

# Charts and Graphs: Holiday Problems

<b>Aim:</b> Interpret line graphs and use these to solve problems. I can use line graphs to solve problems.	<b>Success Criteria:</b> I can read data represented in line graphs. I can answer questions using data from line graphs. I can solve problems using line graphs.	<b>Resources:</b> Lesson Pack
	<b>Key/New Words:</b> Line graph, variable, continuous data.	<b>Preparation:</b> Differentiated <a href="#">Holiday Problems Activity Sheets</a> – one per child <a href="#">Extra Challenge Activity Sheet</a> – as required

**Prior Learning:** It will be helpful if children have experience of solving problems using information presented in line graphs.

## Learning Sequence

	<b>Temperature Q and A:</b> Show the children the four line graphs shown on the <a href="#">Lesson Presentation</a> , and explain that they all show the temperature of different places over different times. Children look for similarities and differences between the four graphs. Children look at the questions and answers shown on the following slides of the <a href="#">Lesson Presentation</a> and work out which graph they are referring to. Share and discuss the answers.	
	<b>Holiday Planning:</b> Introduce the two families shown on the <a href="#">Lesson Presentation</a> and explain that they are going on holiday together. Share the details about the holiday plans.	
	<b>Off We Go!</b> Share the line graph shown on the <a href="#">Lesson Presentation</a> and explain that it shows data about the time and distance of the two families' journeys. Ask the children to use the graph to solve each of the problems shown on the <a href="#">Lesson Presentation</a> . After each problem, share the answer and discuss how the graph has been used to solve the problem.	
	<b>Holiday Problems:</b> Children complete the differentiated <a href="#">Holiday Problems Activity Sheets</a> , to show they use a line graph to solve problems. <div style="display: flex; justify-content: space-around; margin-top: 10px;"> <div style="text-align: center;"> <p>Using the line graph about a holiday boat ride, the children answer questions to solve problems.</p> </div> <div style="text-align: center;"> <p>Using the line graph about the number of people in the swimming pool at different times, the children answer questions to solve problems.</p> </div> <div style="text-align: center;"> <p>Using the triple line graph about holiday activities, the children answer questions to solve problems.  An <a href="#">Extra Challenge Activity Sheet</a> is included as an extension activity as needed.</p> </div> </div>	
	<b>Holiday Happenings:</b> Show children the graph displayed on the <a href="#">Lesson Presentation</a> , which shows data about an activity the two families participated in while on holiday. Can children think of what activity this could be? What title would children give the graph? How would they label the axes? Challenge children to tell the story of what is happening. Share the example answer and discuss how the graph supports this possibility. Emphasise that this is just one possibility and ask children to share their own examples.	

## Exploreit

**Answerit:** Revise answering questions about line graphs with this set of \_\_\_\_\_.

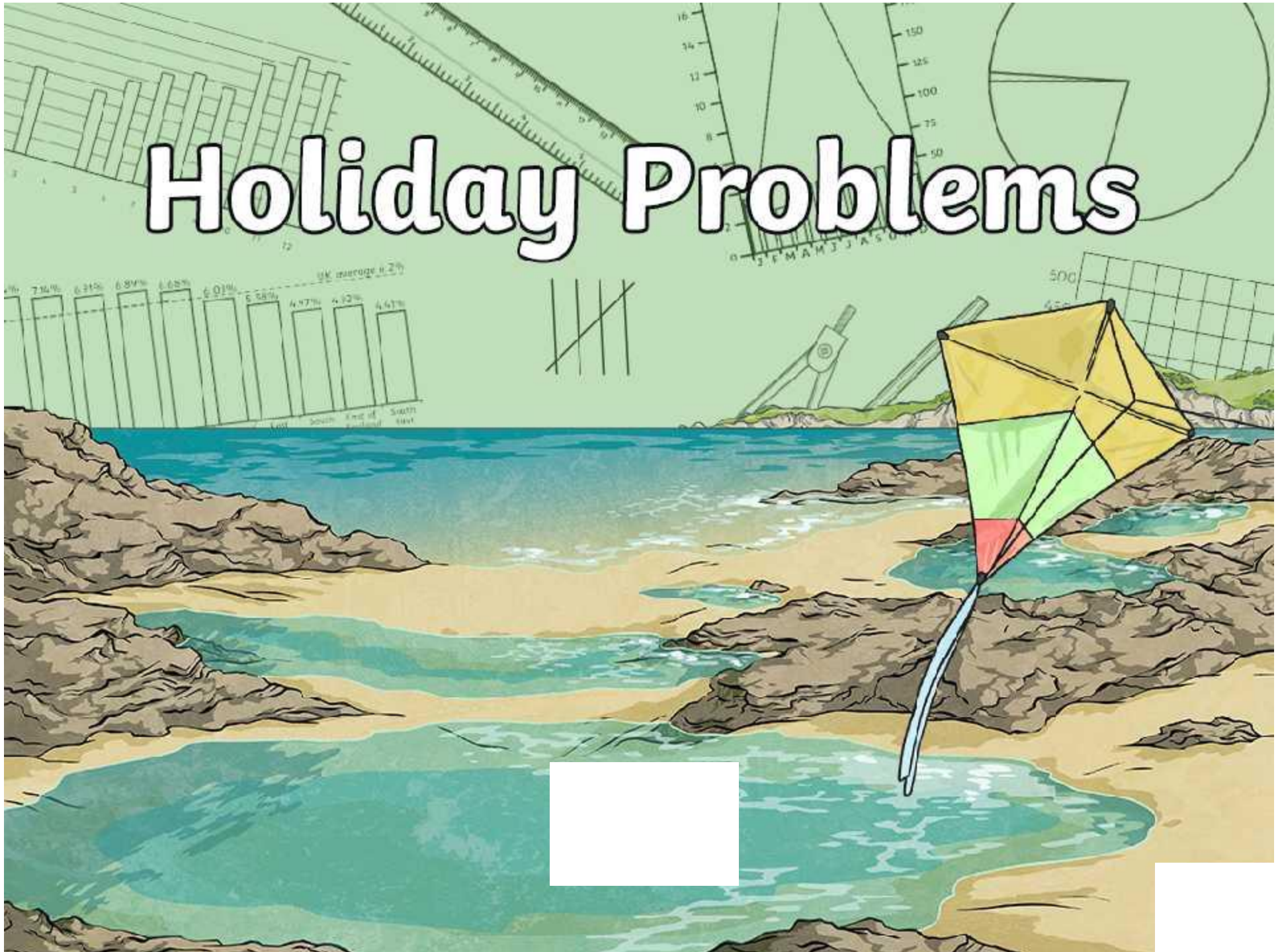
**Tellit:** Challenge children to design a line graph for their partner to come up with a story for.



# Maths

## Statistics

# Holiday Problems



# Aim

- I can use line graphs to solve problems.

# Success Criteria

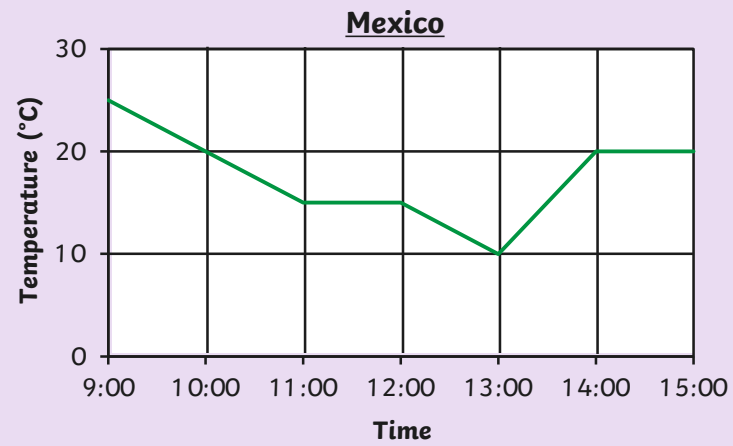
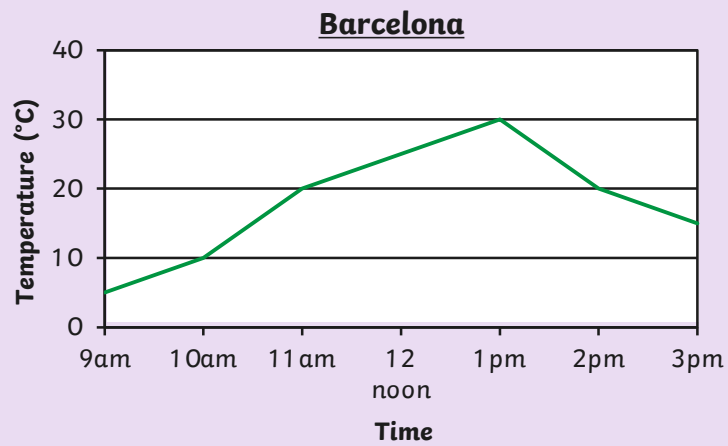
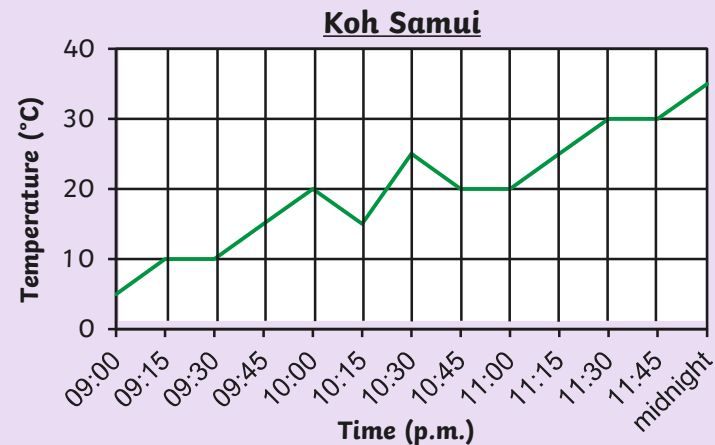
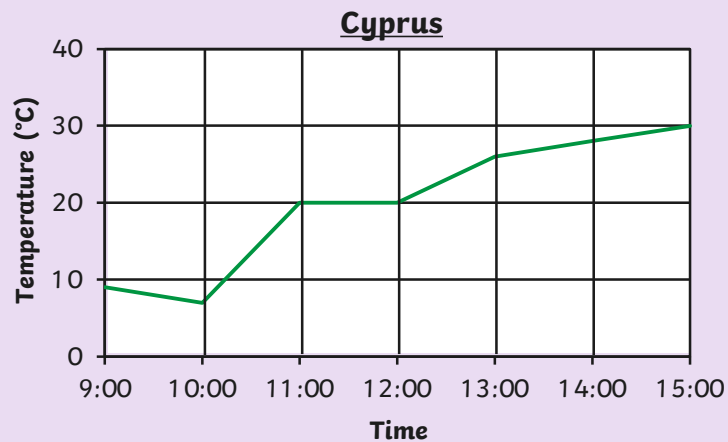
- I can read data represented in line graphs.
- I can answer questions using data from line graphs.
- I can solve problems using line graphs.



# Temperature Q and A



These four temperature graphs show the temperature over different times in different places. Can you see any similarities or differences between the graphs?



