Lesson Printables

Be a rockstar and only print what you need!

Planners: 2-3

Graphs
Sunlight: 4-7
Twilight: 8-11
Midnight: 12-15

Extras
Optional Recording Log: 16
Sunlight Answers: 17-20
Twilight Answers: 21-24
Midnight Answers: 25-28

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

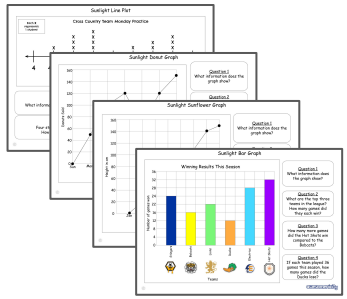
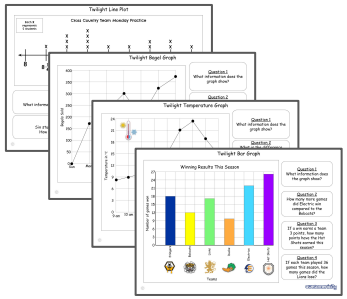
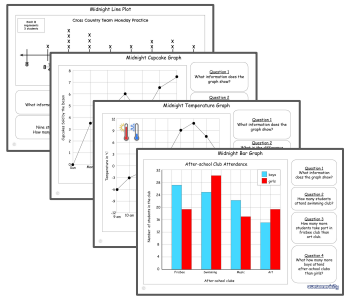
LESSON 1: Data Handling/Probability - Interpreting bar graphs, line graphs and line plots

Starter	Main Activity and Input: Interpreting bar graphs, line graphs and line plots.	Plenary
Black Hole Brainiacs: Using the numbers 0 to 9, can students make each row and column equal the black hole prompt? **To support:** 1. What is one way students could add 3 numbers to make a multiple of 4? What is a multiple? What is one way they could add 3 numbers to make a prime number? What is a prime number? 2. Students can try to solve just one of the puzzles. **To challenge:** 1. Is there more than one way to solve either puzzle?	**Input:** 1. Slide 6 shows penguins 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 bar graph. What do students remember about this type of data? What information is being shown? Share ideas as a class. Slide 8 identifies that it is a bar graph and asks students to identify the x and y axis labels, the title and the scale of the graph. Ask 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 new graph. What do students notice? Ask students to identify the x and y axis labels, the title and the scale of the graph. Slide 10 explains that this type of graph is called a line graph. Line graphs show change over time. What change is being shown here? Elicit from students that the graph shows how many kilometers the penguin swam in 60 minutes. Give students time to answer one or all of the questions connected to the graph. 4. Slide 11 introduces a new graph. What do students notice? Slide 12 explains that this form of data is called a line plot. This 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. Ask them to share their answers as a class. *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 you could skip over these slides.* **Activity: Interpreting data and answering related questions.** 1. Print the 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 the recording logs so that students can organise their thinking. 2. Sunlight Zone graphs mainly involve one-step problems. **To challenge:** 1. Twilight and Midnight Zone graphs have a variety of scales. 2. Students could create their own questions that connect 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 or line plot is most appropriate for each scenario. Answers could vary. E.g. The sandwich sales data could be shown in a bar graph, line graph or line plot.

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.

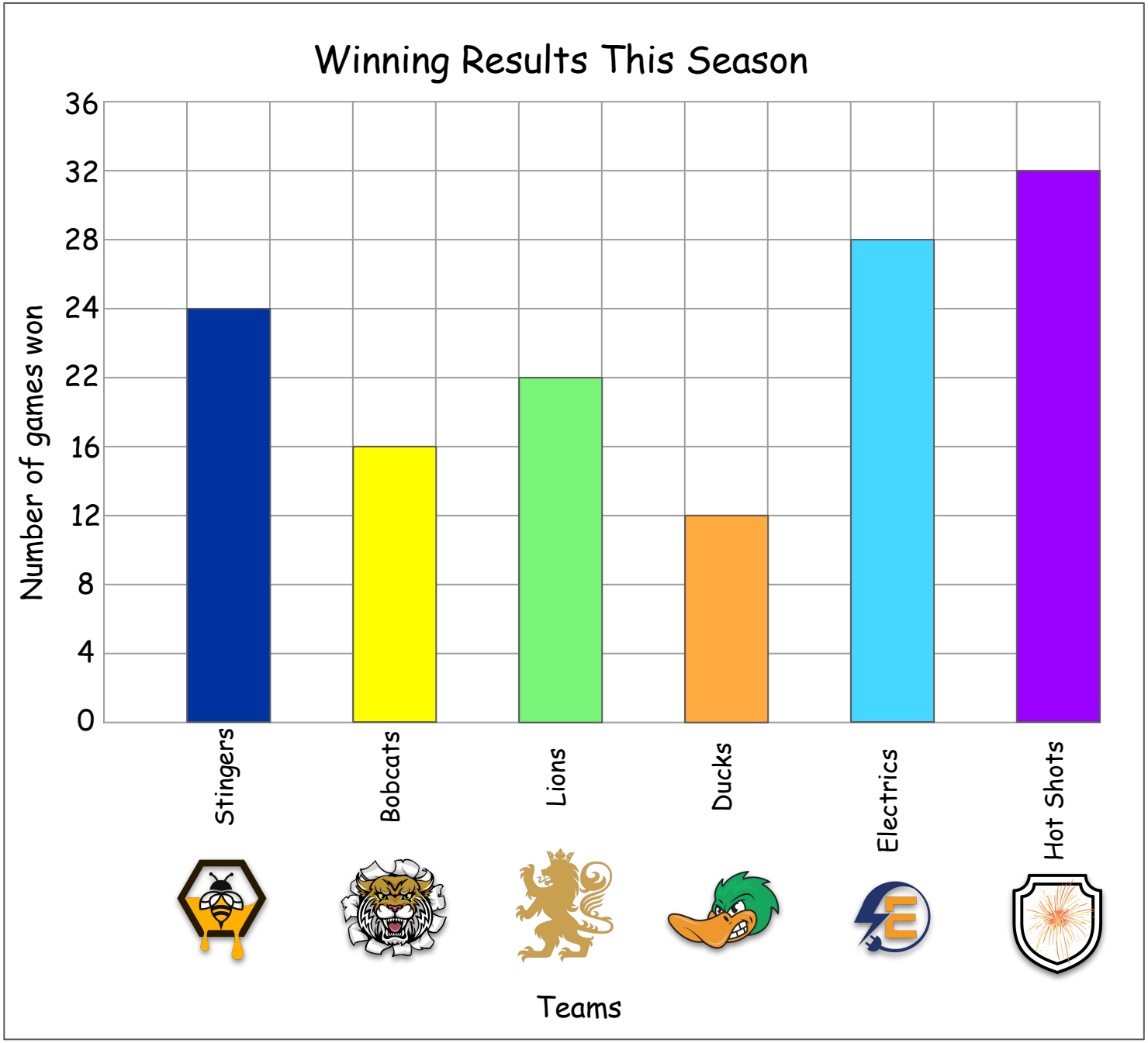
Peek at the Printables:

Sunlight Zone	Twilight Zone	Midnight Zone
		

Greener Alternatives:

➔ Print graphs and place them in stations. Instead of printing the recording logs, students could record their findings in their books.

Sunlight Bar Graph



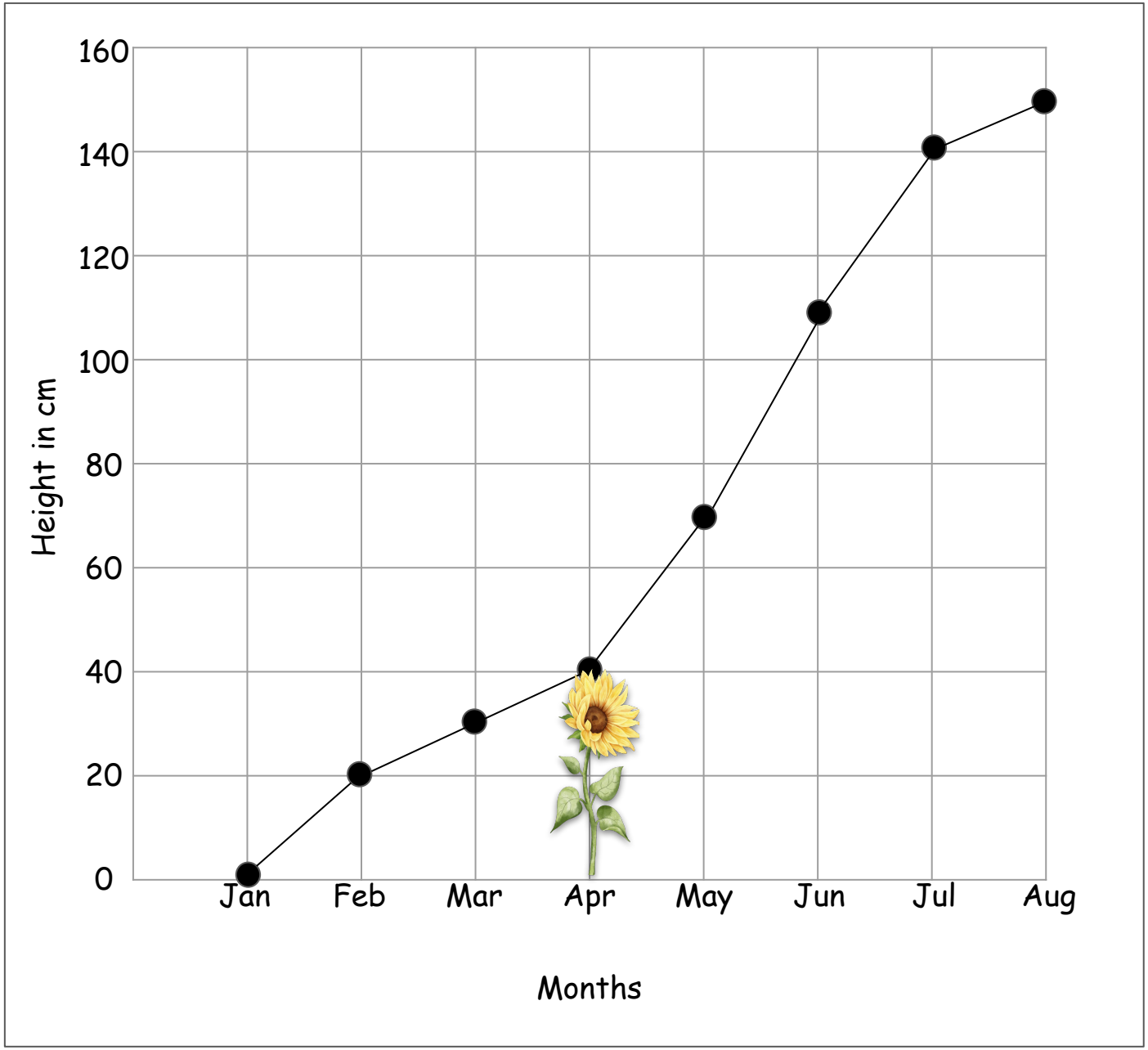
Question 1
What information does the graph show?

Question 2
What are the top three teams in the league? How many games did they each win?

Question 3
How many more games did the Hot Shots win compared to the Bobcats?

Question 4
If each team played 36 games this season, how many games did the Ducks lose?

