

1.3

Day 1: Atlantic City to Lewes

Sidney, Liz, Celia, Malcolm, and Theo found they could comfortably ride from 60 to 90 miles in one day. They use these findings, as well as a map and campground information, to plan a three-day tour route. They wonder if steep hills and rough winds coming off the ocean might make the trip too difficult for some riders.

It is time to test the projected tour route. The students want the trip to attract middle school students, so Sidney asks her 13-year-old brother, Tony, and her 14-year-old sister, Sarah, to come along. The students will collect data during the trip and use the data to write detailed reports. Using the reports, they can improve their plans and explain the trip to potential customers.

They begin their bike tour in Atlantic City and ride five hours south to Cape May, New Jersey. Sidney and Sarah follow in a van with camping gear. Sarah records distances traveled until they reach Cape May. She makes the table at the right.

From Cape May, they take a ferry across the Delaware Bay to Lewes (LOO-is), Delaware. They camp that night in a state park along the ocean.

Atlantic City to Cape May

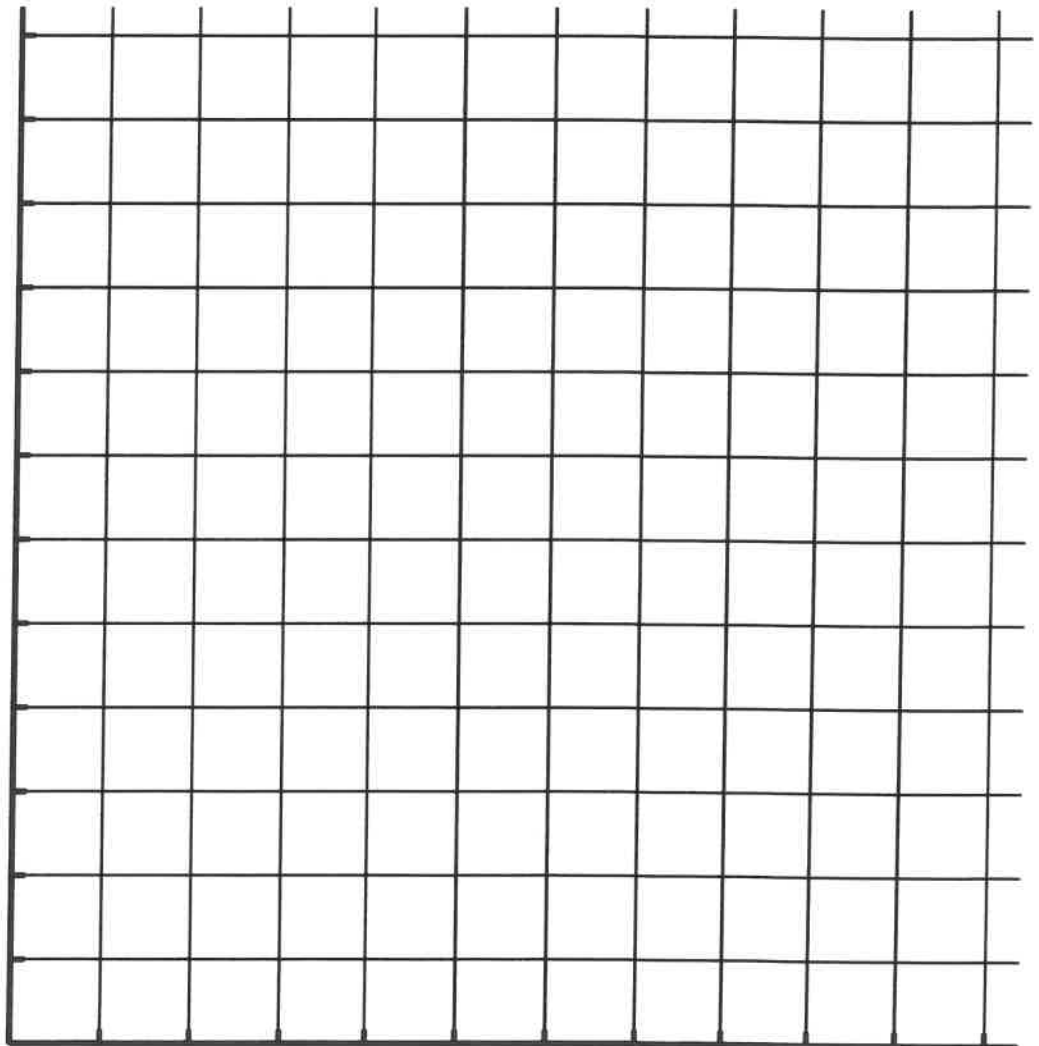
| Time (hr) | Distance (mi) |
|-----------|---------------|
| 0 | 0 |
| 0.5 | 8 |
| 1.0 | 15 |
| 1.5 | 19 |
| 2.0 | 25 |
| 2.5 | 27 |
| 3.0 | 34 |
| 3.5 | 40 |
| 4.0 | 40 |
| 4.5 | 40 |
| 5.0 | 45 |

Name: _____ Class: _____ Date: _____

Variables & Patterns
Lesson 1.3 – Day 1: Atlantic City to Lewes

Part I: Read page 10 in your Variables & Patterns textbook.