# Temperature Q and A



Look at the following question

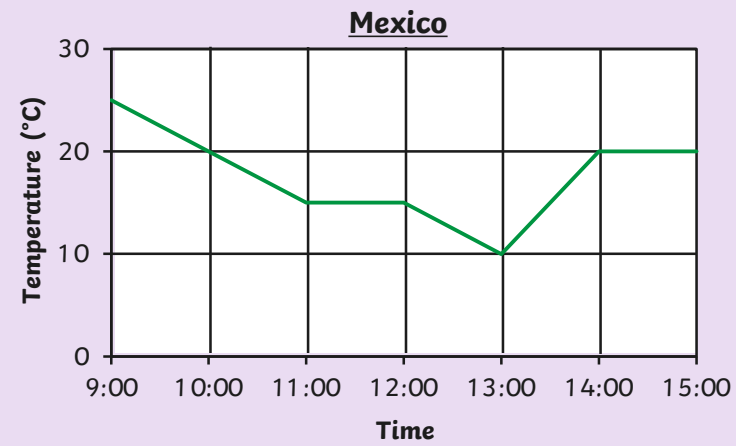
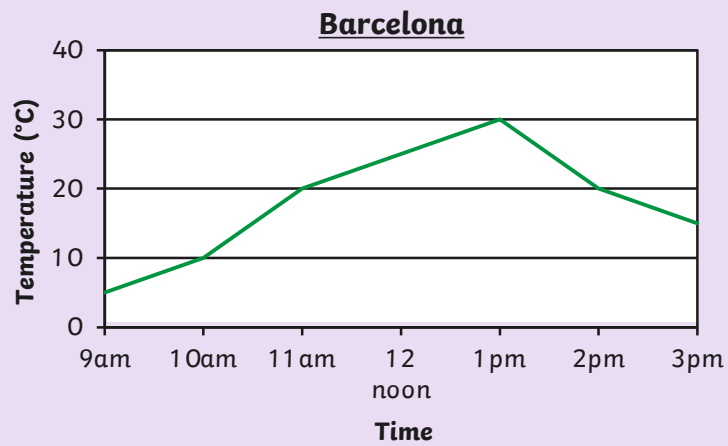
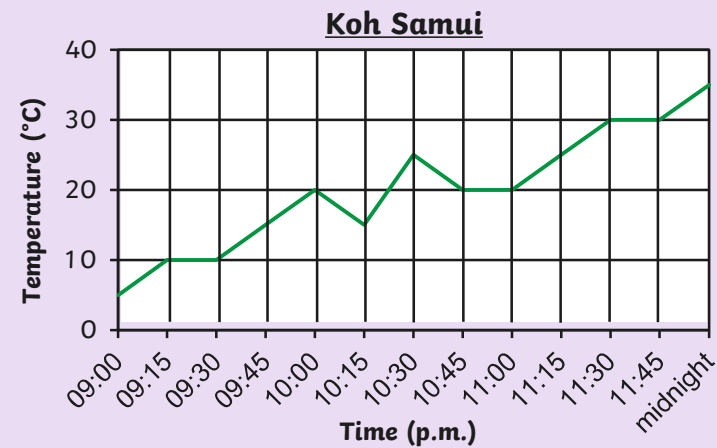
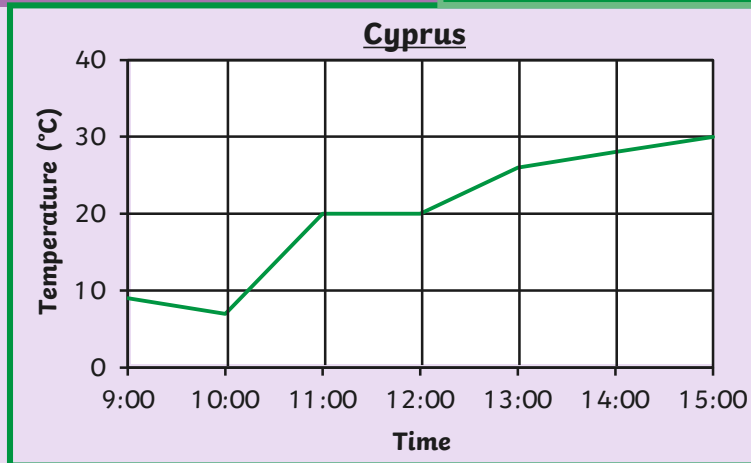
**Q:** What was

**Answer:**

5°C in Mexico or 21°C in Cyprus

graph they could be referring to.

10:00 and 15:00?



# Temperature Q and A

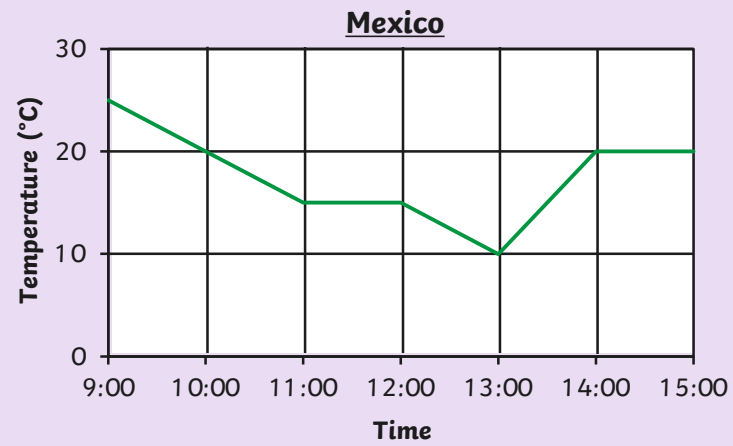
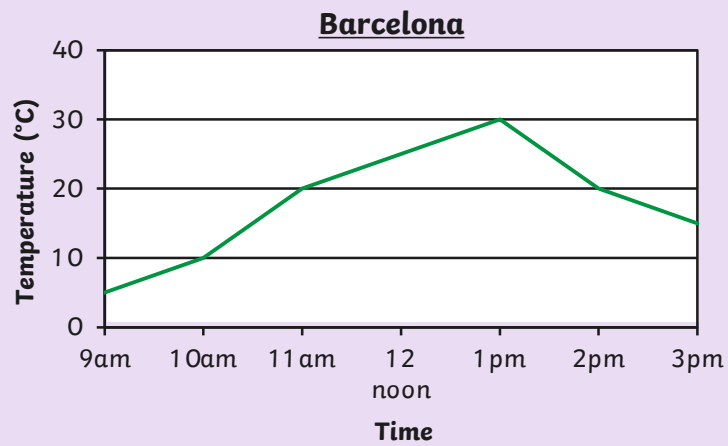
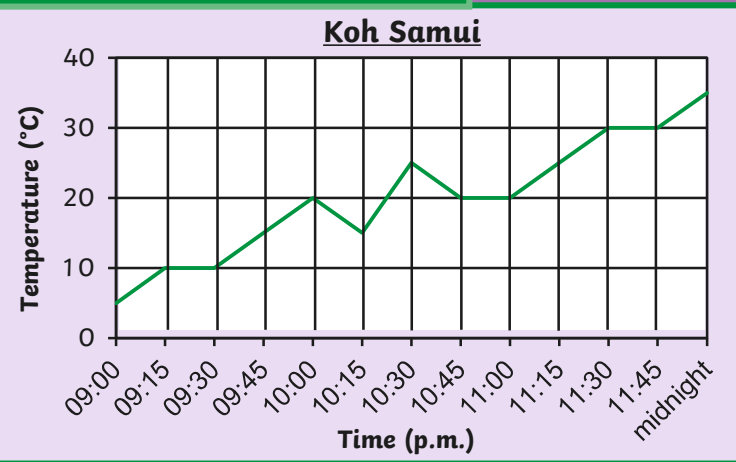
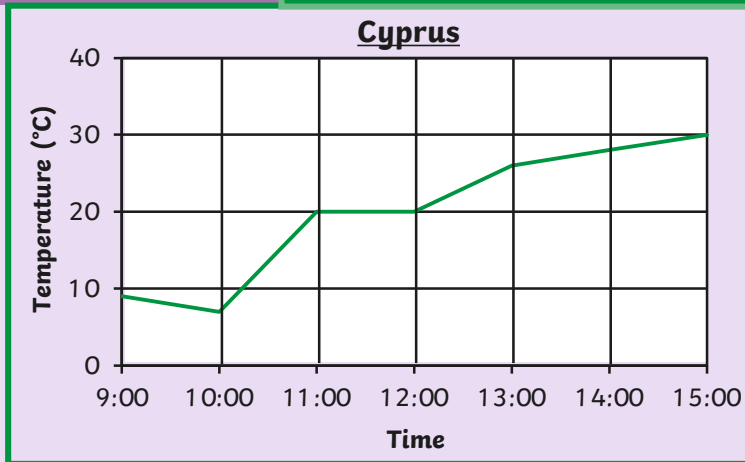


Look at the following

**Answer:**

could be referring to.

**Q:** For a **One hour in Cyprus or 15 minutes in Koh Samui** at 20°C?

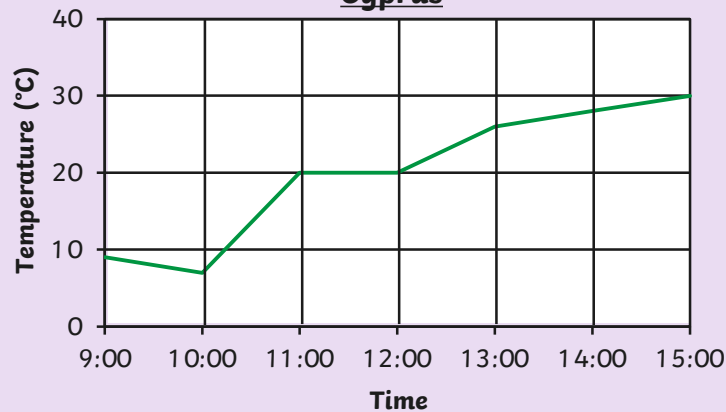


# Temperature Q and A

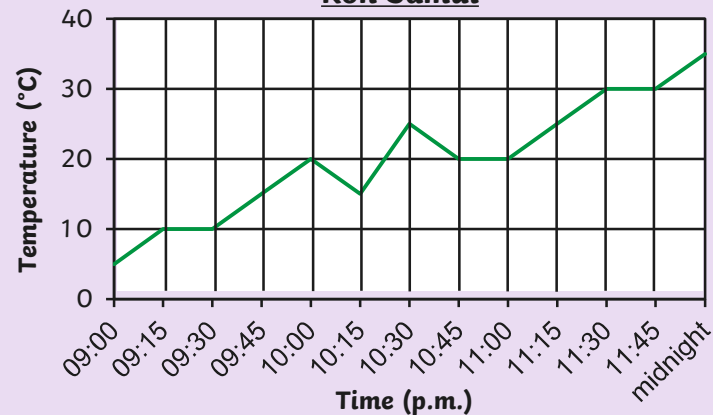


Look at the **Answer: 15°C.** Only Barcelona can answer this question because it is the only graph showing the morning using the 12-hour clock. *ferring to.*