Sunlight Sunflower Graph



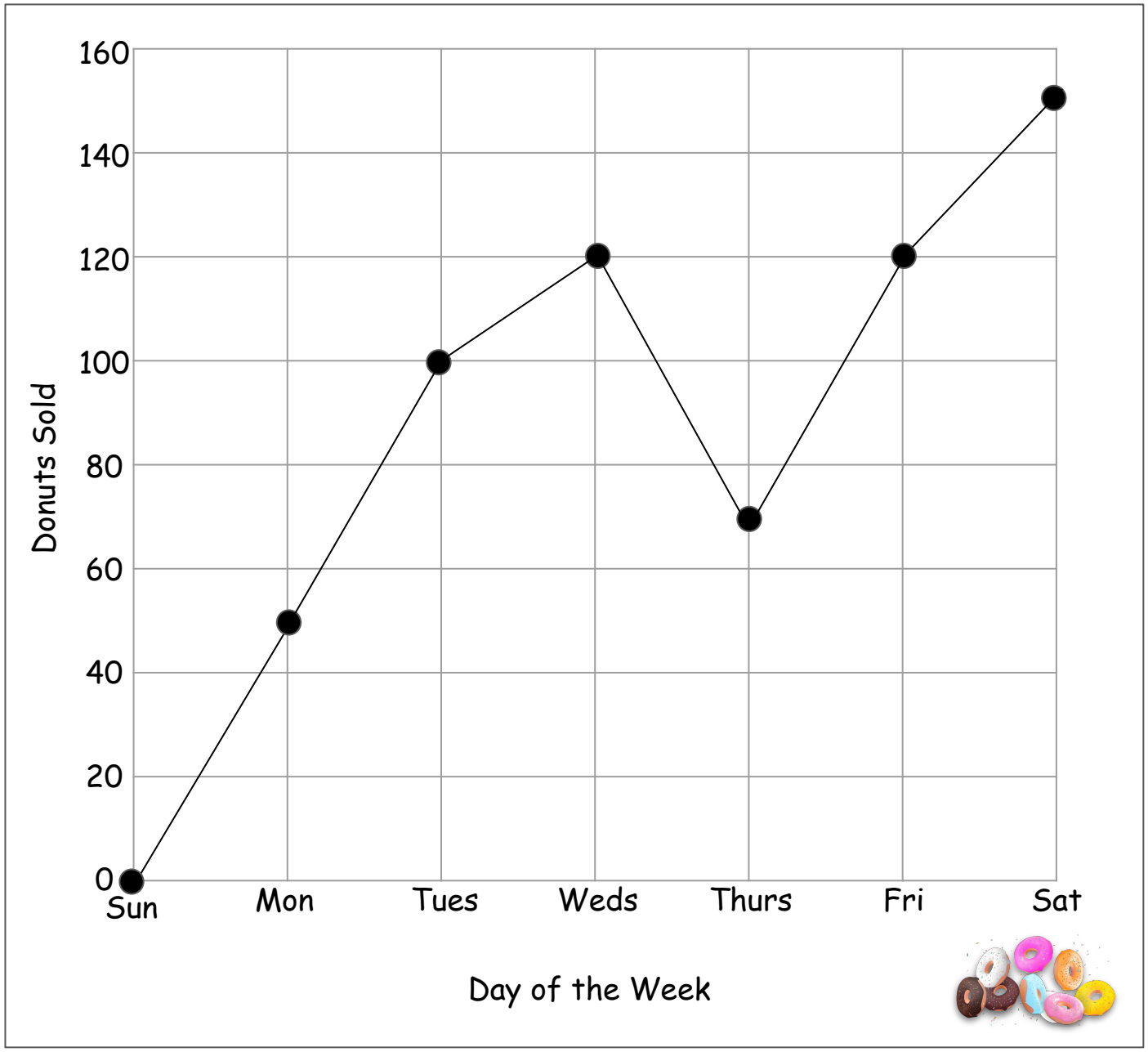
Question 1
What information does the graph show?

Question 2
How many centimetres did the sunflower grow between April and July?

Question 3
How many months did it take the sunflower to grow more than a metre tall?

Question 4
How much taller was the sunflower in August compared to May?

Sunlight Donut Graph



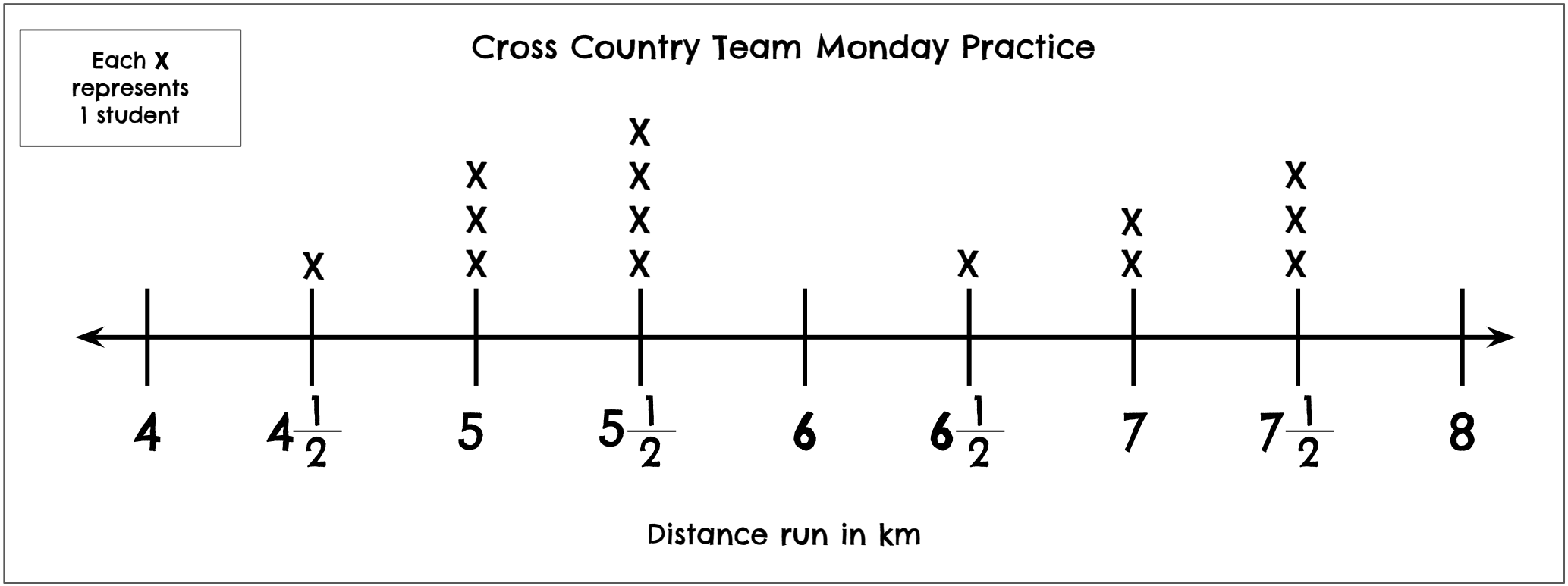
Question 1
What information does the graph show?

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

Question 3
How many donuts were sold on Sunday? Why do you think this might be?

Question 4
How many donuts were sold this week?

Sunlight Line Plot



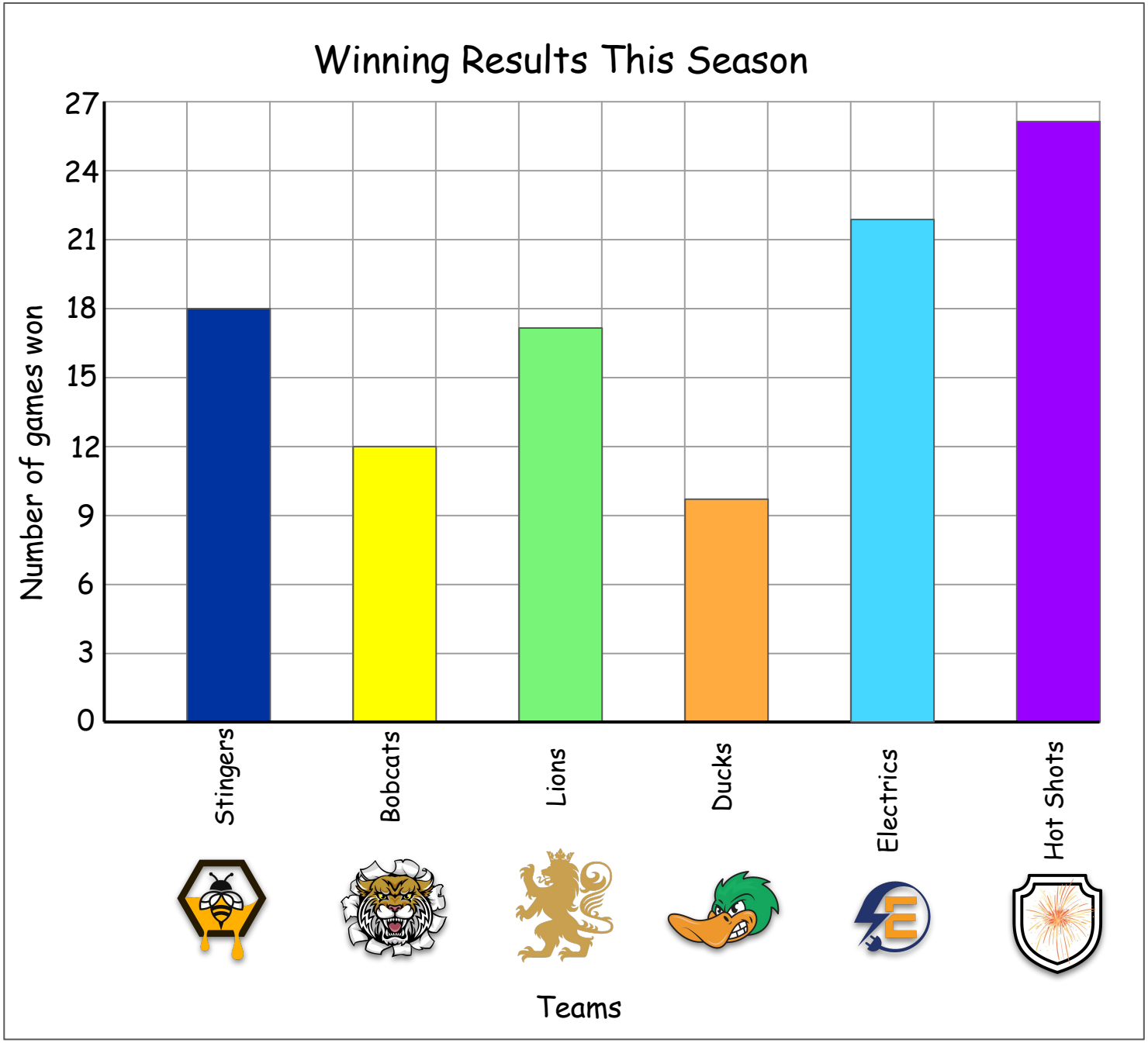
Question 1
What information does the graph show?

Question 2
How many students ran 7 and 1/2 km?