Part II: Make a coordinate graph of the time and distance data in data table on page 10. Show time on the x-axis.

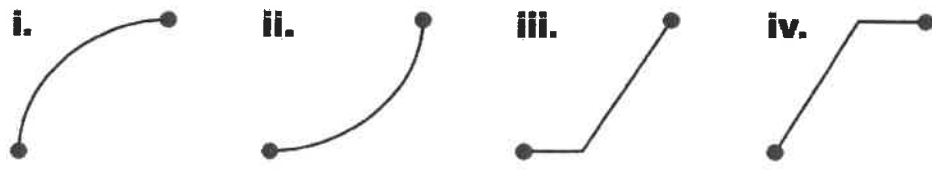


Check your coordinate graph...

- Does your coordinate graph have a title?
- Are your x-axis and y-axis labeled?
- Do your x-axis and y-axis have an appropriate scale?
- Did you plot the data (coordinate pairs)?

Part III: Answer the questions looking at your coordinate graph.

- 1.) Give the coordinate pair for the third point on your graph. What information does this point give?
- 2.) Connecting the points on a graph sometimes helps you see a pattern more clearly. You can connect the points to consider what is happening in the intervals between points. Connect the points on your graph with straight line segments. Use the line segments to estimate the distance traveled after $\frac{3}{4}$ of an hour (0.75 hours). About what distance had they traveled in $\frac{3}{4}$ of an hour? How do you know this?
- 3.) The straight-line segment you drew from (4.5, 40) to (5.0, 45) shows the progress if the riders travel at a steady rate for the entire half hour. The actual pace of the group, and of individual riders, may vary throughout the half hour. These paths show some possible ways the ride may have progressed:



Match each of these connecting paths with the travel notes below.

- _____ a. Celia rode slowly at first and gradually increased her speed.
- _____ b. Tony and Liz rode quickly and reached the campsite early.
- _____ c. Malcolm had to fix a flat tire, so he started late.
- _____ d. Theo started off fast. He soon felt tired and slowed down.

- 4.) Sidney wants to describe Day 1 of the tour. Using information from the table or graph, what can she write about the day's travel? **Answer the following questions in complete sentences:**
 - a.) How far did the group travel? How much time did it take them?
 - b.) During which time interval(s) did they go the greatest distance?

- c.) During which time interval(s) did they go the least distance?
- d.) Did the riders go farther in the first half or the second half of the day's ride? How did you decide this?
- 5.) Sidney wants to include either the table or the graph in her report. Which do you think she should include? Why?

1.4

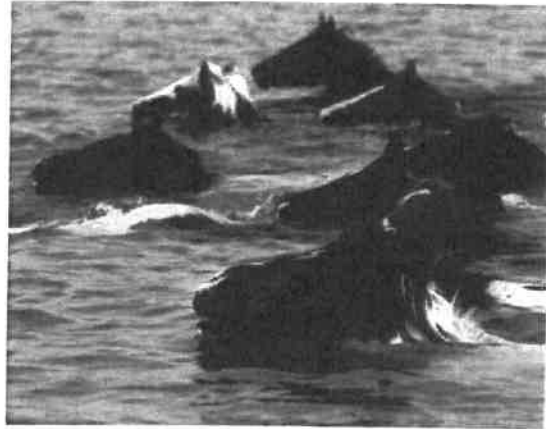
Day 2: Lewes to Chincoteague Island

On Day 2, the students leave Lewes, Delaware, and ride through Ocean City, Maryland. They stop for the day on Chincoteague (SHING kuh teeg) Island, which is famous for its annual pony auction.

Did You Know?