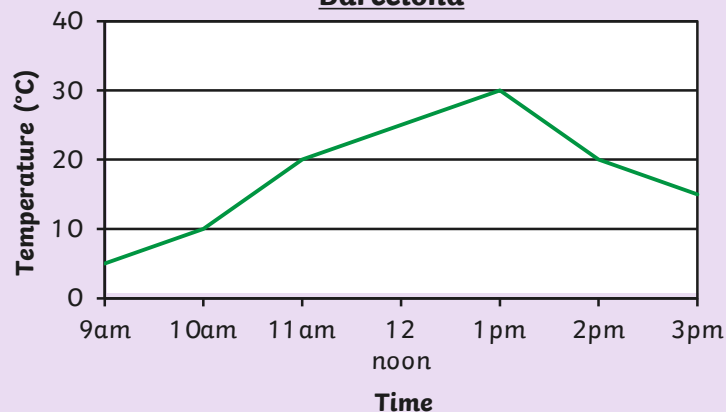
**Cyprus**



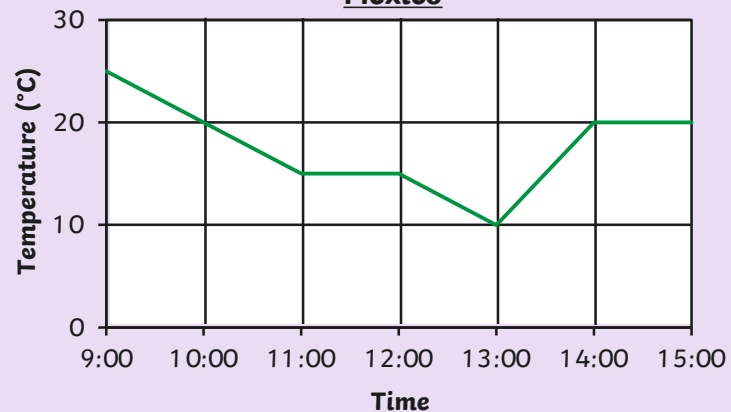
**Koh Samui**



**Barcelona**



**Mexico**

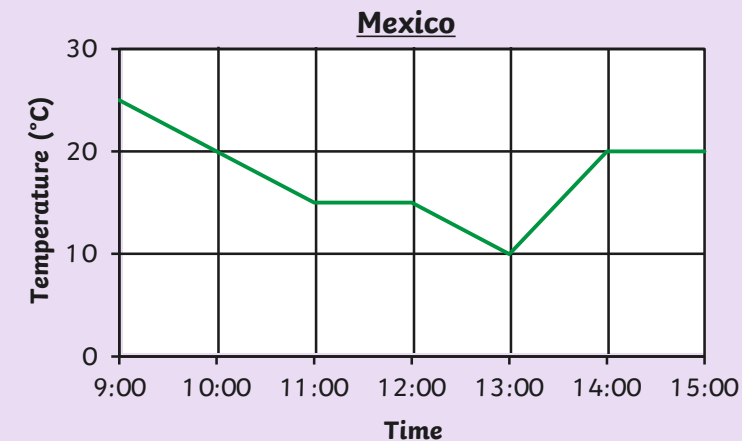
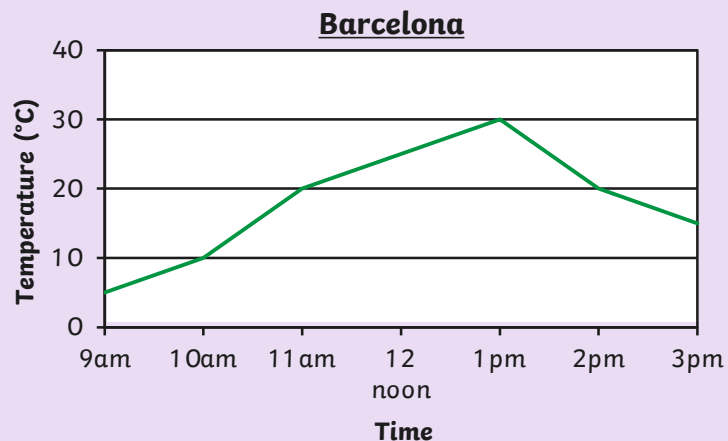
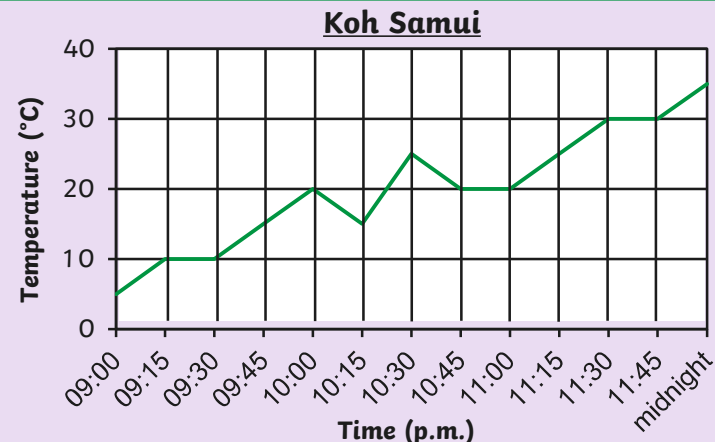
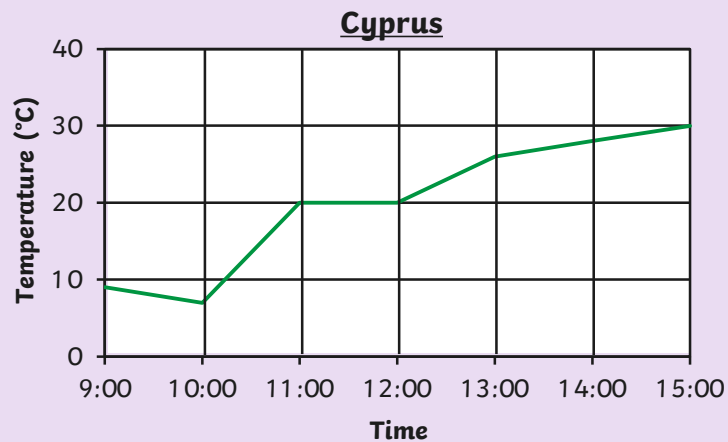




# Temperature Q and A



Look at the **Answer: 10°C.** Only Koh Samui can answer this question because it is the only graph showing the evening using the 12-hour clock. *ferring to. .?*



# Holiday Planning

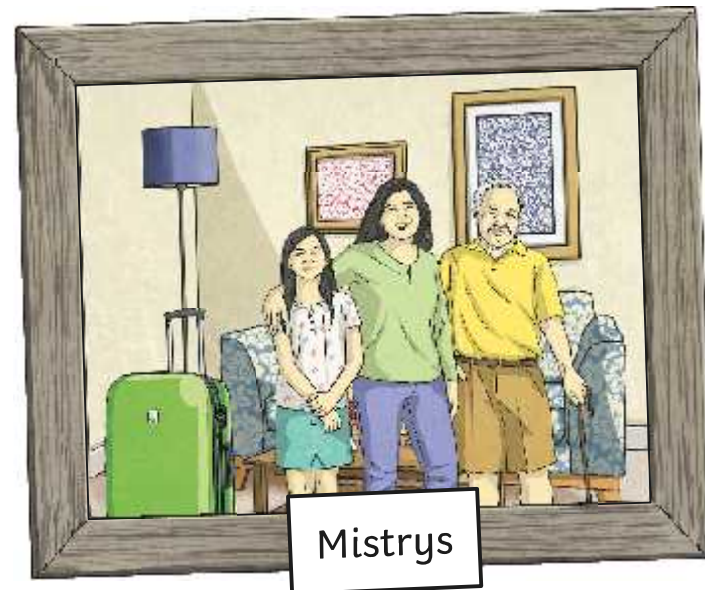


The Kellets and the Mistrys are going on holiday!

# Holiday Planning

The two families have decided to go on holiday to Cornwall. They will travel to Cornwall separately, and will share the accommodation when they get there.

They have booked an apartment with a shared pool. While on holiday, they plan to go swimming, eat at local restaurants, fly kites on the beach, take a boat ride and go fishing.

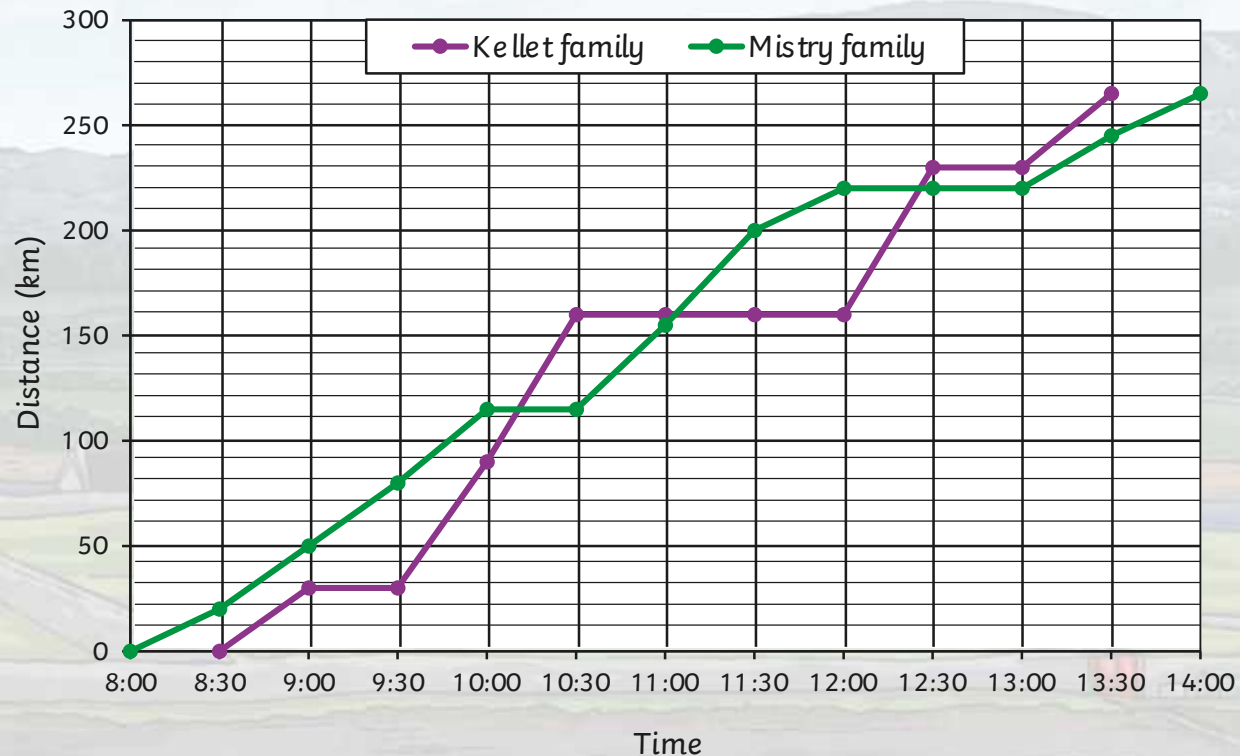


# Off We Go!



The **Mistry** family travel to Cornwall by car, while the **Kellets** decide to travel by train.

A Line Graph to Show How Long It Took The Families to Travel to Cornwall



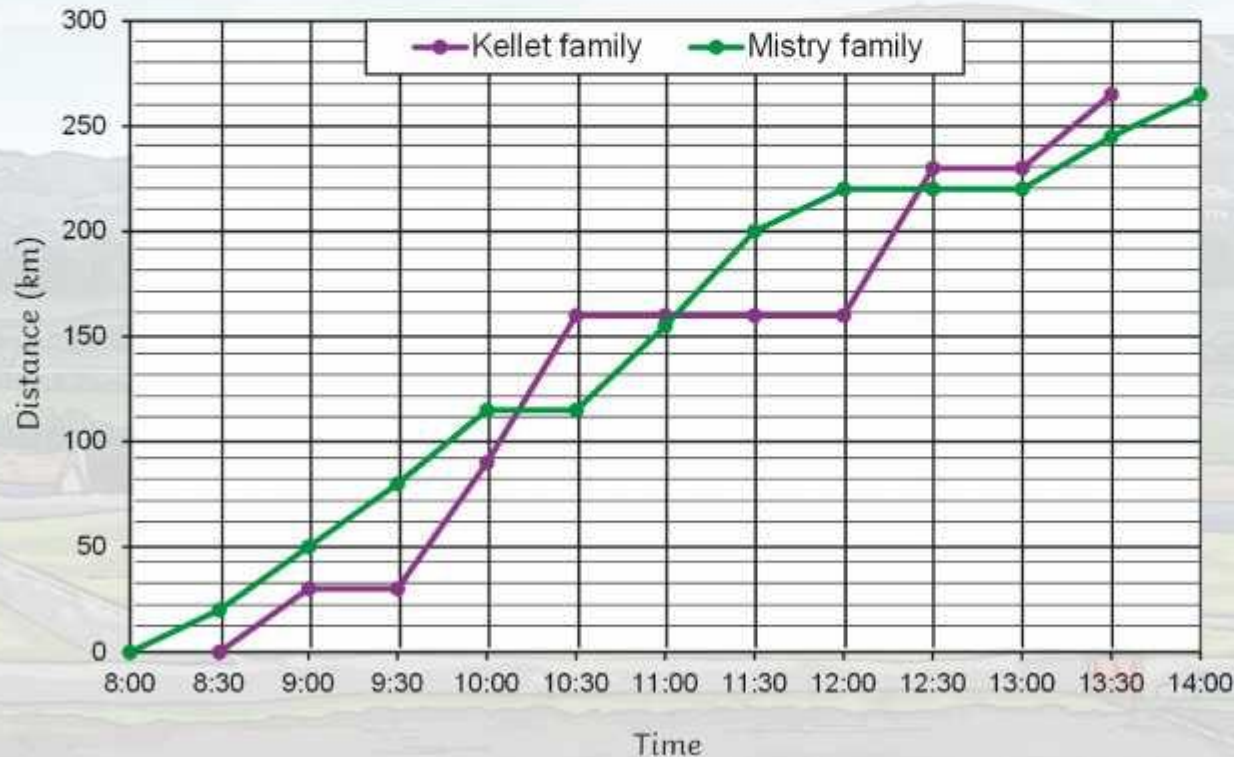


# Off We Go!



What time did each of the families set off?