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

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

Twilight Bar Graph



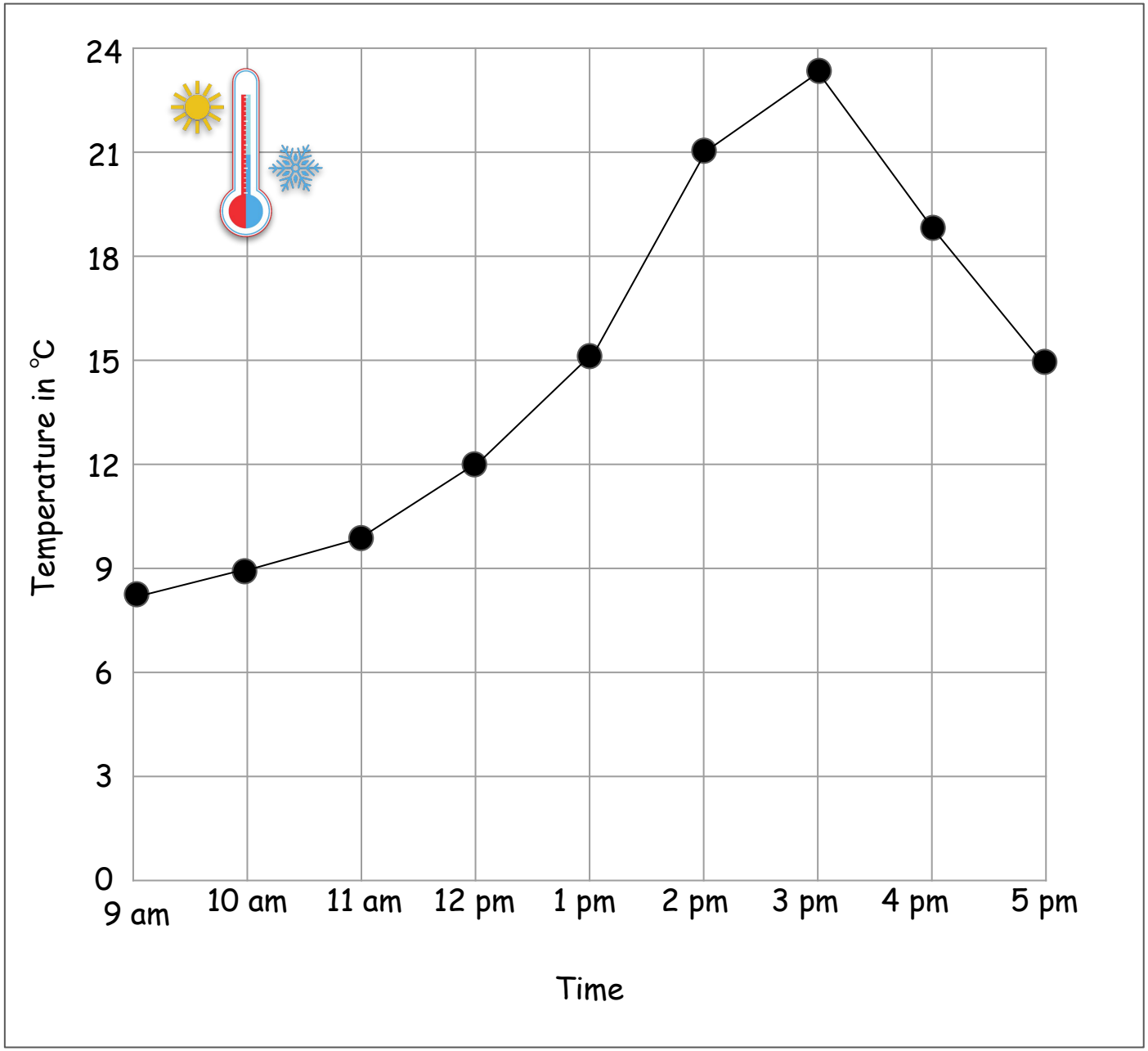
Question 1
What information does the graph show?

Question 2
How many 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?

Twilight Temperature Graph



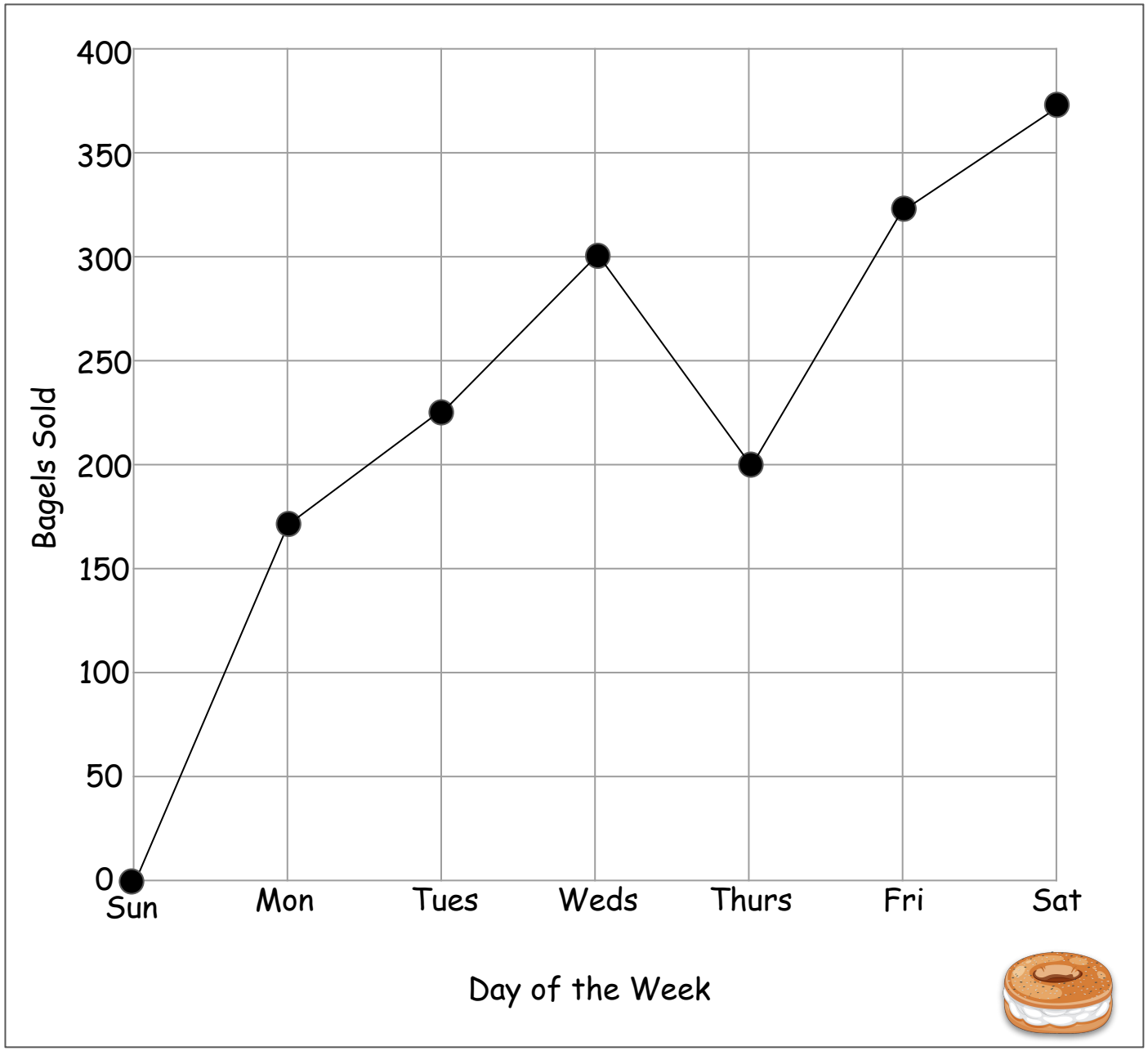
Question 1
What information does the graph show?

Question 2
What is the difference between the hottest temperature and the coldest temperature recorded?

Question 3
How much did the temperature increase between 11 am and 2 pm?

Question 4
Between what times did the temperature change by 3 degrees?

Twilight Bagel Graph



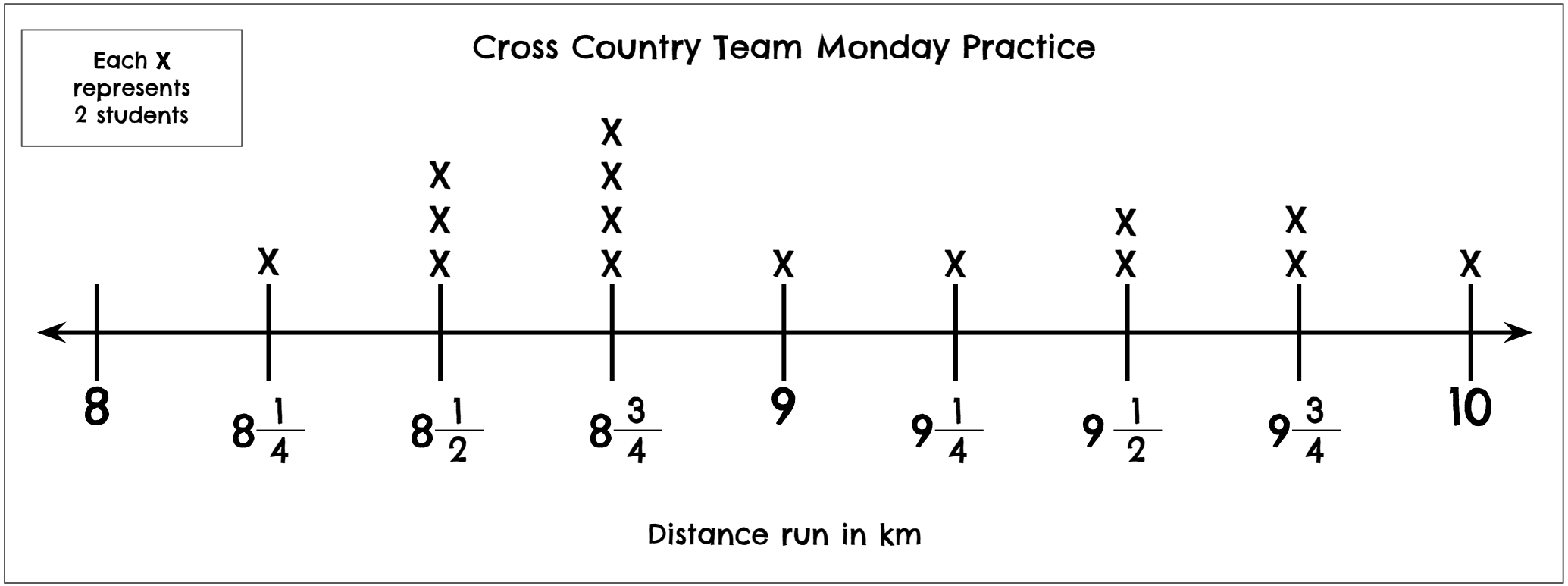
Question 1
What information does the graph show?

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 $3, what is the difference between the amount of money made on Tuesday compared to Saturday?

Twilight Line Plot



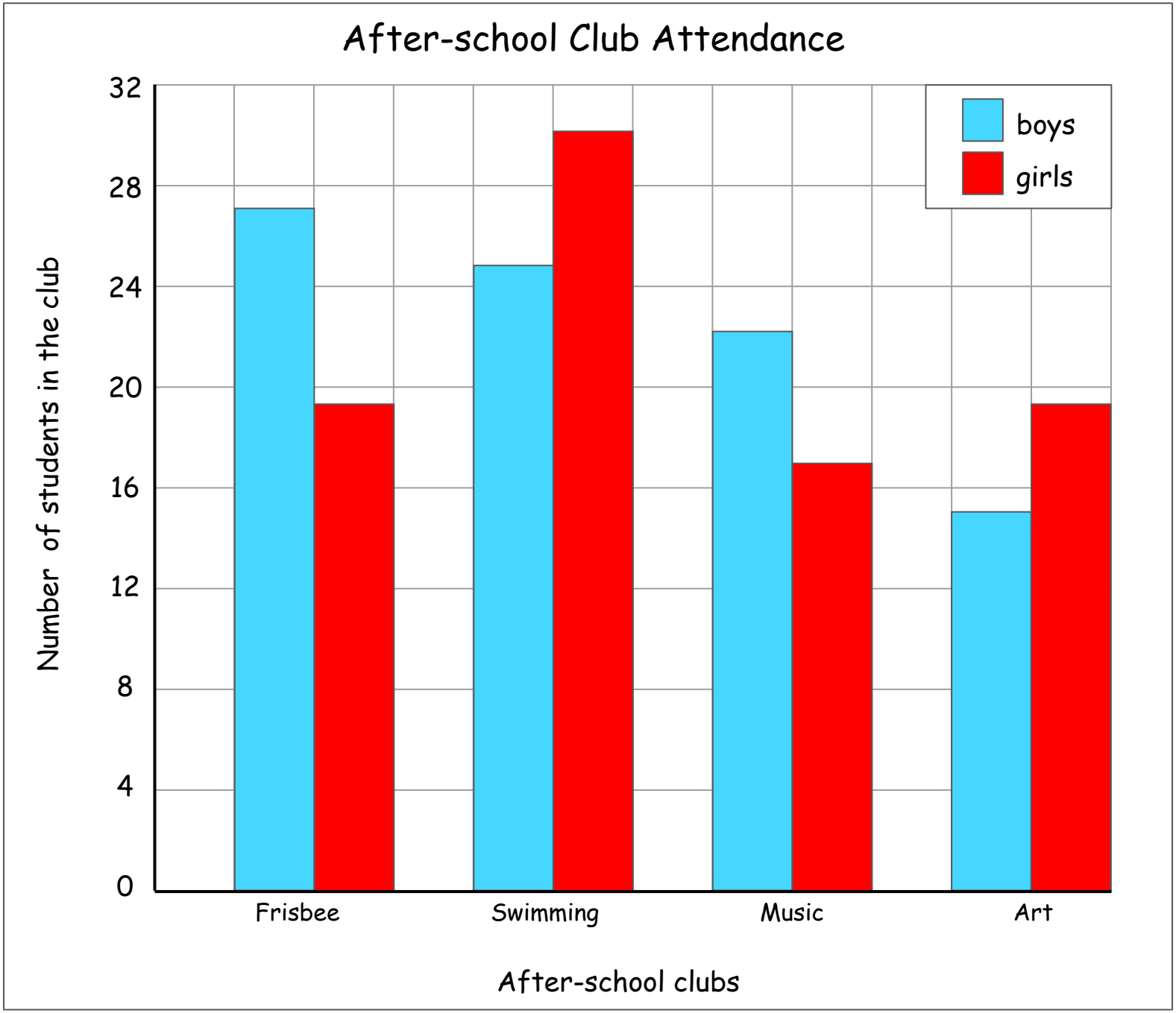
Question 1
What information does the graph show?

