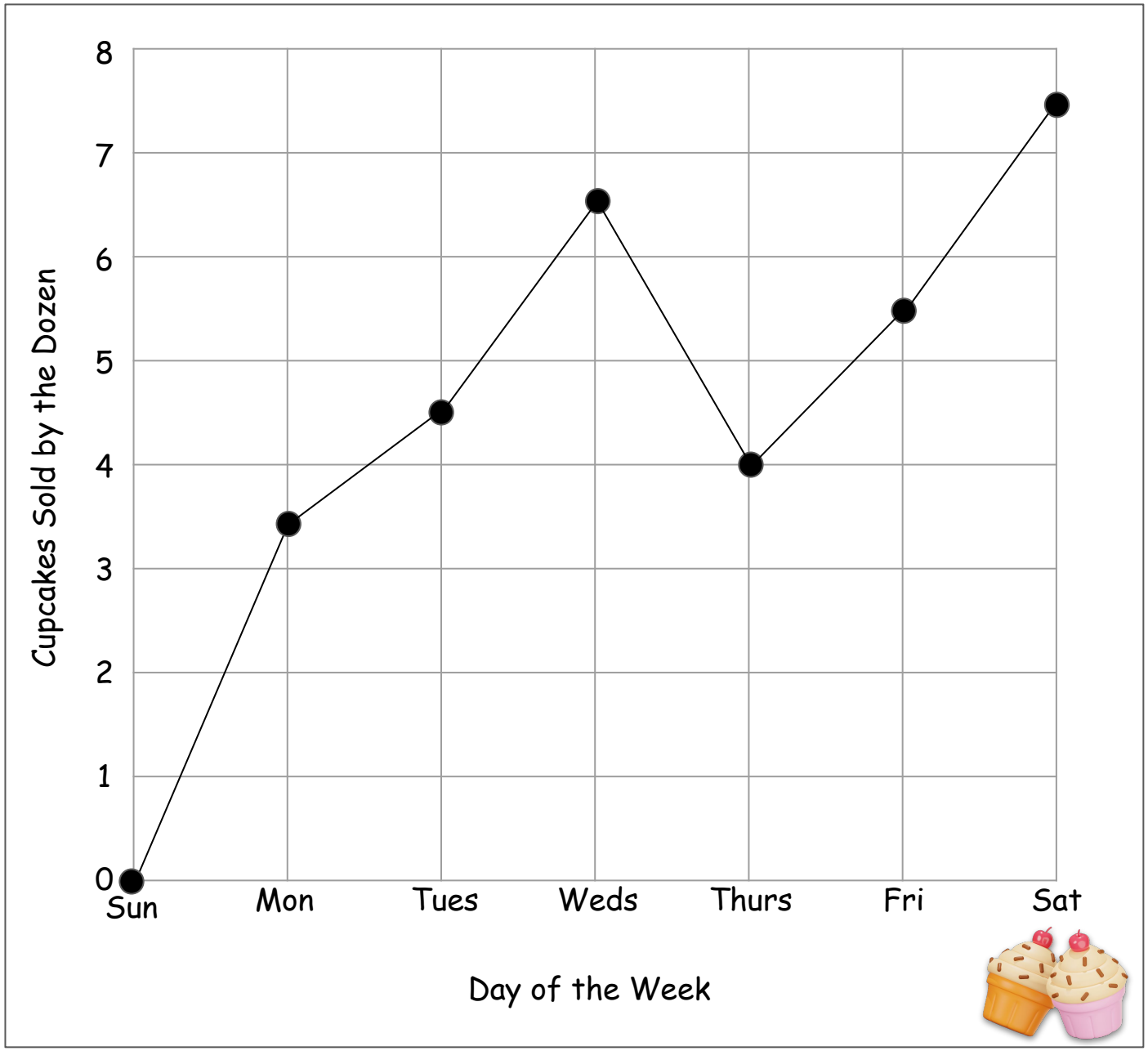
Question 1
What information does the graph show?
How much money people spend on travel expenses. (Answers could vary)

Question 2
How much more did Maui spend on flights than sleeping?
Maui spent $1,100 more on flights.