A Line Graph to Show How Long It Took The Families to Travel to Cornwall



## Answer

The Mistry family set off at **08:00**.

The Kellet family set off at **08:30**.

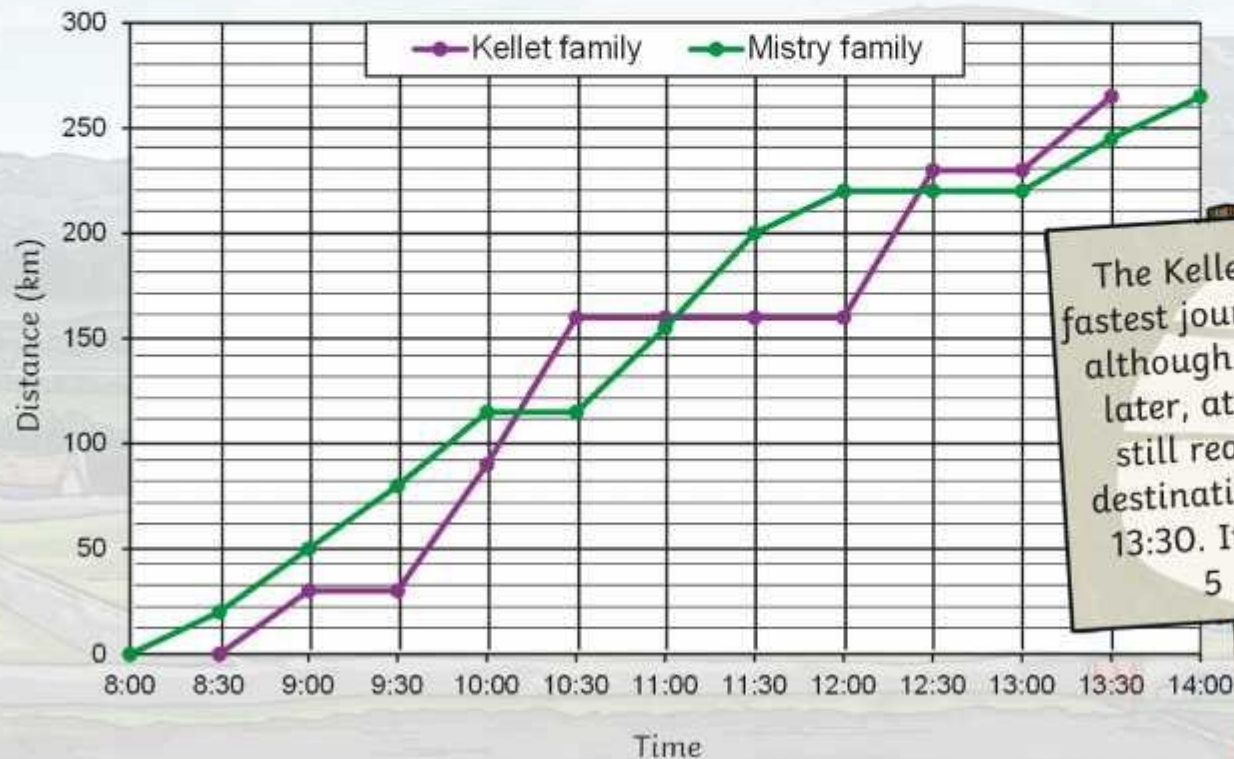


# Off We Go!



Which family had the fastest journey?

A Line Graph to Show How Long It Took The Families to Travel to Cornwall



The Mistry family set off at 8:00 and arrived at 14:00. It took them 6 hours.

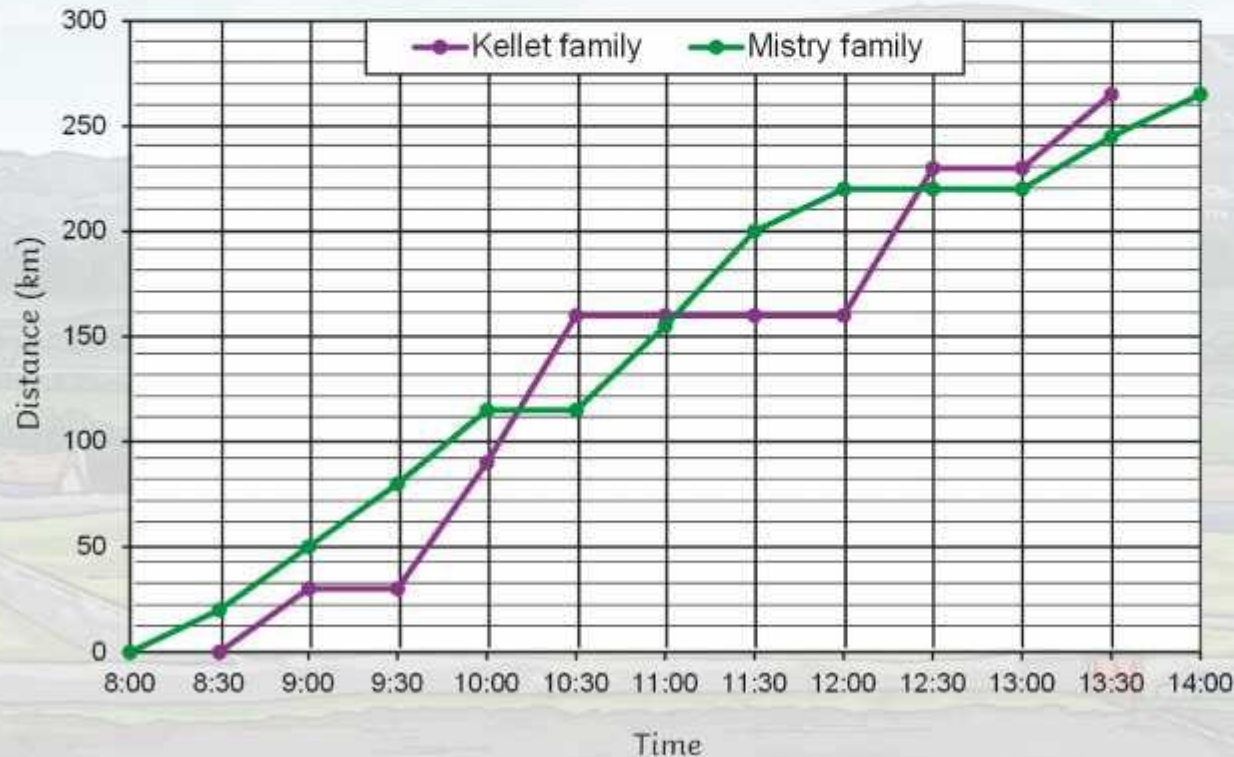
The Kellets had the fastest journey because although they set off later, at 8:30, they still reached their destination earlier at 13:30. It took them 5 hours.

# Off We Go!



The Mistry family stopped at motorway service stations twice.  
At which times did they stop? How long did they stop for each time?

A Line Graph to Show How Long It Took The Families to Travel to Cornwall



## Answer

They stopped at 10:00 for 30 minutes and at 12:00 for one hour.

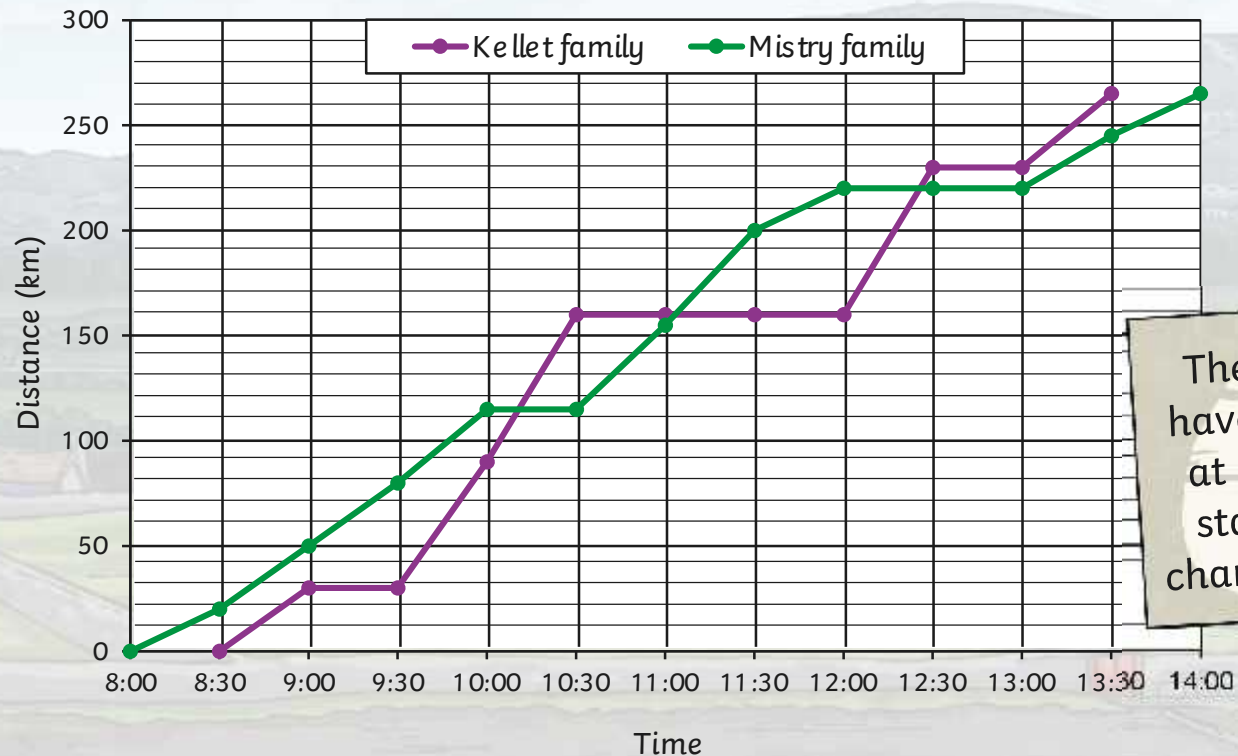


# Off We Go!



The Kellet family also stopped at different times during their journey. How many times did they stop? Can you think of a reason why their journey stopped?

A Line Graph to Show How Long It Took The Families to Travel to Cornwall



## Answer

The Kellet family stopped at three different times: at 09:00, 10:30 and 12:30.