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?

Midnight Bar Graph



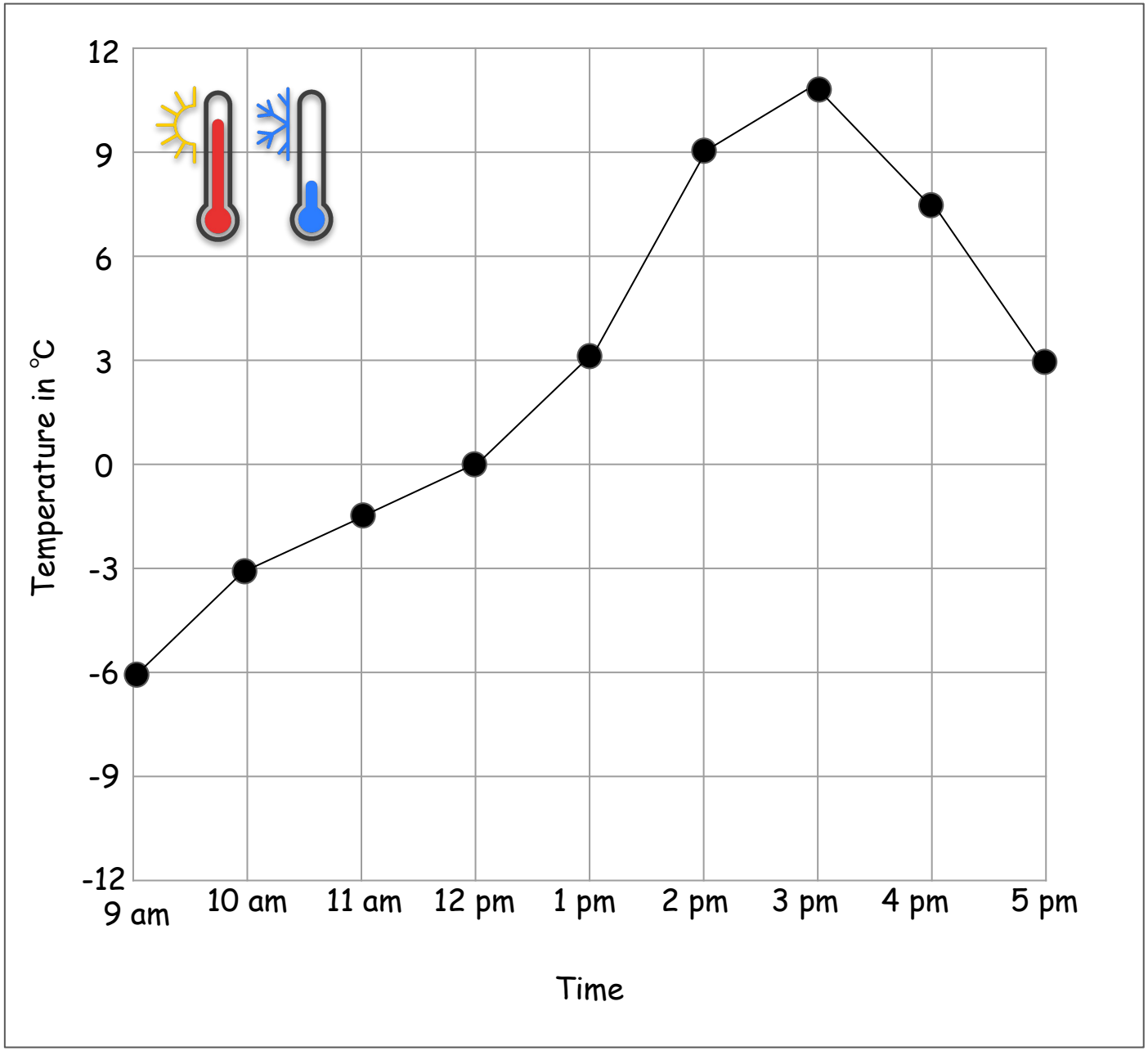
Question 1
What information does the graph show?

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?

Midnight Temperature Graph



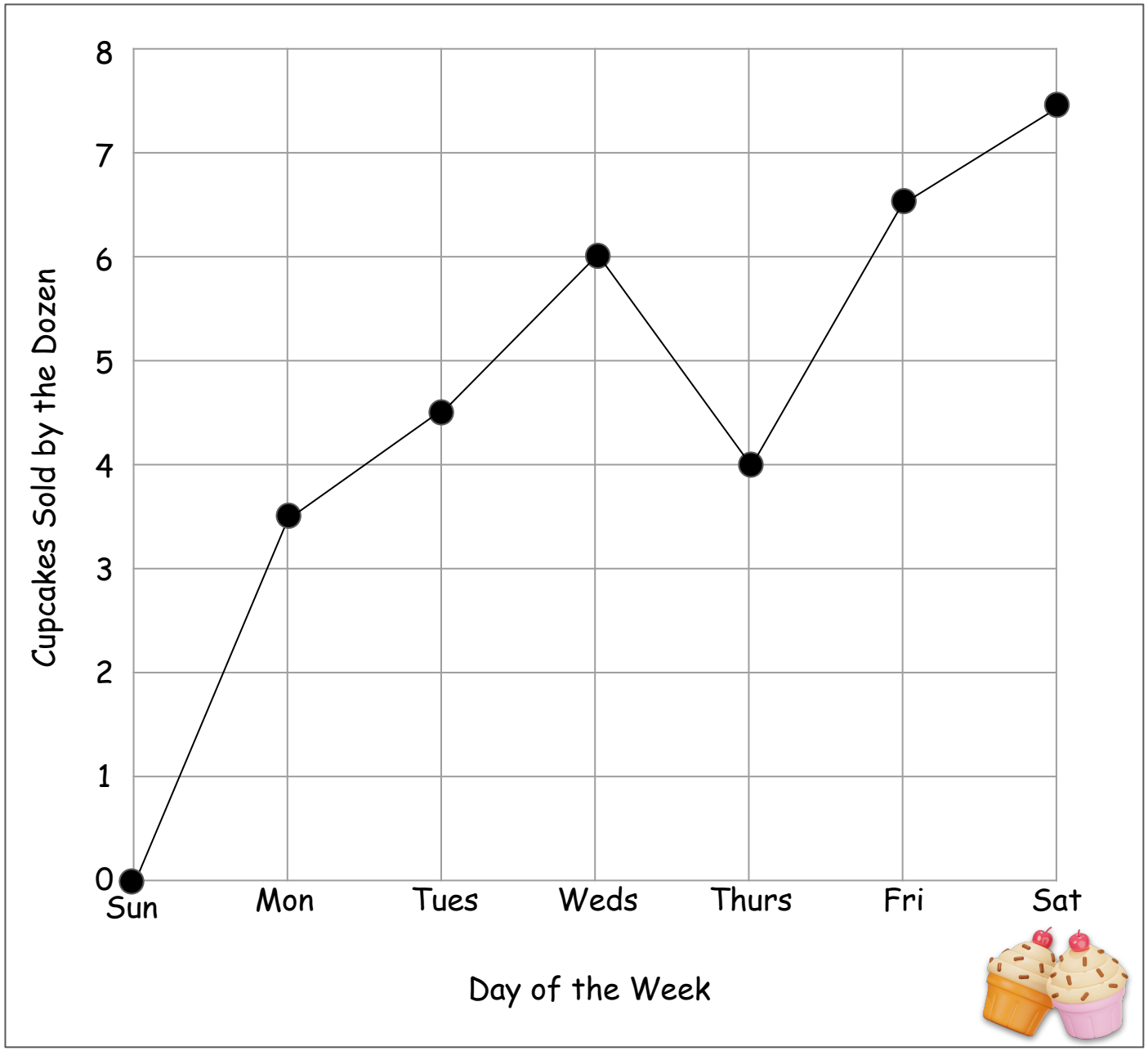
Question 1
What information does the graph show?

Question 2
What is the difference between the hottest temperature and the coldest temperature recorded?

Question 3
How much did the temperature increase between 10 am and 2 pm?

Question 4
Between what times did the temperature change by 3 degrees?

Midnight Cupcake Graph



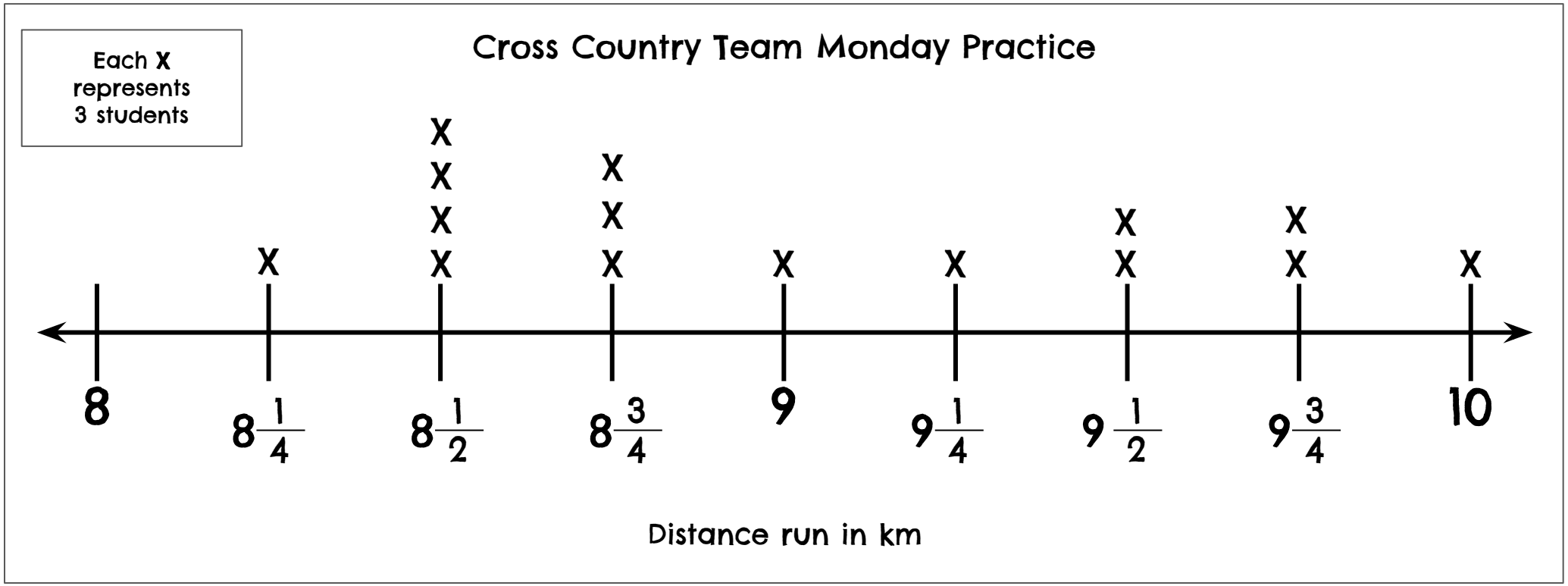
Question 1
What information does the graph show?