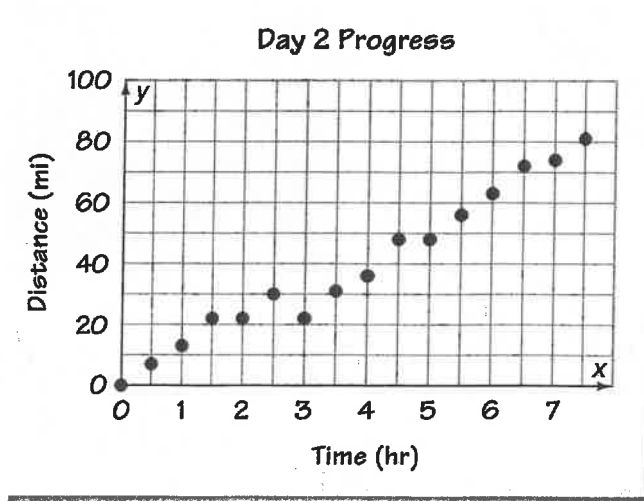
Assateague (A suh teeg) Island is home to herds of wild ponies. To survive in a harsh environment of beaches, sand dunes, and marshes, these sturdy ponies eat saltmarsh, seaweed, and even poison ivy!

To keep the population of ponies under control, an auction is held every summer. During the famous "Pony Swim," the ponies that will be sold swim across a quarter mile of water to Chincoteague Island.



Go online For: Information about the "Pony Swim"
PHSchool.com Web Code: ane-9031

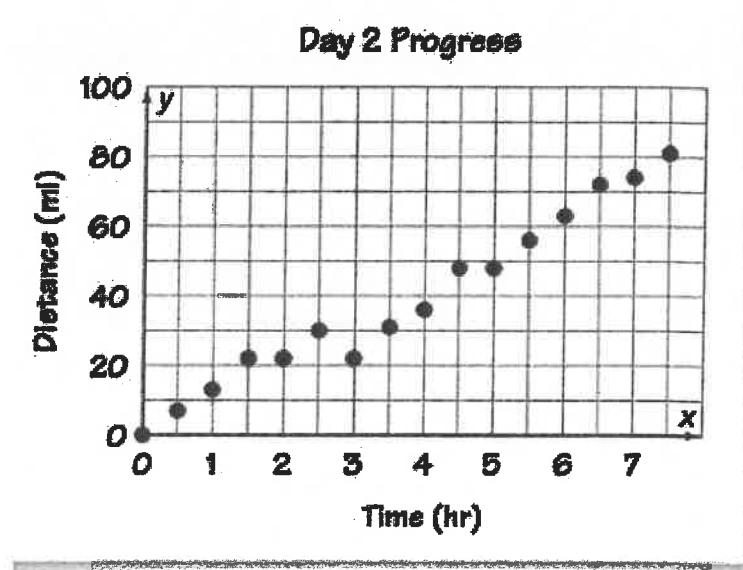
Celia collects data along the way and uses it to make the graph below. Her graph shows the distance the riders are from Lewes as the day progresses. This graph is different from the graph made for Problem 1.3, which showed the total distance traveled as Day 1 progressed.



Variables & Patterns
Lesson 1.4 – Day 2: Lewes to Chincoteague Island

Part I: Read page 12 in your Variables & Patterns textbook.

Part II: Look at the coordinate graph on page 12 in your Variables & Patterns textbook or below to answer the questions.



- 1.) Does it make sense to connect the points on this graph? Explain.

- 2.) What might have happened between hours 2 and 4?

- 3.) What do you think happened between hours 1.5 and 2?

- 4.) Use the graph to find the total distance the riders travel on Day 2. How did you find the answer?

- 5.) Complete the table of (time , distance) data that matches the coordinate pairs of the graph.
(You will need to estimate many of the distance values.)

| Time (hr) | Distance (mi) |
|------------------|----------------------|
| 0 | 0 |
| 0.5 | |
| 1.0 | |
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- 6.) Which method of displaying the data helps you see the changes better, a table or a graph? Explain.

1.5

Day 3: Chincoteague Island to Norfolk

On Day 3, the group travels from Chincoteague Island to Norfolk, Virginia. Malcolm and Tony ride in the van. They forget to record the distance traveled each half hour, but they do write some notes about the trip.

- We started at 8:30 A.M. and rode into a strong wind until our midmorning break.
- About midmorning, the wind shifted to our backs.
- We stopped for lunch at a barbeque stand and rested for about an hour. By this time, we had traveled about halfway to Norfolk.
- Around 2:00 P.M., we stopped for a brief swim in the ocean.

- Around 3:30 P.M., we reached the north end of the Chesapeake Bay Bridge and Tunnel. We stopped for a few minutes to watch the ships passing. Because riding bikes on the bridge is not allowed, we put the bikes in the van and drove across.
- We took 7.5 hours to complete today's 80-mile trip.