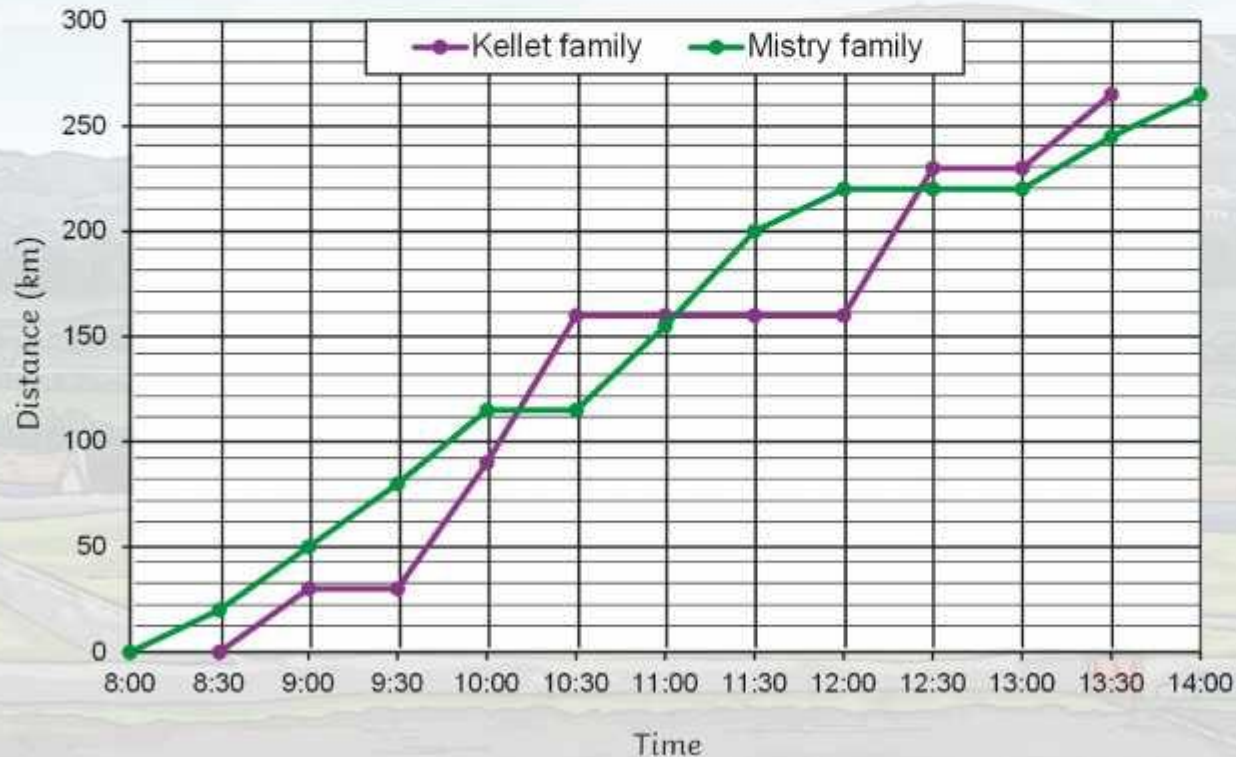
They could have stopped at different stations to change trains.

# Off We Go!



Did both families travel the same distance overall?

A Line Graph to Show How Long It Took The Families to Travel to Cornwall



## Answer

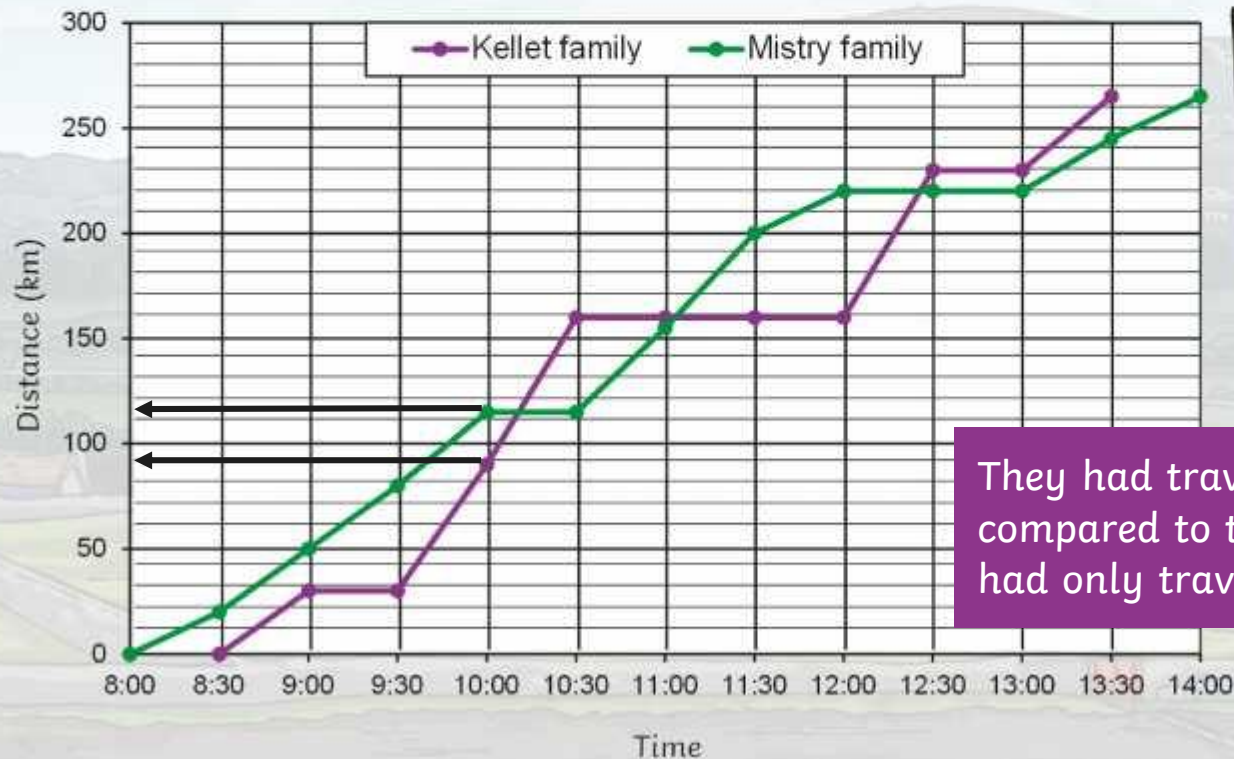
Yes, both families travelled 265km.

# Off We Go!



Which family had travelled the furthest by 10:00? How far had they travelled?

A Line Graph to Show How Long It Took The Families to Travel to Cornwall



## Answer

The Mistry family had travelled furthest by 10:00.

They had travelled 115km by 10:00, compared to the Kellet family who had only travelled 90km.

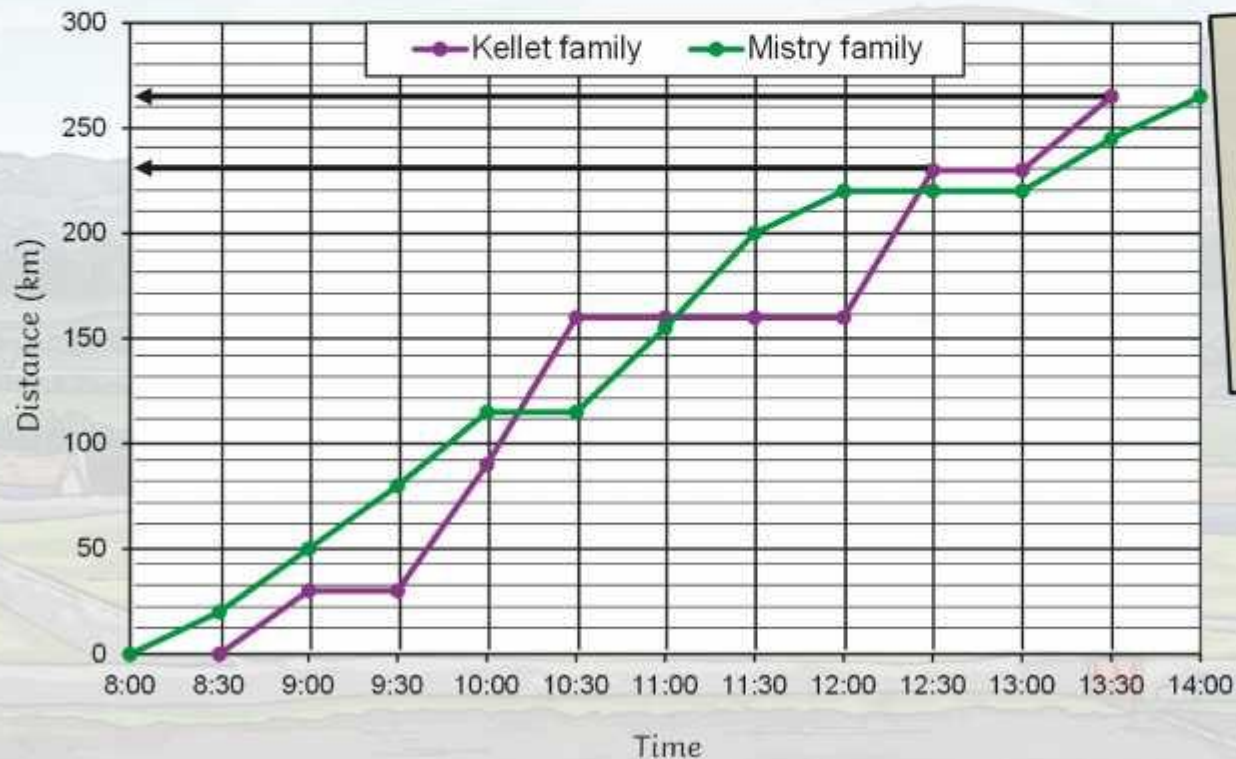


# Off We Go!



The Kellet family stopped for half an hour at 12:30.  
How far away from their destination were they?

A Line Graph to Show How Long It Took The Families to Travel to Cornwall



## Answer

When the Kellets stopped at 12:30, they had travelled 230km. They needed to travel 265km altogether.

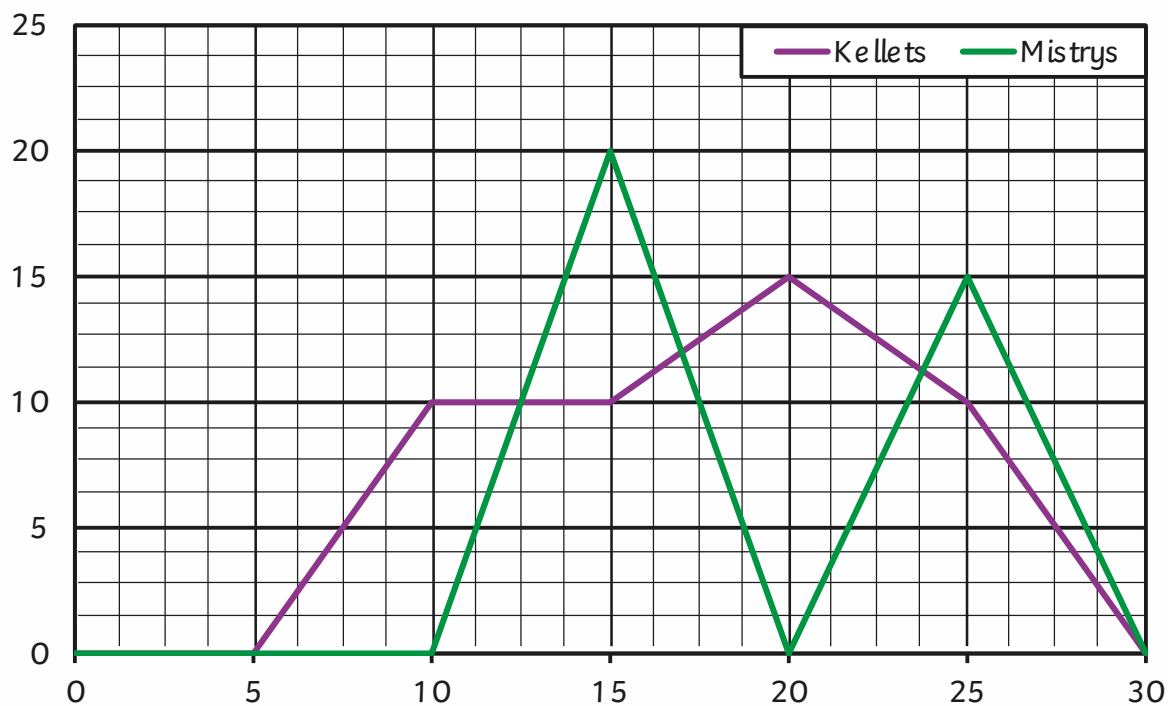
They still had 55km left to travel as the difference between 230 and 265 is 35.



# Holiday Happenings



This graph shows data about an activity the two families participated in while on holiday. Can you think of what activity this could be? What would the title of the graph be? How would you label the axes? Tell the story of what is happening.



