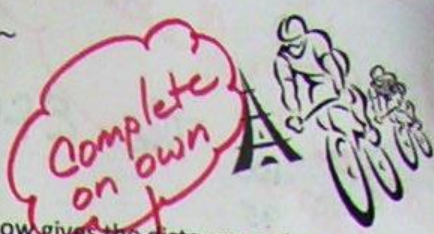## Comparing Rates in Tables, Graphs, and Equations
Cycling with Jose, Maria, and Sheldon

Jose, Maria, and Sheldon went on a weeklong cycling trip. The table below gives the distance each person traveled for the first three hours of the trip. The table shows only the time when the riders were actually biking, not when they stopped to rest, eat, and so on.

Complete on own

Cycling Time (hours)	Distance (miles)		
	Jose	Maria	Sheldon
0	0	0	0
1	5	7	9
2	10	14	18
3	15	21	27
4	20		
5	25		
6	30		
7	35		
8	40		
9	45		
10	50		
	Add 5		

a. Complete the table.

b. How fast did each person travel in miles per hour?

complete on own

Jose: __5 mi/hr__   Maria: _____   Sheldon: _____
or 5 mph

Explain how you got your answers: __In one hour, how many miles they travelled (or) The pattern you add is the rate.__

c. Assume that each person continued at this rate. Find the distance each person traveled in 7 hours.

Jose: __35 miles__   Maria: _____   Sheldon: _____
7·5

Complete on own

d. Assume that each person continued at this rate. Find the distance each person traveled in 12 hours.

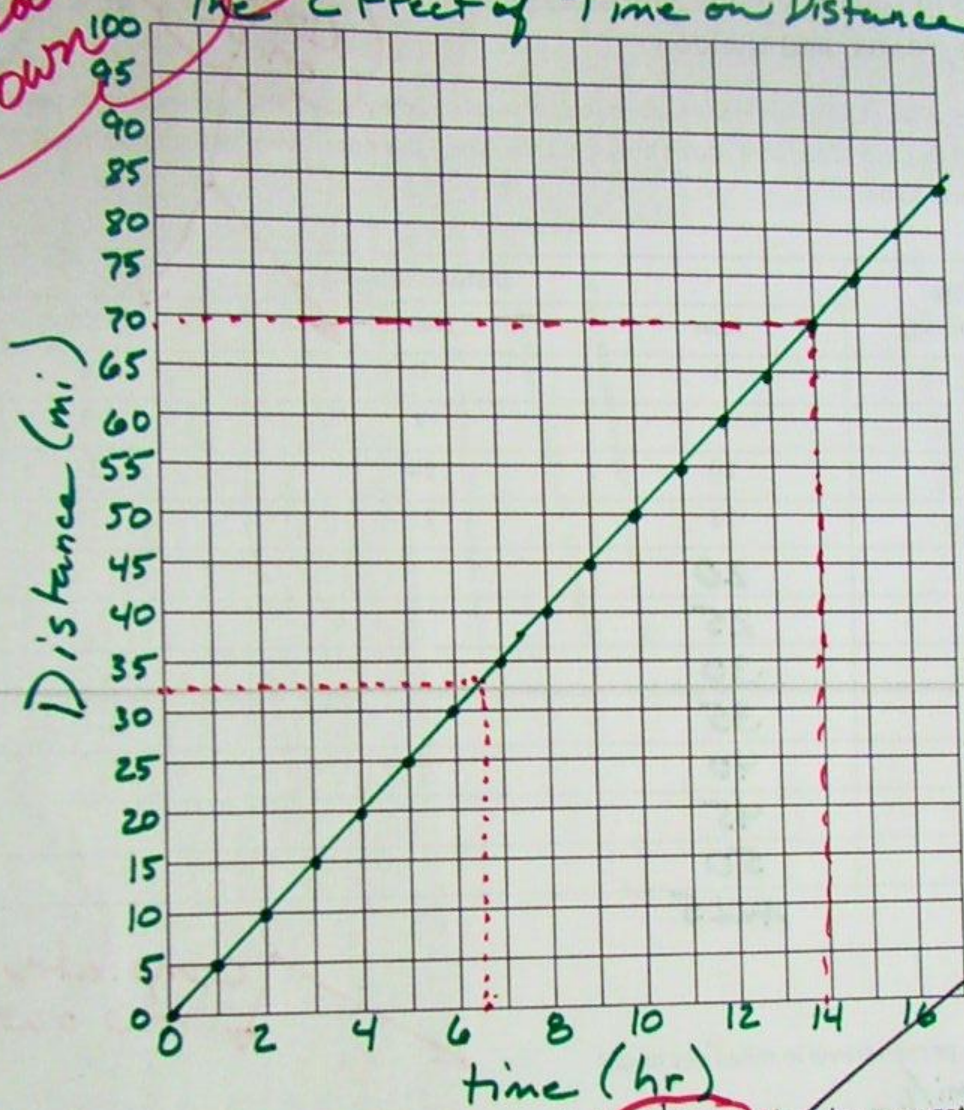Jose: __60 miles__   Maria: _____   Sheldon: _____
12·5
↑ Rate
time

On the next page, graph the time and distance data for the three riders on the same coordinate grid. Make a key to ... Use an interval of 1 on the x-axis and 5 on the y-axis. Your graph should include a title

Graph Maria & Sheldon on own

The Effect of Time on Distance

Distance (mi.) vs time (hr)

Key

Jose •
Maria ✳
Sheldon ☐

complete on own

2) b. Use the graphs to find the distance each person travelled in 6½ hours. Show how you got your answers using dashed lines.

Jose: ≈ 34 miles   Maria: _____   Sheldon: _____

c. Use the graphs to find the time it took each person to travel 70 miles. Show how you got your answers using dashed lines.

Jose: 14 hrs   Maria: _____   Sheldon: _____

d. How does the rate at which each person rides affect the graphs? The rate effects the steepness

Complete on own

a. For each rider, write an equation that can be used to calculate the distance traveled after a given number of hours. fine your own variables.

Distance traveled= d Number of hours= h

Jose: $d = 5h$ Maria: _____ Sheldon: _____

b. How does a person's biking rate affect the equation? **multiply the rate by the time**

c. Use your equations from part a to calculate the distance each person would have traveled in $6\frac{1}{2}$ hours.
   (Show all work as indicated.)

	Jose	Maria	Sheldon
Equation ⟹	$d = 5h$		
Substitution ⟹	$d = 5(6\frac{1}{2})$		
Solution ⟹	$d = 32.5$ mi		

Compare these answers to #2 part b. Did you get close to the same answers? **Yes** Which method would be more accurate, using the equation or the graph? **The equation**

. Use your equations from part a to calculate the time it took each person to travel 70 miles.
   (Show all work as indicated.)

	Jose	Maria	Sheldon
Equation ⟹	$d = 5h$		
Substitution ⟹	$\frac{70}{5} = \frac{5h}{5}$		
Work ⟹			
Solution ⟹	$h = 14$ hrs		

Compare these answers to #2 part c. Did you get close to the same answers? _____ Which method would be easier for very large numbers, using the equation or the graph? _____