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 Line Plot



Question 1
What information does the graph show?

Question 2
How many students are 250 metres short of a 10 km run?

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

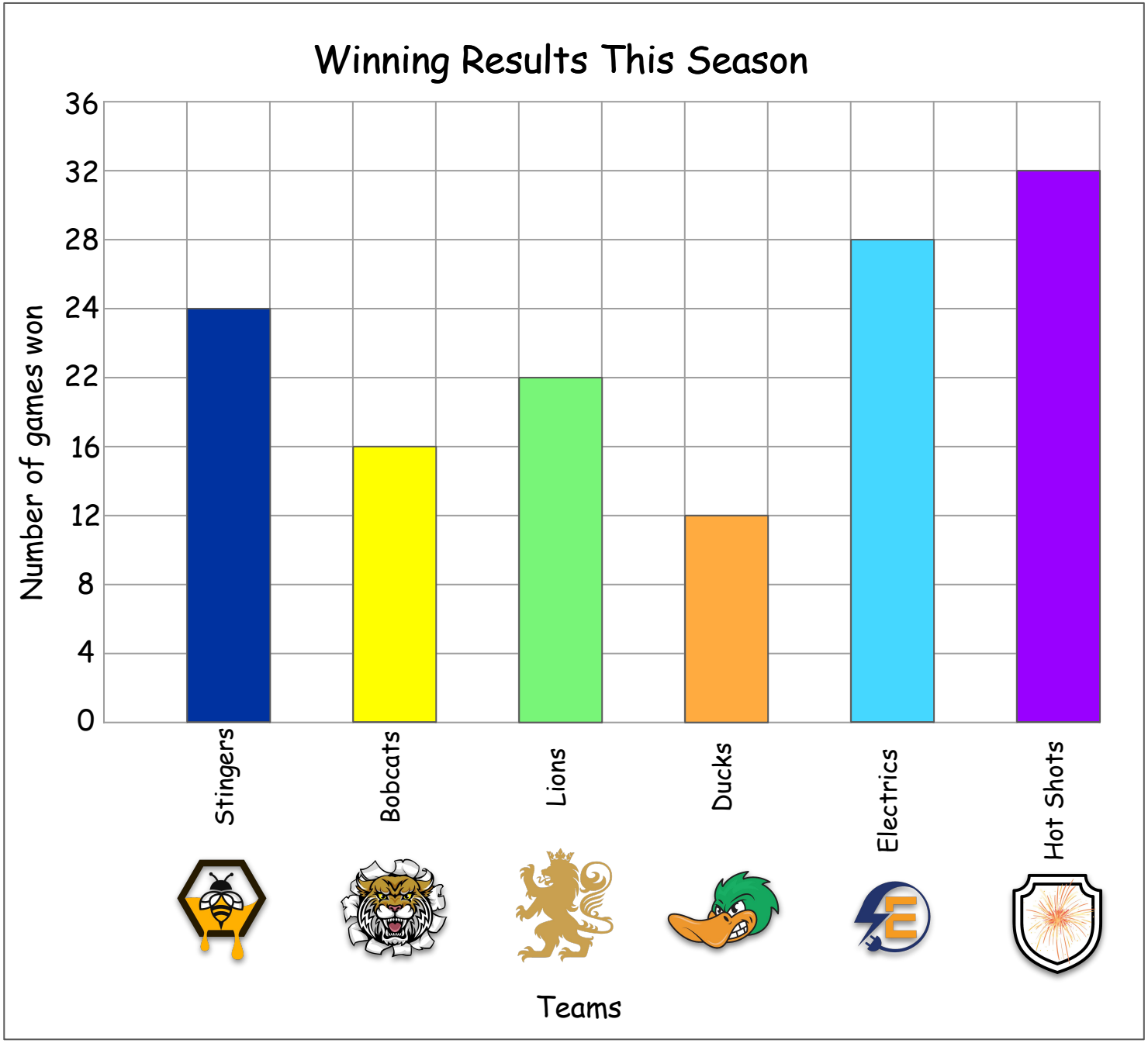
Question 4
How far did all of the students who ran more than 9 km run in total?
Hint: How could writing the fractions as decimals help you?

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

What are the top three teams in the league?

How many games did they each win?

Hot Shots (32)

Electrics (28)

Stingers (24)

Question 3

How many more games did the Hot Shots win compared to the Bobcats?

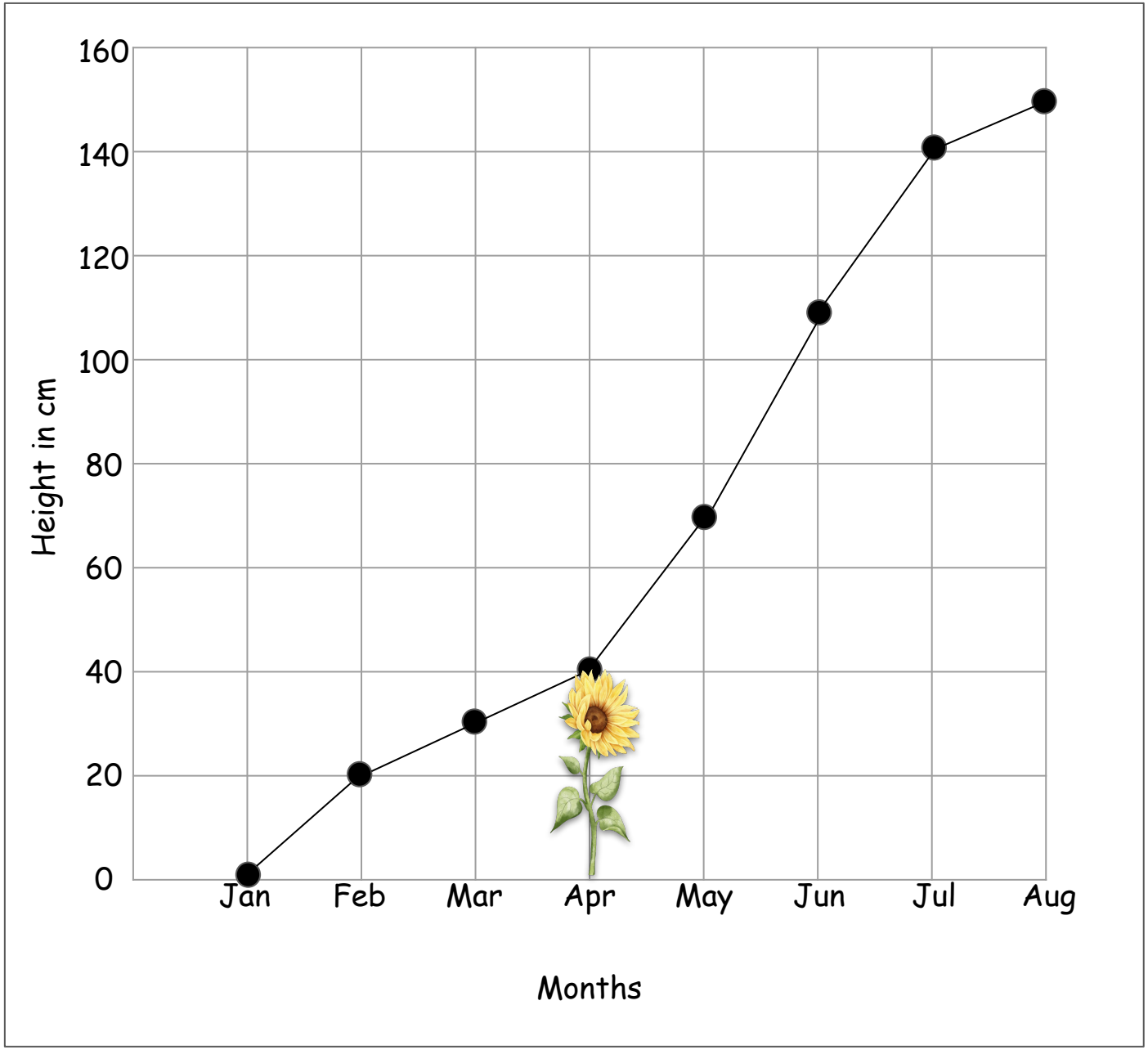
32 - 16 = 16 games

Question 4

If each team played 36 games this season, how many games did the Ducks lose?

36 - 12 = 24 games

Sunlight Sunflower Graph Answers



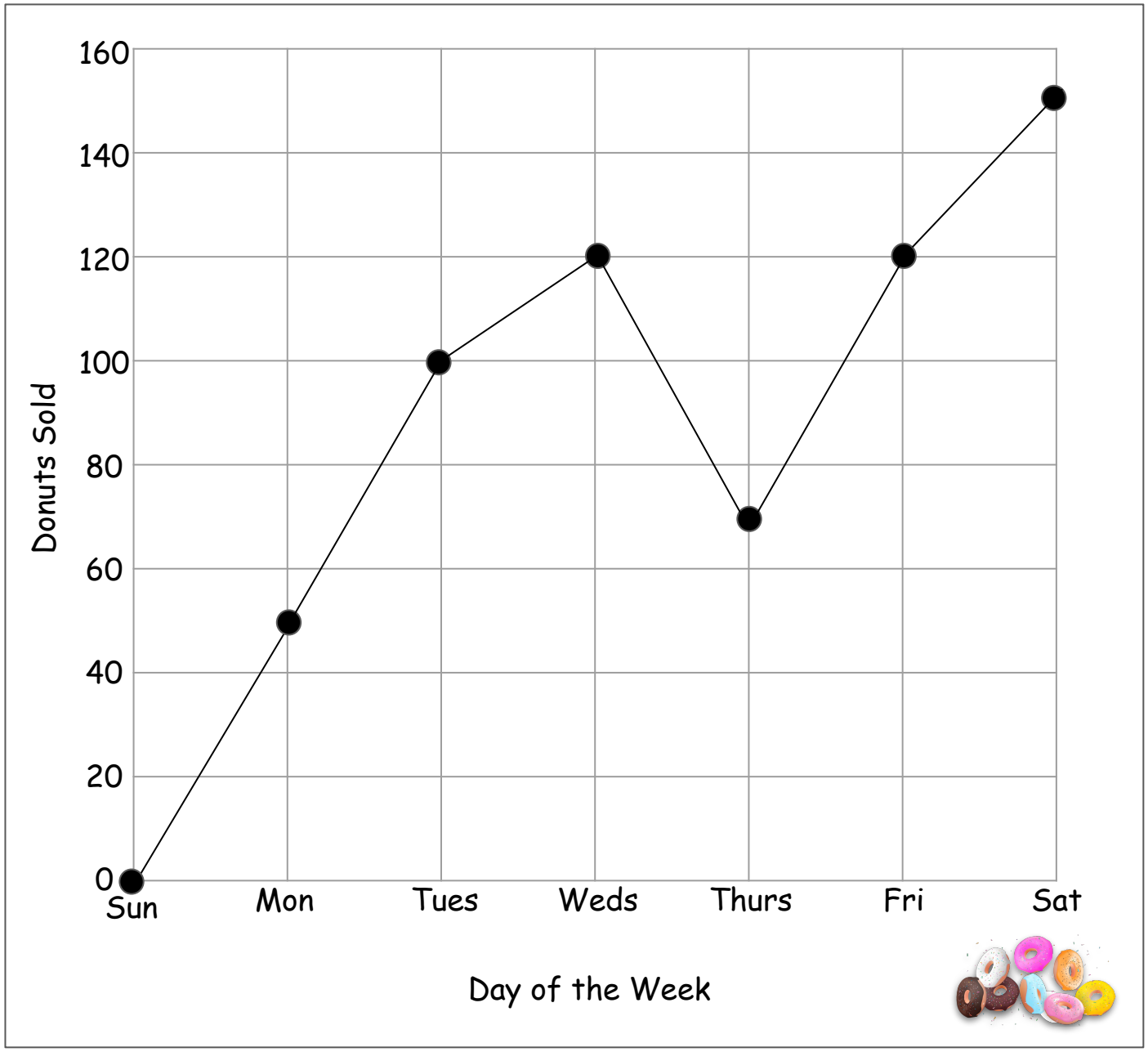
Question 1
What information does the graph show?
How tall a sunflower grew in 8 months.
(Answers could vary)