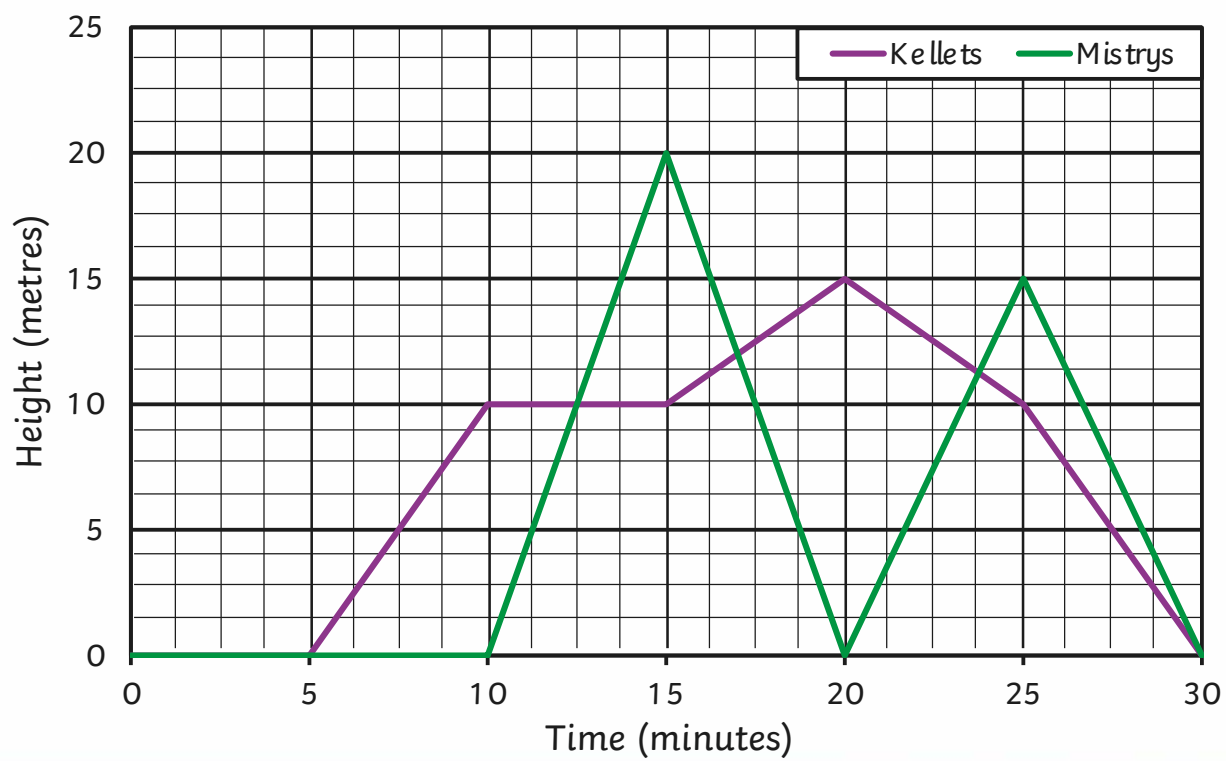


# Holiday Happenings



The graph could be showing the two families flying kites.

A Line Graph to Show the Height of Two Kites over 30 Minutes

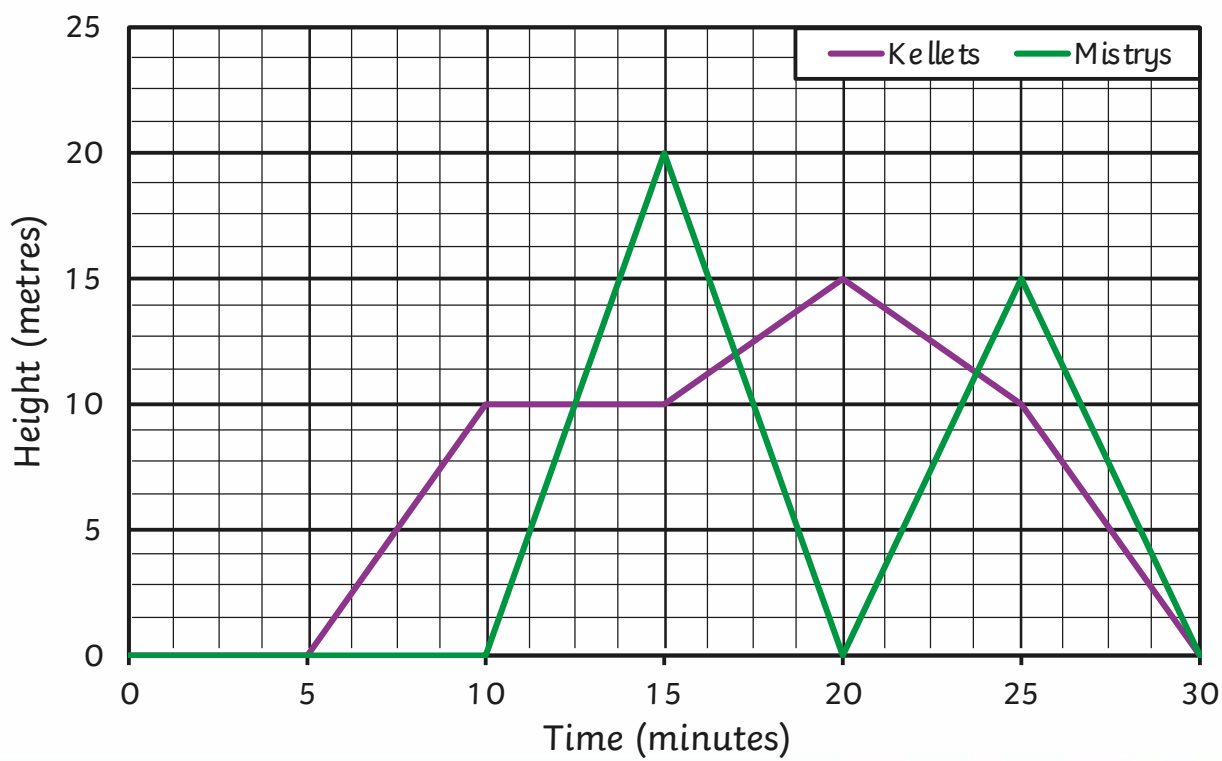


# Holiday Happenings



The Kellet family got their kite flying up to 10m after 10 minutes. After 15 minutes, they let out the string so by the time it was 20 minutes the kite had gone up by 15m. Then, they brought it back down to 10m at 25 minutes and by 30 minutes the kite had fallen to the ground.

A Line Graph to Show the Height of Two Kites over 30 Minutes



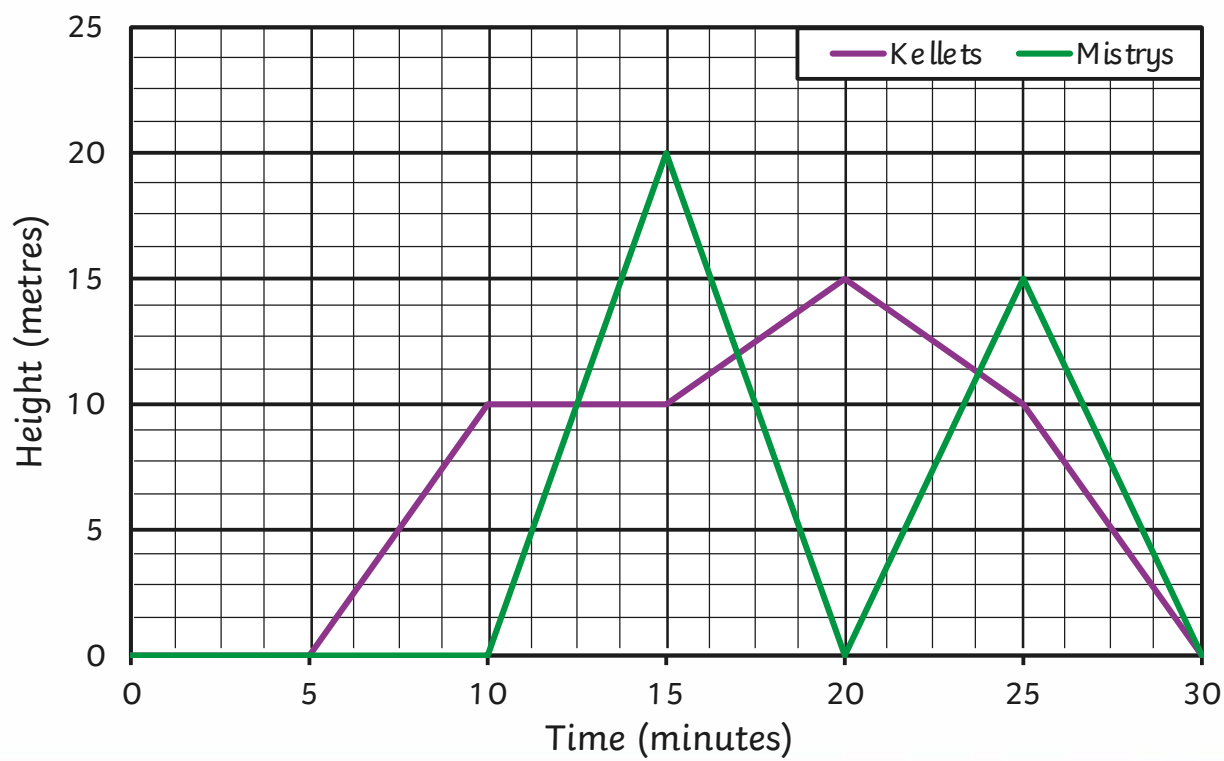


# Holiday Happenings



The Mistry family struggled to get their kite flying, taking over 10 minutes to get it off the ground. After reaching a height of 20m at 15 minutes, the kite fell down to the ground at 20 minutes. They got it flying at 15m at 25 minutes, but it hit the ground again by 30 minutes.

A Line Graph to Show the Height of Two Kites over 30 Minutes

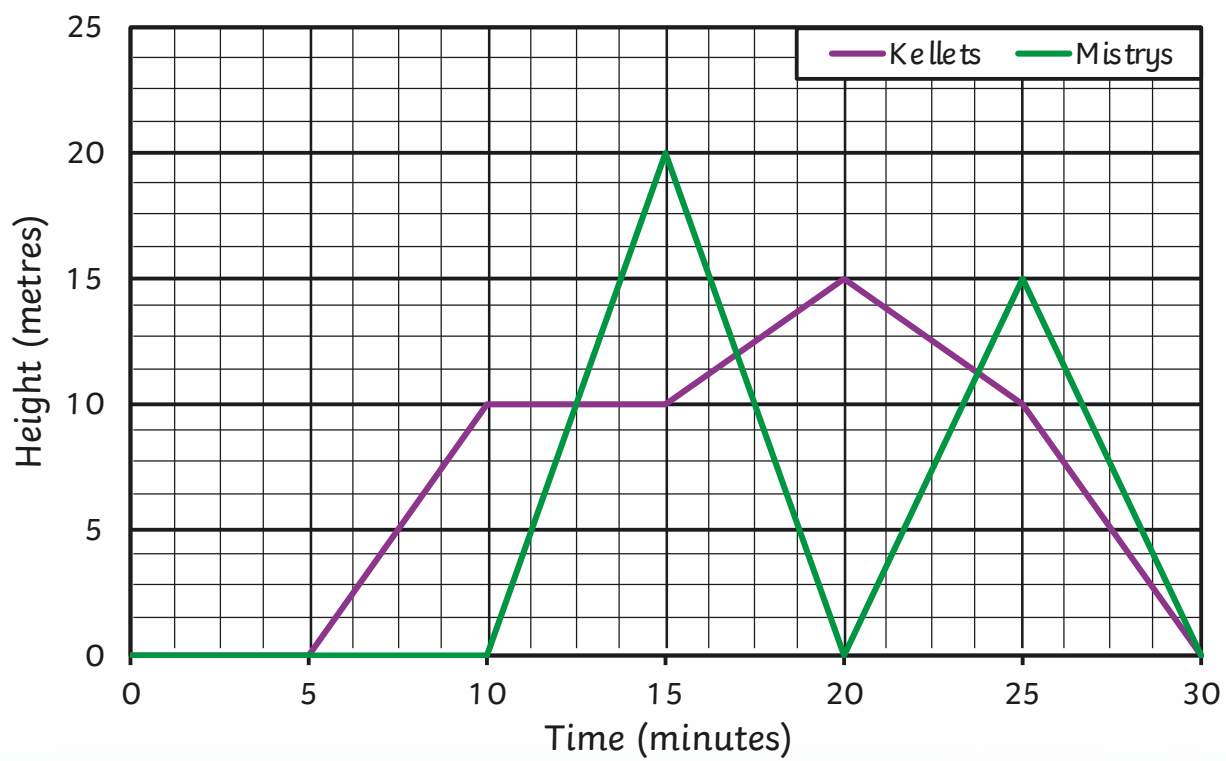


# Holiday Happenings



Did you come up with any different stories?