Name: _____ Class: _____ Date: _____

Variables & Patterns
Lesson 1.5 – Day 3: Chincoteague Island to Norfolk

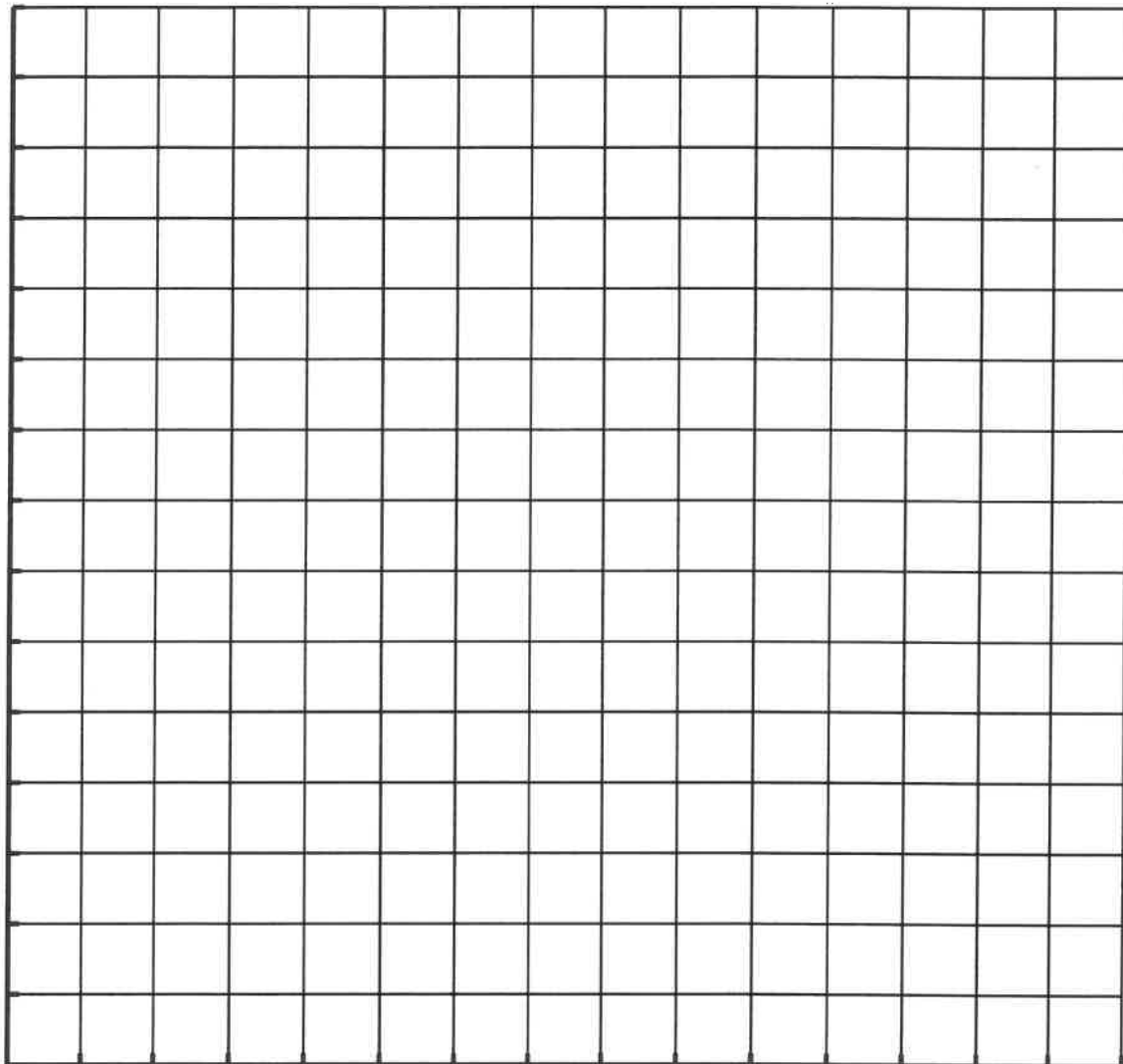
Part I: Read page 14 in your Variables & Patterns textbook.

Part II: Answer the following questions.

- 1.) Make a table of (time , distance) data that reasonably fits the information in Malcolm and Tony's notes.

| Time (hr) | Distance (mi) |
|------------------|----------------------|
| 8:30AM | 0 |
| 9:00AM | |
| 9:30AM | |
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2.) Sketch a coordinate graph that shows the same information.



Check your coordinate graph...

- Does your coordinate graph have a title?
- Are your x-axis and y-axis labeled?
- Do your x-axis and y-axis have an appropriate scale?
- Did you plot the data (coordinate pairs)?

3.) The riders traveled 80 miles in 7.5 hours. Suppose they had traveled at a constant speed for the entire trip. This constant speed would be the same as the average speed of the real trip. What was the average speed for this trip?

4.) Suppose you made a (time , distance) graph for a rider who made the entire 7.5-hour trip traveling at the average speed you found in question 3. What would the graph look like? How would it compare with the graph you made in question 2?