Question 3
How much money was spent on eating in total?
300 + 500 + 500 + 300
$1,600 in total

Question 4
Who spent twice as much money on sleeping expenses as they did on flight expenses?
Jade
Sleeping: $600
Flights: $300

Midnight Cupcake Graph



Question 1

What information does the graph show?

How many cupcakes were sold in a week.

(Answers could vary)

Question 2

What is the difference between cupcakes sold on Friday to cupcakes sold on Monday?

(5 x 12) + 6 = 66 on Friday

(3 x 12) + 6 = 42 on Monday

66 - 42 = 24 cupcakes

Question 3

How many cupcakes were sold between Monday and Wednesday?

Mon: 42

Tues: (4 x 12) + 6 = 54

Weds: (6 x 12) + 6 = 78

174 cupcakes in total

Question 4

If a cupcake costs $2.75 what is the difference between the amount of money made on Thursday compared to Saturday?

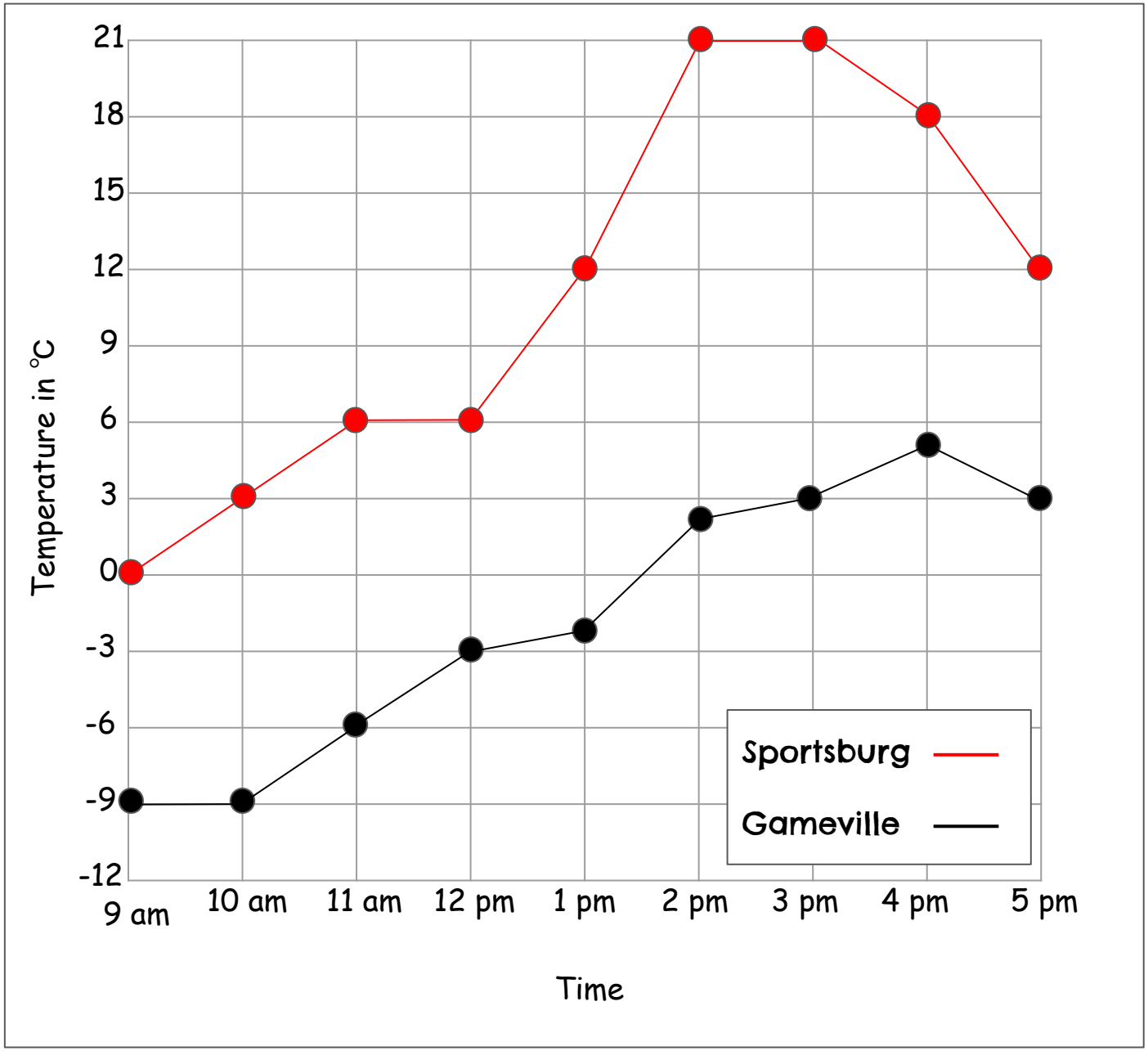
Thurs: 48 x 2.75 = $132

Sat: (7 x 12) + 6 = 90

90 x 2.75 = $247.50

247.50 - 132 = $115.50 difference

Midnight Temperature Graph Answers



Question 1
What information does the graph show?
The change in temperature of two different towns in one day. (Answers could vary)

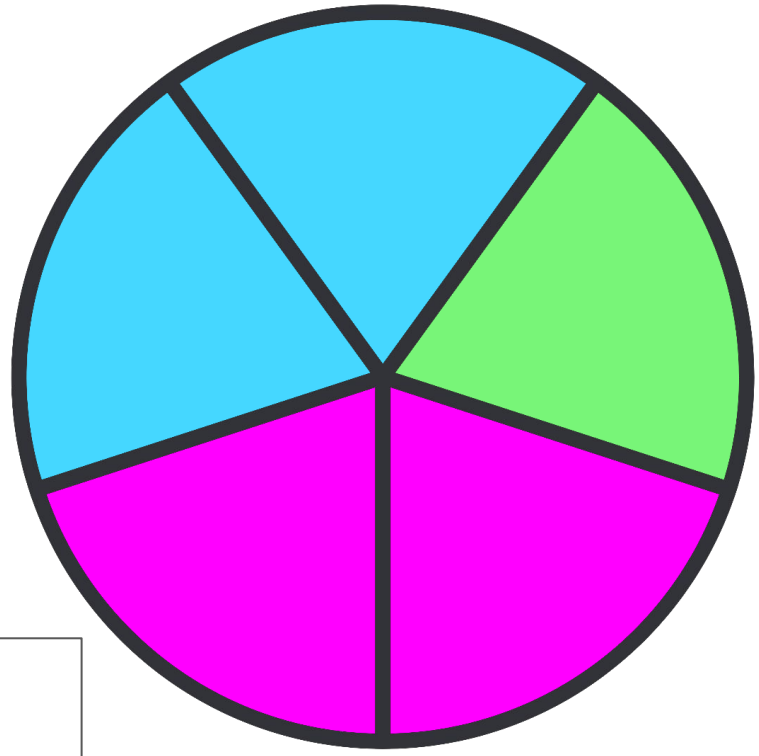
Question 2
What was the difference between the temperatures in both towns at 1pm?
12 - (-2) = 14 degrees

Question 3
How many degrees hotter is Sportsburg compared to Gameville at the hottest time of day for both towns?
21 - 5 = 16
Sportsburg is 16 degrees hotter.