A Line Graph to Show the Height of Two Kites over 30 Minutes



# Aim



- I can use line graphs to solve problems.

# Success Criteria

- I can read data represented in line graphs.
- I can answer questions using data from line graphs.
- I can solve problems using line graphs.



<b>Aim:</b> I can use line graphs to solve problems.				<b>Date:</b>					
				<b>Delivered By:</b>			<b>Support:</b>		
<b>Success Criteria</b>	<b>Me</b>	<b>Friend</b>	<b>Teacher</b>	<b>T</b>	<b>PPA</b>	<b>S</b>	<b>I</b>	<b>AL</b>	<b>GP</b>
I can read data represented in line graphs.				<b>Notes/Evidence</b>					
I can answer questions using data from line graphs.									
I can solve problems using line graphs.									
Next Steps									
) _____									
) _____									

<b>T</b>	Teacher	<b>I</b>	Independent
<b>PPA</b>	Planning, Preparation and Assessment	<b>AL</b>	Adult Led
<b>S</b>	Supply	<b>GP</b>	Guided Practice

<b>Aim:</b> I can use line graphs to solve problems.				<b>Date:</b>					
				<b>Delivered By:</b>			<b>Support:</b>		
<b>Success Criteria</b>	<b>Me</b>	<b>Friend</b>	<b>Teacher</b>	<b>T</b>	<b>PPA</b>	<b>S</b>	<b>I</b>	<b>AL</b>	<b>GP</b>
I can read data represented in line graphs.				<b>Notes/Evidence</b>					
I can answer questions using data from line graphs.									
I can solve problems using line graphs.									
Next Steps									
) _____									
) _____									

<b>T</b>	Teacher	<b>I</b>	Independent
<b>PPA</b>	Planning, Preparation and Assessment	<b>AL</b>	Adult Led
<b>S</b>	Supply	<b>GP</b>	Guided Practice





# Holiday Problems

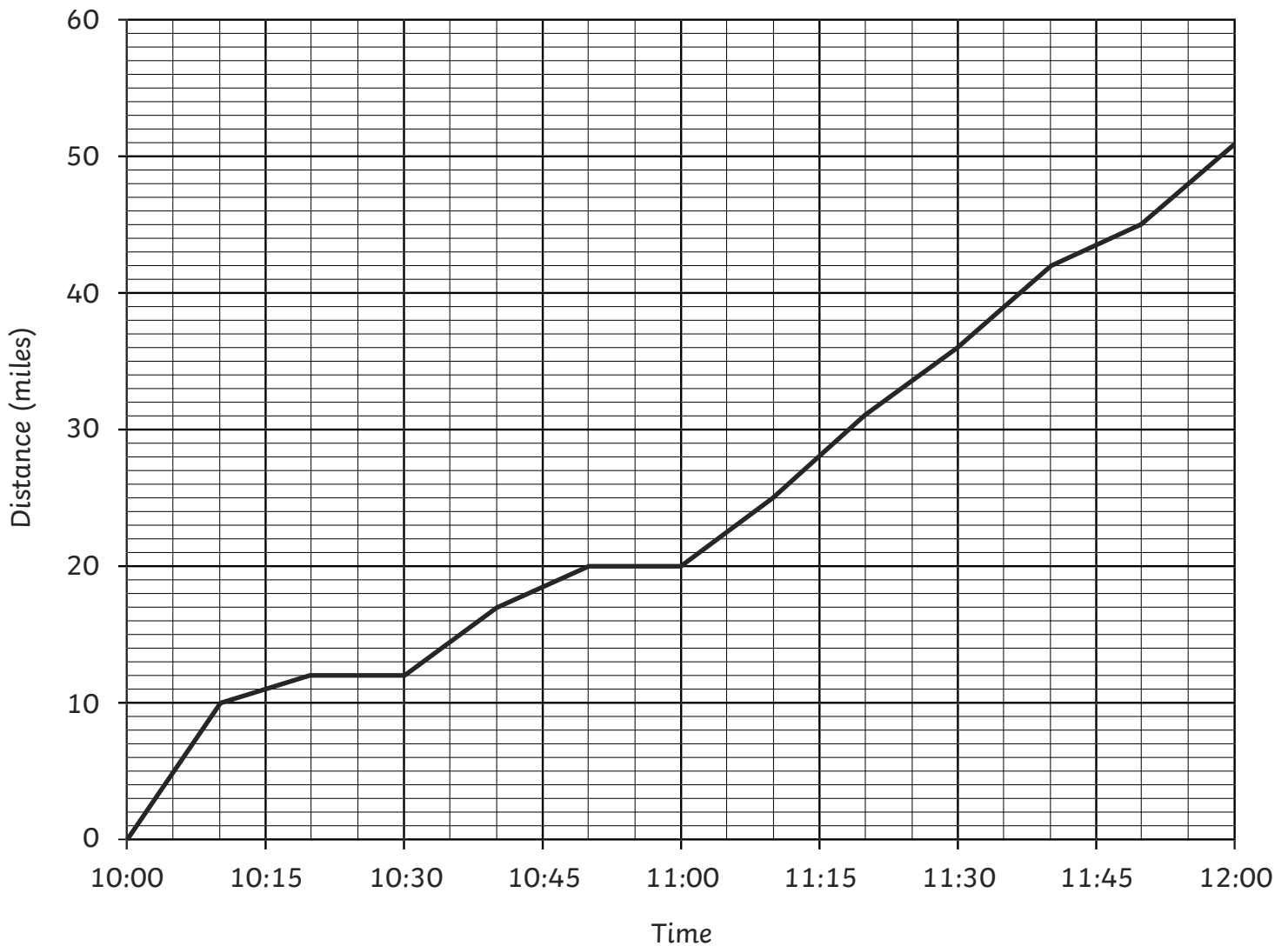
I can use line graphs to solve problems.



The Kellets and the Mistrys are on holiday. Use the line graph about their holiday activities to solve the problems.

The Mistrys go on a boat ride along the coast to look at the cliffs, explore the caves and see seals. The boat goes out exploring, then comes back. This graph shows the time of the journey and the distance they travelled.

A Line Graph to Show a Boat Ride along the Cornish Coast





1. How long did the boat ride last in total?

---

2. The boat travels the same distance out and back. Approximately how far away from the harbour was it when it turned back?

---

3. The boat stops twice, first to allow the passengers to photograph the caves, then to look at the seals. At approximately what time does the boat stop first?

---

4. What time do they finish watching the seals?

---

5. What is the distance between the caves and the seal colony?

---

6. Why do you think the boat does not stop at all in the final 25 miles?

---



# Holiday Problems

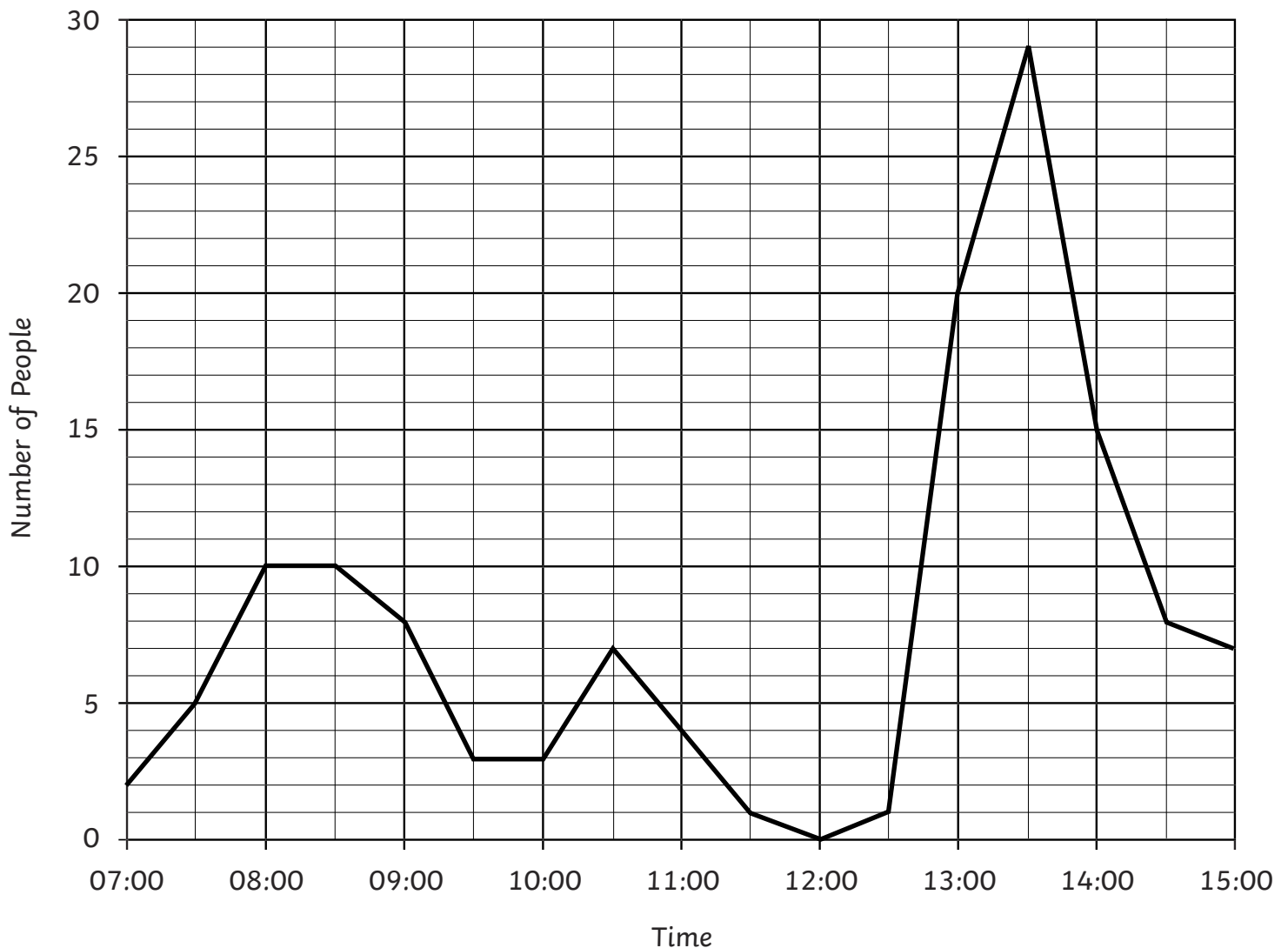
I can use line graphs to solve problems.



The Kellets and the Mistrys are on holiday. Use the line graph about their holiday activities to solve the problems.

Ash and George both use the swimming pool. They get in at different times: Ash joins in the morning lane swim at 8 a.m., while George does the afternoon inflatables play session at 1 p.m. This graph shows the number of people in the pool at different times.

A Line Graph to Show the Number of People in a Swimming Pool during a Day





1. What is the difference between the highest number of people in the pool during the morning lane session and the highest number of people during the afternoon inflatable play session?