Question 2
How many centimetres did the sunflower grow between April and July?
140 - 40 = 100 cm

Question 3
How many months did it take the sunflower to grow more than a metre tall?
6 months

Question 4
How much taller was the sunflower in August compared to May?
150 - 70 = 80 cm

Sunlight Donut Graph Answers



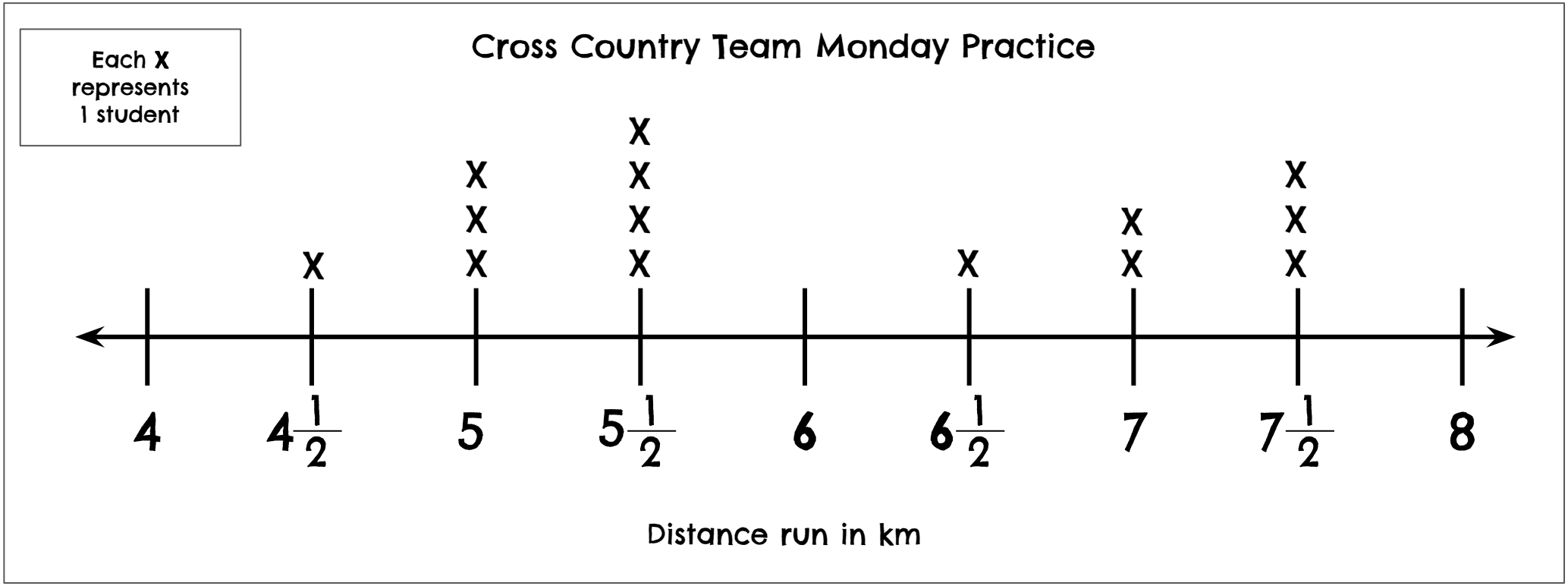
Question 1
What information does the graph show?
How many donuts were sold in a week.
(Answers could vary)

Question 2
What is the difference between donuts sold on Friday to donuts sold on Monday?
120 - 50 = 70 donuts

Question 3
How many donuts were sold on Sunday? Why do you think this might be?
0. The cupcake shop was closed.

Question 4
How many donuts were sold this week?
50 + 100 + 120 + 70 + 120 + 150
Total: 610

Sunlight Line Plot Answers



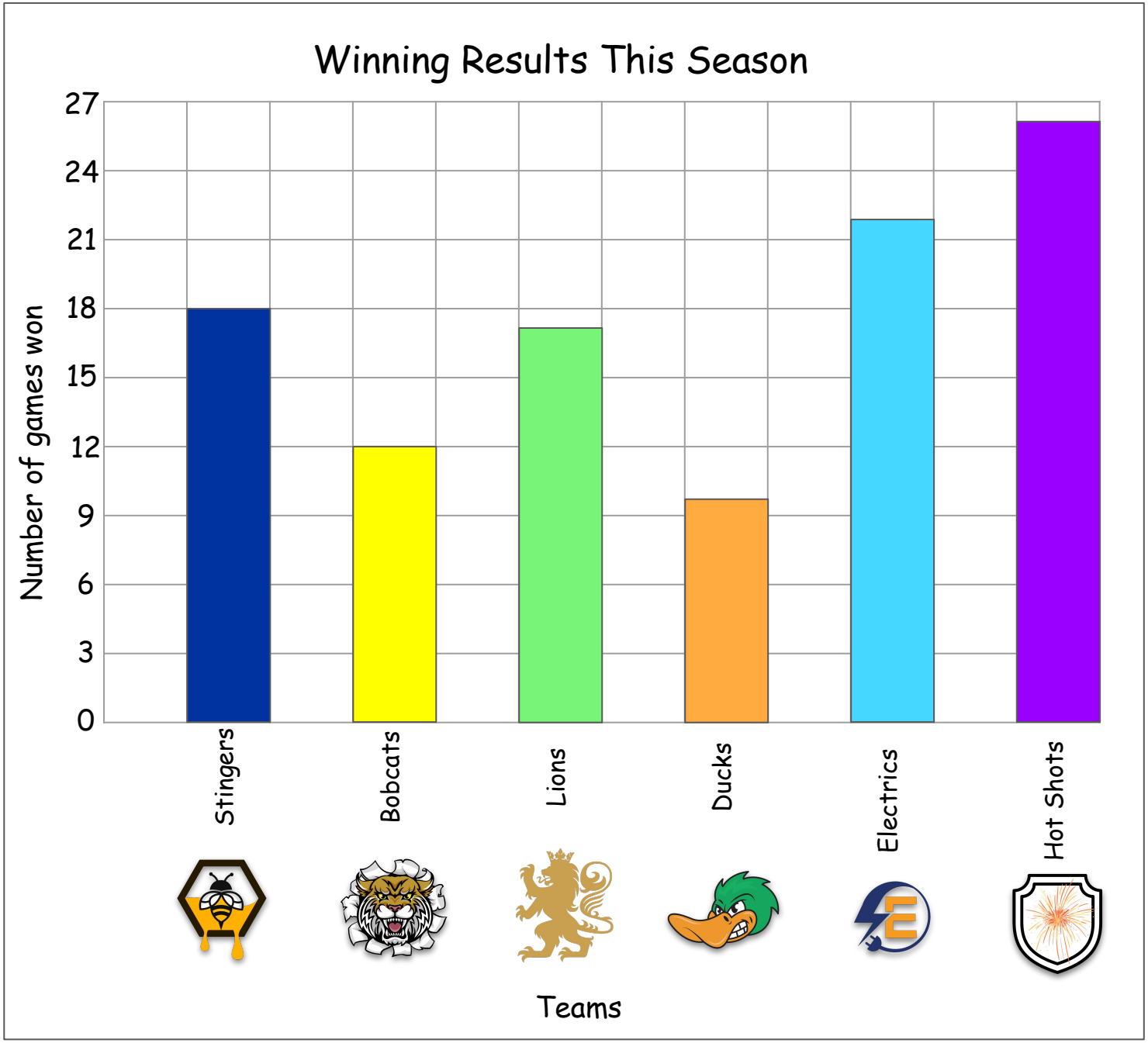
Question 1
What information does the graph show?
How far students ran at running practise on Monday.
(Answers could vary)

Question 2
How many students ran 7 and 1/2 km?
3

Question 3
Four students ran together.
How far did they run?
5 ½ km

Question 4
How many students came to cross country practice on Monday?
14

Twilight Bar Graph



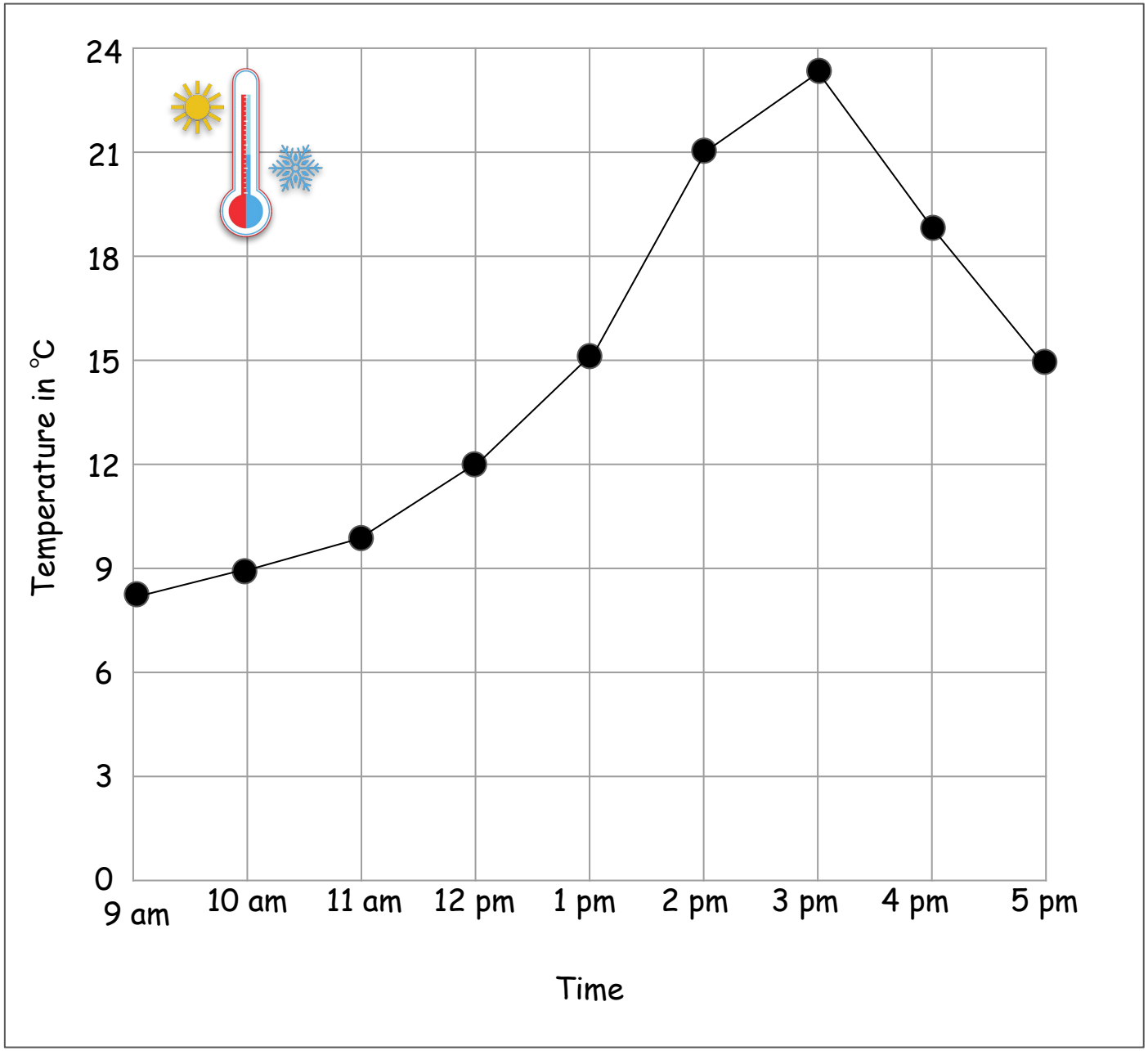
Question 1
What information does the graph show?
How many games 6 teams have won this season.
(Answers could vary)