Question 4
What is the difference between the hottest temperature and the coldest temperature recorded in Gameville?
5 - (-9) = 14 degrees

Midnight Pie Graph Answers

Upper Primary's Favourite School Sports



Frisbee

Football

Swimming

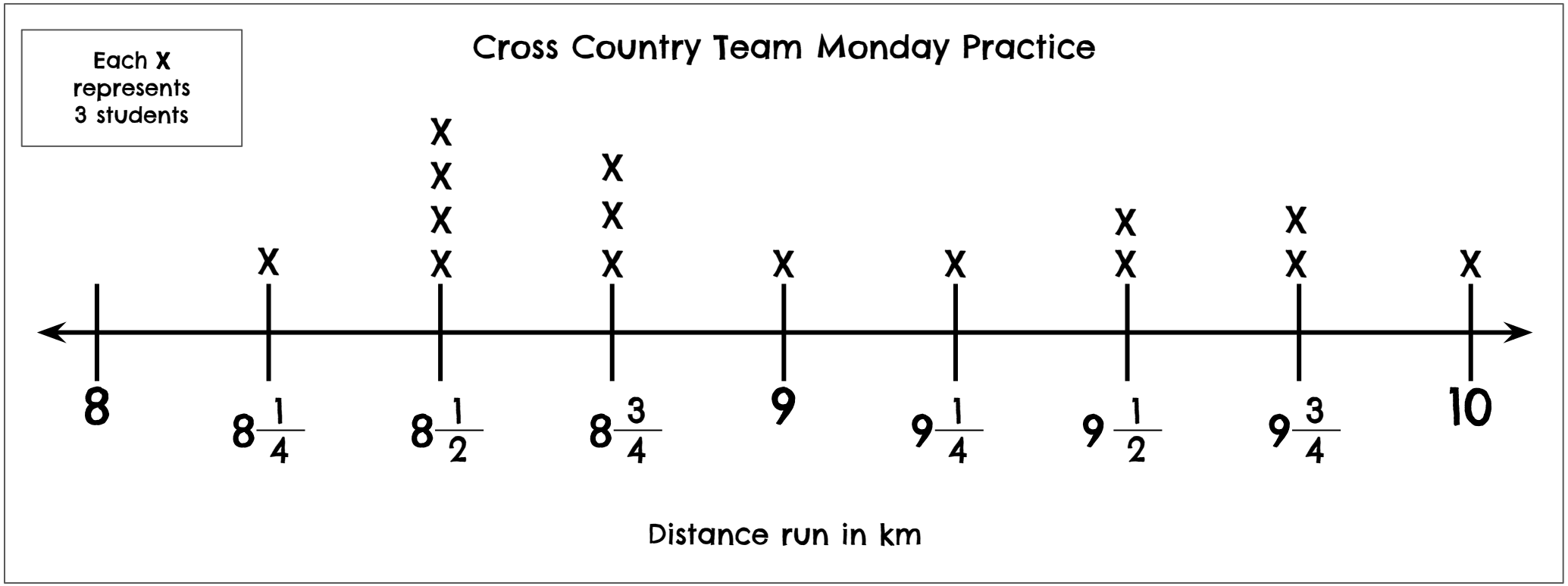
Question 1
What information does the graph show?
What percentage/fraction/part of Upper Primary like a particular school sport.
(Answers could vary)

Question 2
120 people were surveyed.
How many students chose frisbee?
1/5 of 120 = 60

Question 3
What percentage of students voted for football?
1/5 of 100% is 20%
2/5 of 100% is 40%

Question 4
What fraction of the pie chart represents students who voted for swimming and frisbee?
How would you write this as a percentage?
3/5 or 60%

Midnight Line Plot



Question 1
What information does the graph show?
The distance individual students ran during running practice.
(Answers could vary)

Question 2
How many students are 0.25 metres short of complete a 10 km run?
6

Question 3
Nine students ran together.
How many *metres* did they run?
8,750 metres

Question 4
How far did all of the students who ran more than 9 km run in total?
(3 x 9.25) + (6 x 9.5) + (6 x 9.75) + (3 x 10)
27.75 + 57 + 58.5 + 30 = 173.25 km in total.