---

2. When were there twice as many people in the pool as were there at 08:30?

---

3. What reason could explain why there was no one in the pool at 12:00?

---

4. What time do you think the inflatable play session ends? Explain your reasoning.

---

5. At approximately which times were there only 5 people in the pool?

---



# Holiday Problems

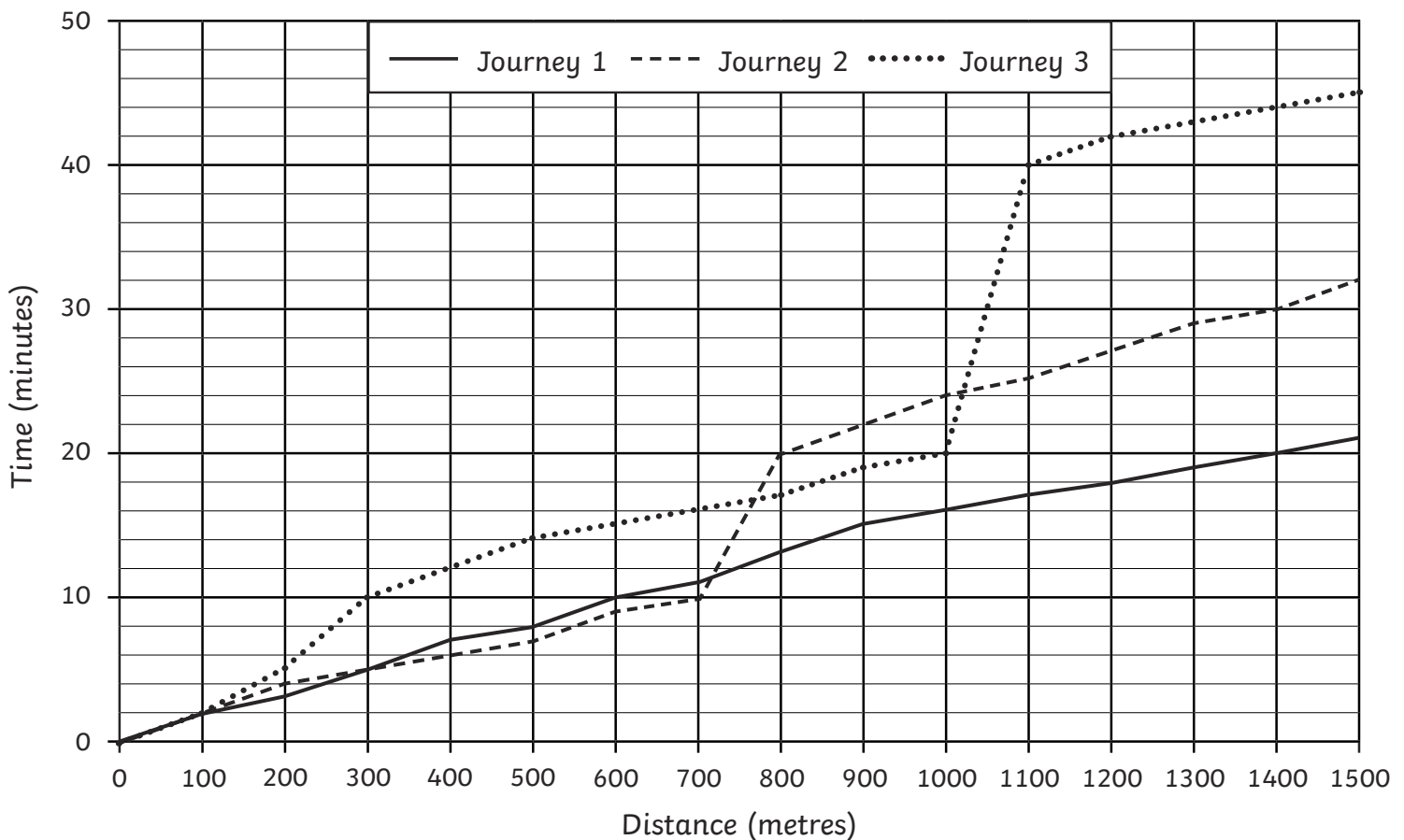
I can use line graphs to solve problems.



The Kellets and the Mistrys are on holiday. Use the line graph about their holiday activities to solve the problems.

While on holiday, the families find a favourite local restaurant. They visit this restaurant three times over their holiday. This graph shows the three journeys they took.

A Line Graph to Show the Three Journeys Made to the Restaurant







1. Describe the similarities and the differences between the three journeys.

---



---

2. Which was the quickest journey?

---

3. On one of the journeys, George realised he had forgotten to lock the door of their apartment, so they had to go back. Which journey do you think this was? Explain your reasoning.

---

4. On journey 2, the two families take 10 minutes to travel from 700m to 800m. Can you think of a reason for this?

---



---

5. On one of the journeys, the families discovered a bar on the way to the restaurant and had some drinks before carrying on. Which journey was this? Around how long did they stay at the bar? Explain your reasoning.

---



---



# Holiday Problems **Answers**

1. How long did the boat ride last in total?

**2 hours**

2. The boat travels the same distance out and back. Approximately how far away from the harbour was it when it turned back?

**25 miles**

3. The boat stops twice, first to allow the passengers to photograph the caves, then to look at the seals. At approximately what time does the boat stop first?

**10:20**

4. What time do they finish watching the seals?

**11:00**

5. What is the distance between the caves and the seal colony?

**8 miles**

6. Why do you think the boat does not stop at all in the final 25 miles?

***The crew are on their way back and they have already explored the caves and seen the seals.***



# Holiday Problems **Answers**

1. What is the difference between the highest number of people in the pool during the morning lane session and the highest number of people during the afternoon inflatable play session?

*There were 19 more people in the afternoon session.*

2. When were there twice as many people in the pool as were there at 08:30?

*13:00 and 13:50*

3. What reason could explain why there was no one in the pool at 12:00?

*People might be eating lunch at 12:00.*

4. What time do you think the inflatable play session ends? Explain your reasoning.

*13:30, because the number of people in the pool drops from 29 to 15 straight after this time.*

5. At approximately which times were there only 5 people in the pool?

*07:30, 09:15, 10:15, 10:50 and 12:40*



# Holiday Problems Answers

1. Describe the similarities and the differences between the three journeys.

*All the journeys are the same distance: 1500m. The three journeys take different times. Journeys 2 and 3 both show times when they have slowed down or stopped.*

2. Which was the quickest journey?

*Journey 1 was the quickest, as they got to the restaurant in just over 20 minutes. This compares to journey 2 which took 32 minutes and journey 3 which took approximately 45 minutes.*

3. On one of the journeys, George realised he had forgotten to lock the door of their apartment, so they had to go back. Which journey do you think this was? Explain your reasoning.

*Journey 3, as they were much slower covering the first 300m of the journey.*

4. On journey 2, the two families take 10 minutes to travel from 700m to 800m. Can you think of a reason for this?

*They could have slowed down to take photos or to look at the view. One of the family members could have hurt themselves or dropped something and had to look for it.*

5. On one of the journeys, the families discovered a bar on the way to the restaurant and had some drinks before carrying on. Which journey was this? Around how long did they stay at the bar? Explain your reasoning.

*Journey 3, because it took them 20 minutes to travel from 1000m to 1100m. They must have stopped for about 15 to 20 minutes.*



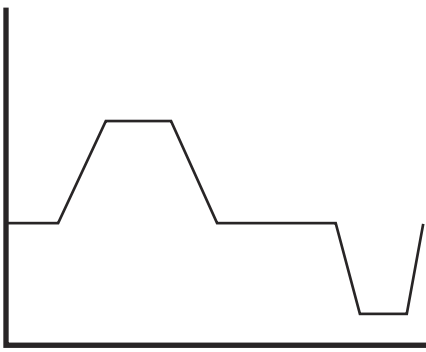
# Holiday Problems

I can use line graphs to solve problems.



Below are three line graphs. Each line graph shows data from an aspect of the Kellets' and Mistrys' holiday.

For each line graph, write a story to explain the data, then write two questions about the graph. Swap with a partner and answer each other's questions.



Story:

---

---

---

---

---

---

Question 1:

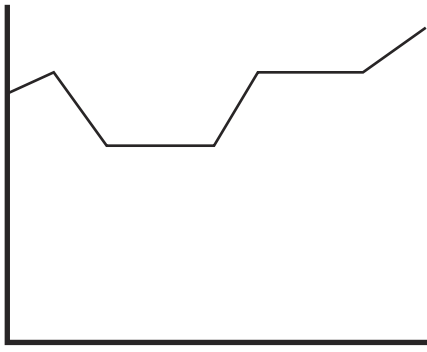
---

---

Question 2:

---

---



Story:

---

---

---

---

---

---

Question 1:

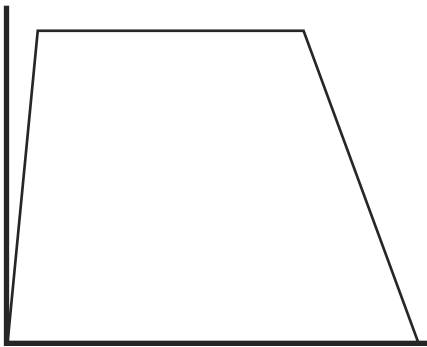
---

---

Question 2:

---

---



Story:

---

---

---

---

---

---

Question 1:

---

---

Question 2:

---

---

# Holiday Problems Answers

Multiple answers possible. Example answers and questions are given.

Question	Answer
Graph 1:	
Story	<i>This graph shows the height above or below ground level the families were at as they visited a castle. They start at ground level, climb up to visit a tower, then come back to ground level. They then visit the dungeons below ground level, before returning to ground level.</i>
Question 1:	<i>The families visit the castle for 2 hours. For approximately how long are they below ground level?</i>
Question 2:	<i>For how long are the families at ground level?</i>
Graph 2:	
Story	<i>This graph shows the number of people at the hotel over one week. A family arrives, then two families leave. After some time, two more families arrive. Occupancy remains the same for some time, then another family arrives.</i>
Question 1:	<i>For how long does occupancy remain the same the first time this occurs?</i>
Question 2:	<i>Does the weekend with more or fewer guests at the hotel? Explain how you know.</i>
Graph 3:	
Story	<i>This graph shows the height Ash was at over 30 minutes of parasailing. She rose very high very quickly, then maintained her height for around 15 minutes. She then descended slowly over the next 10 minutes.</i>
Question 1:	<i>Approximately how much longer does it take Ash to descend than to rise?</i>
Question 2:	<i>Why do you think Ash descended more slowly than she rose?</i>

Statistics | Holiday Problems

I can use line graphs to solve problems.		
I can read data represented in line graphs.		
I can answer questions using data from line graphs.		
I can solve problems using line graphs.		

Statistics | Holiday Problems

I can use line graphs to solve problems.		
I can read data represented in line graphs.		
I can answer questions using data from line graphs.		
I can solve problems using line graphs.		

Statistics | Holiday Problems

I can use line graphs to solve problems.		
I can read data represented in line graphs.		
I can answer questions using data from line graphs.		
I can solve problems using line graphs.		

Statistics | Holiday Problems

I can use line graphs to solve problems.		
I can read data represented in line graphs.		
I can answer questions using data from line graphs.		
I can solve problems using line graphs.		

Statistics | Holiday Problems

I can use line graphs to solve problems.		
I can read data represented in line graphs.		
I can answer questions using data from line graphs.		
I can solve problems using line graphs.		

Statistics | Holiday Problems

I can use line graphs to solve problems.		
I can read data represented in line graphs.		
I can answer questions using data from line graphs.		
I can solve problems using line graphs.		

Statistics | Holiday Problems

I can use line graphs to solve problems.		
I can read data represented in line graphs.		
I can answer questions using data from line graphs.		
I can solve problems using line graphs.		

Statistics | Holiday Problems

I can use line graphs to solve problems.		
I can read data represented in line graphs.		
I can answer questions using data from line graphs.		
I can solve problems using line graphs.		