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

Twilight Temperature Graph Answers



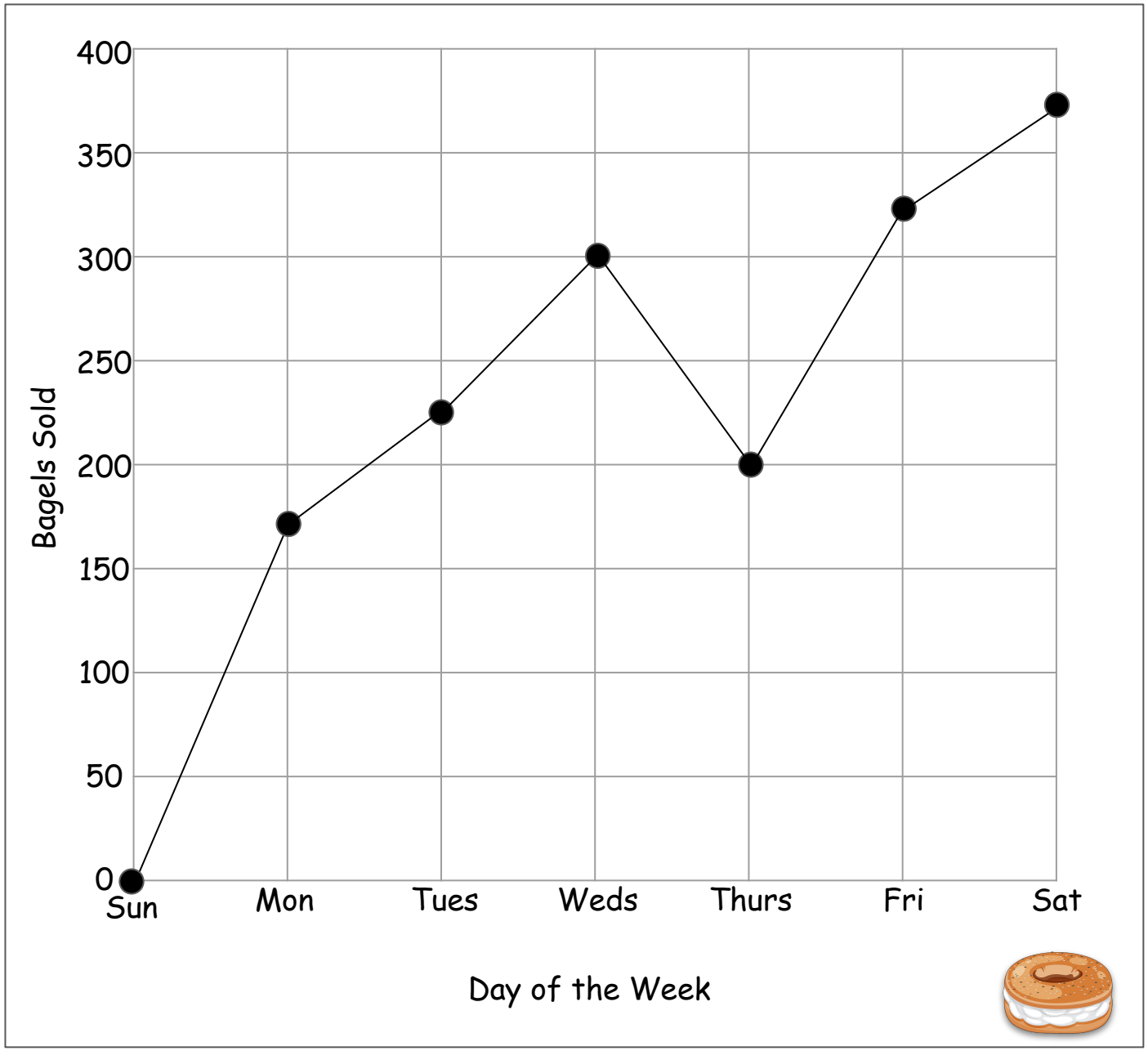
Question 1
What information does the graph show?
How much the temperature changes throughout the day.
(Answers could vary)

Question 2
What is the difference between the hottest temperature and the coldest temperature recorded?
23 - 8 = 15 degrees

Question 3
How much did the temperature increase between 11 am and 2 pm?
21 - 10 = 11 degrees

Question 4
Between what times did the temperature change by 3 degrees?
(Answers will vary)
10 am and 12 pm
12 pm and 1 pm

Twilight Bagel Graph Answers



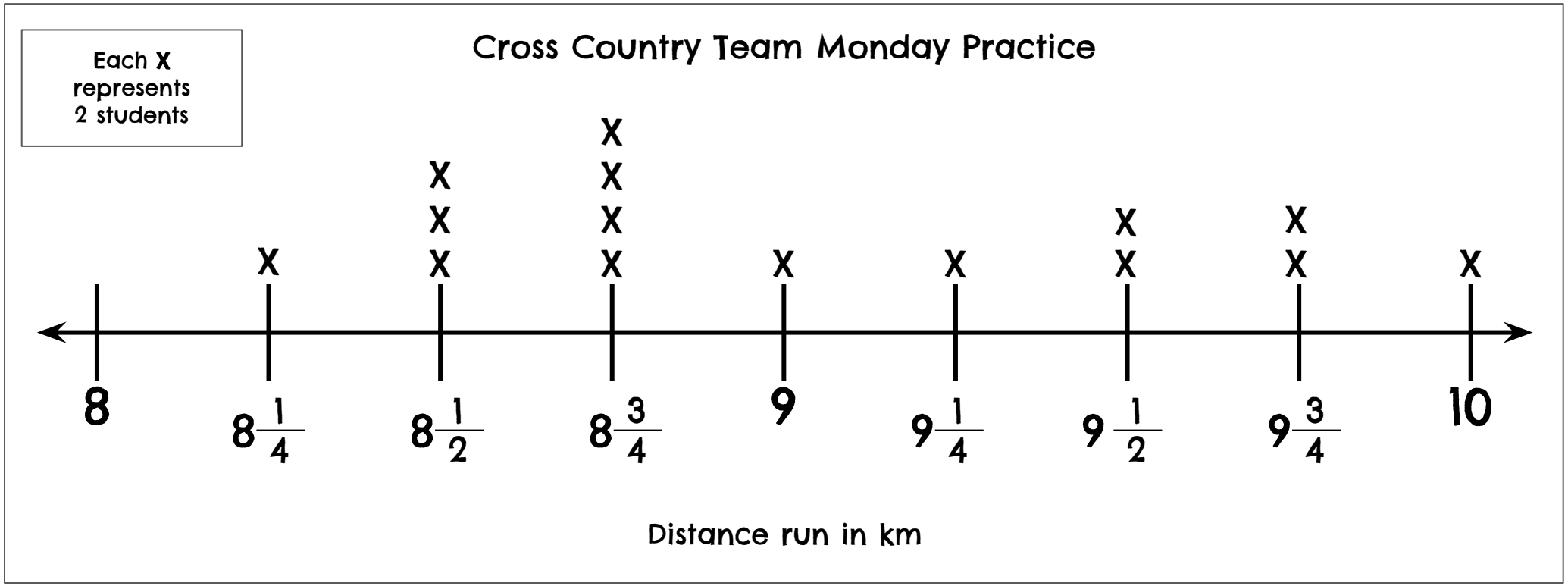
Question 1
What information does the graph show?
How many bagels were sold in a week.
(Answers could vary)

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

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

Question 4
If a bagel costs $3, what is the difference between the amount of money made on Tuesday compared to Saturday?
Tuesday: 225 x 3 = 675
Saturday: 375 x 3 = 1,125
1,125 - 675 = $450 difference

Twilight Line Plot Answers



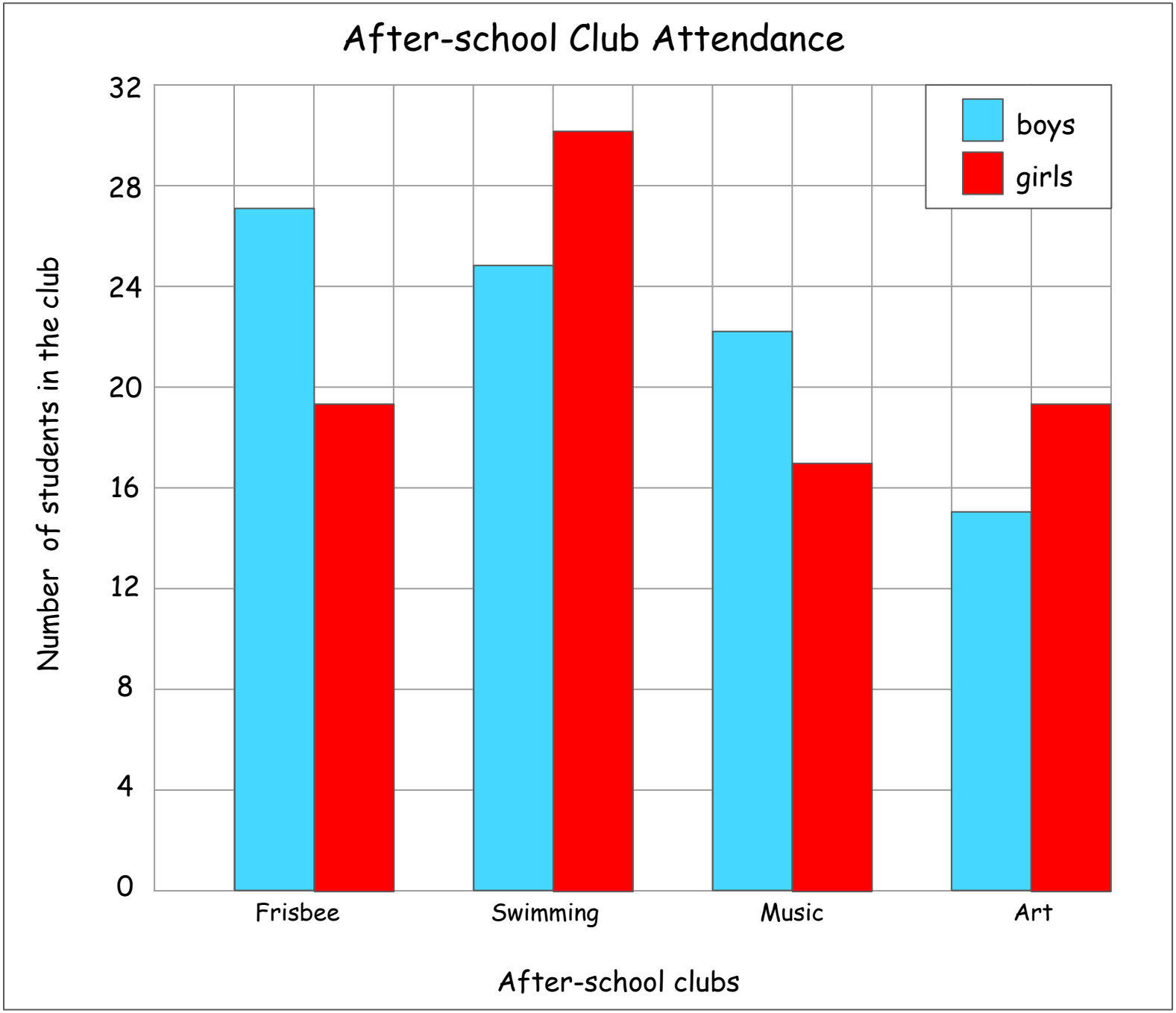
Question 1
What information does the graph show?
How far students ran at running practise on Monday.
(Answers could vary)

