

For Exercises 3–5, Jose, Mario, Melanie, Mike, and Alicia are on a weeklong cycling trip. The table below gives the distance Jose, Mario, and Melanie each travel for the first 3 hours. Cycling times include only biking time, not time to eat, rest, and so on.

**Cycling Distance**

Cycling Time (hours)	Distance (miles)		
	Jose	Mario	Melanie
0	0	0	0
1	5	7	9
2	10	14	18
3	15	21	27

3. a. Assume that each person cycles at a constant rate. Find the rate at which each person travels during the first 3 hours. Explain.
- b. Find the distance each person travels in 7 hours.
- c. Graph the time and distance data for all three riders on the same coordinate axes.
- d. Use the graphs to find the distance each person travels in  $6\frac{1}{2}$  hours.
- e. Use the graphs to find the time it takes each person to travel 70 miles.

- f. How does the rate at which each person rides affect each graph?
- g. For each rider, write an equation that can be used to calculate the distance traveled after a given number of hours.
- h. Use your equations from part (g) to calculate the distance each person travels in  $6\frac{1}{2}$  hours.
- i. How does a person's cycling rate show up in his or her equation?
- j. Are any of these proportional relationships? If so, what is the constant of proportionality?

4. Mike makes the following table of the distances he travels during the first day of the trip.

a. Suppose Mike continues riding at this rate. Write an equation for the distance Mike travels after  $t$  hours.

b. Sketch a graph of the equation. How did you choose the range of values for the time axis? For the distance axis?

c. How can you find the distances Mike travels in 7 hours and in  $9\frac{1}{2}$  hours, using the table? Using the graph? Using the equation?

d. How can you find the numbers of hours it takes Mike to travel 100 miles and 237 miles, using the table? Using the graph? Using the equation?

e. For parts (c) and (d), what are the advantages and disadvantages of using each model—a table, a graph, and an equation—to find the answers?

f. Compare the rate at which Mike rides with the rates at which Jose, Mario, and Melanie ride. Who rides the fastest? How can you determine this from the tables? From the graphs? From the equations?

Time (hours)	Distance (miles)
0	0
1	6.5
2	13
3	19.5
4	26
5	32.5
6	39