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

Midnight Bar Graph Answers



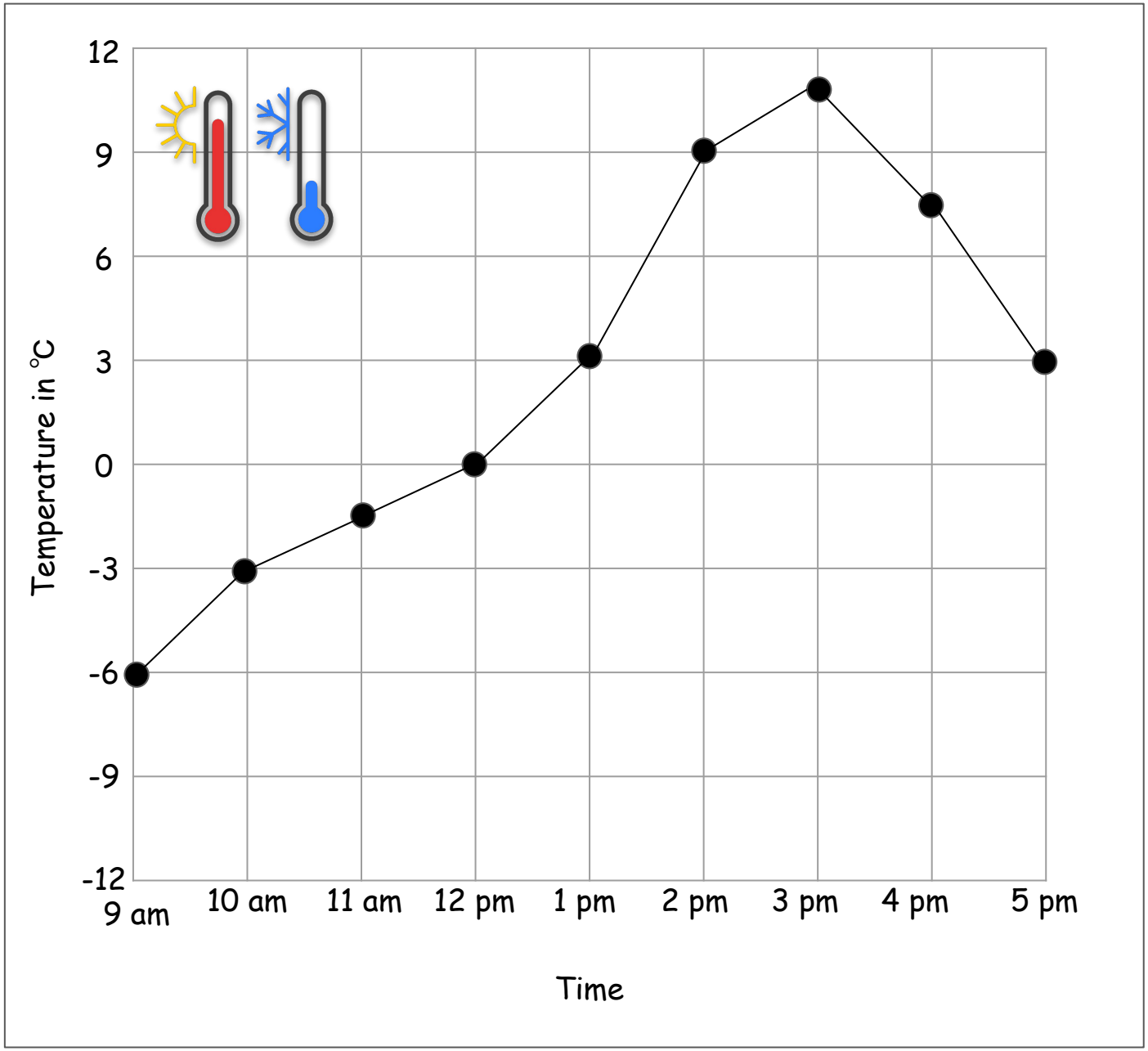
Question 1
What information does the graph show?
How many boys and girls attend after-school clubs. (Answers could vary)

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 attend frisbee

Question 4
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

Midnight Temperature Graph Answers



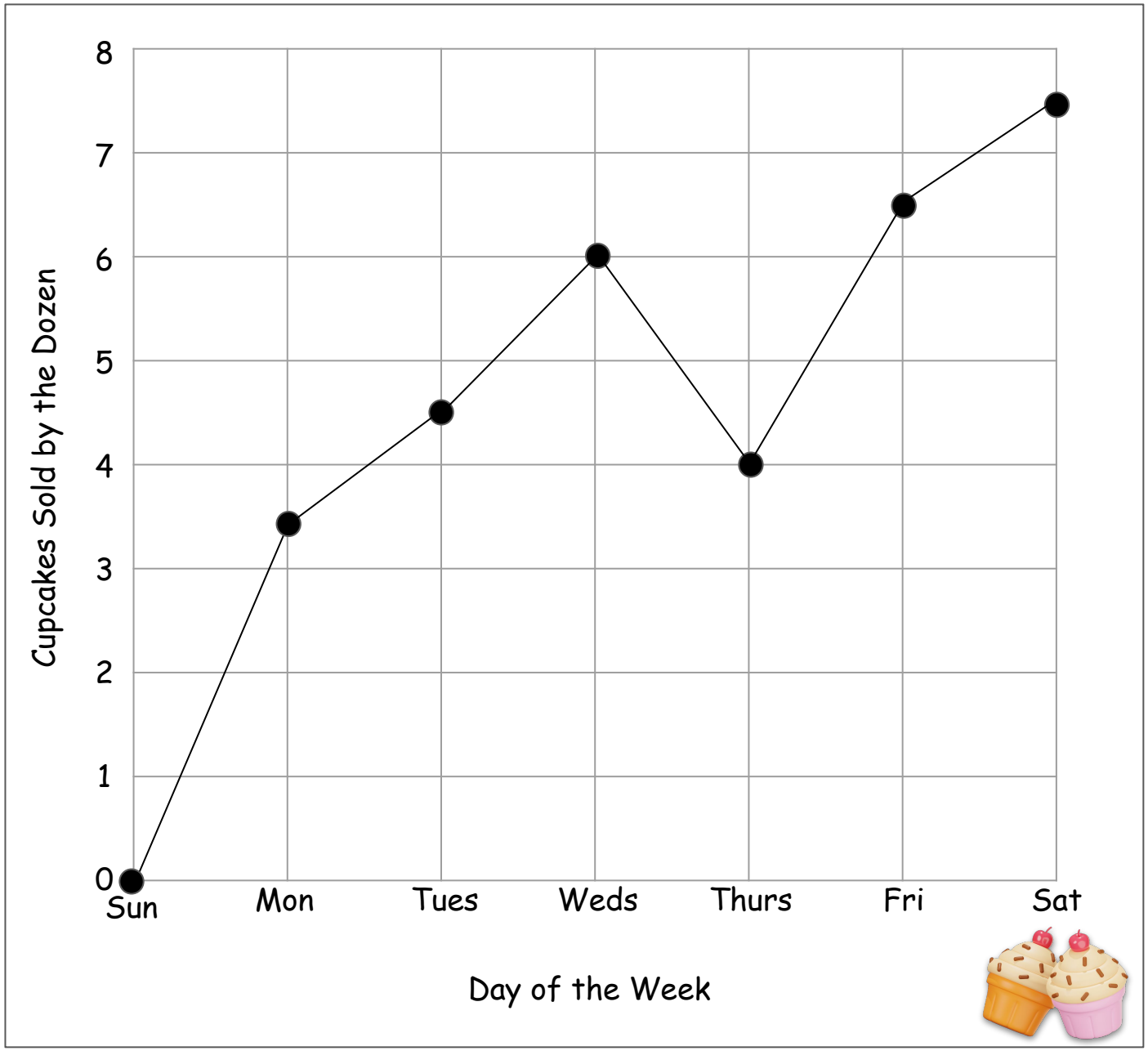
Question 1
What information does the graph show?
How much the temperature changes throughout the day.
(Answers could vary)

Question 2
What is the difference between the hottest temperature and the coldest temperature recorded?
11 - (-6) = 17 degrees

Question 3
How much did the temperature increase between 10 am and 2 pm?
-3 to 9
It increased by 12 degrees

Question 4
Between what times did the temperature change by 3 degrees?
Answers could vary.
9 am to 10 am
10 am to 12 pm
12 pm to 1 pm

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?

(6 x 12) + 6 = 78 on Friday

(3 x 12) + 6 = 42 on Monday

78 - 42 = 36 cupcakes

Question 3

How many cupcakes were sold between Monday and Wednesday?

Mon: 42

Tues: (4 x 12) + 6 = 54

Weds: 6 x 12 = 72

168 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?

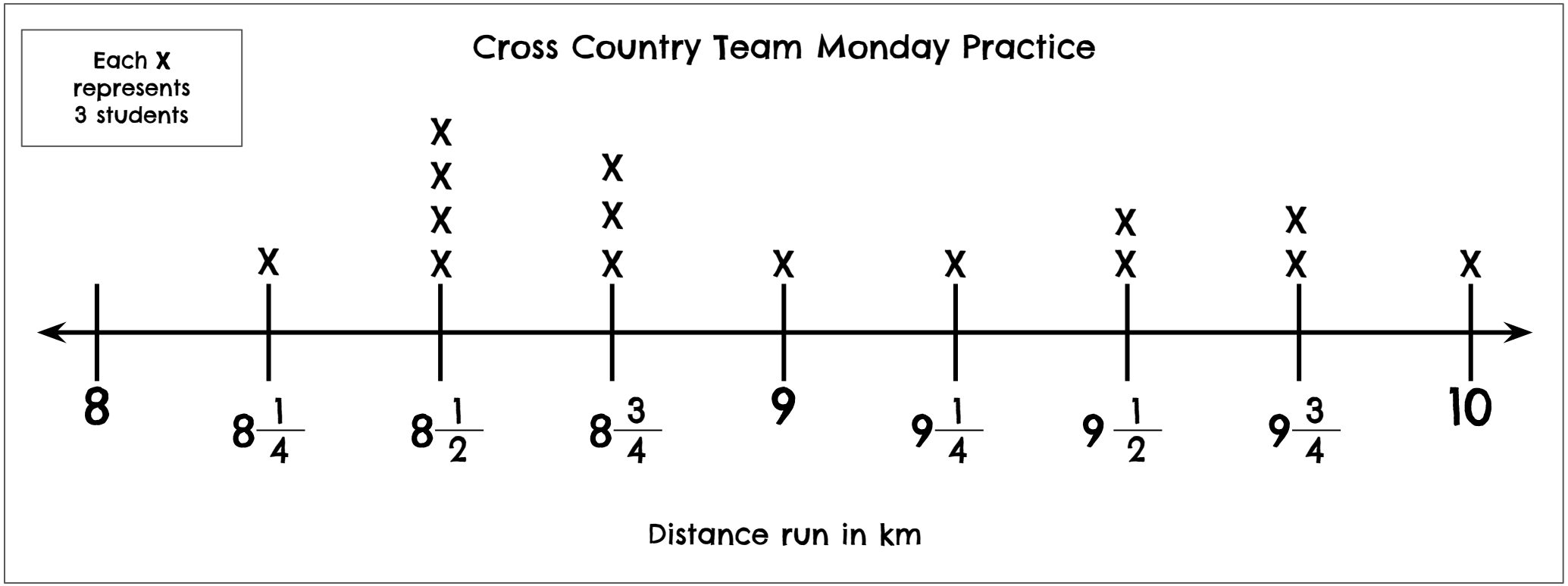
Thurs: 48 x 2.75 = $132

Sat: 90 x 2.75 = $247.50

247.50 - 132 = $115.50 difference

awesomenicity

Midnight 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 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