Rates – Day 1
Notes

Name _____
Date _____ Period _____

Biking Bob and his buddies are planning to see the great state of Texas by going on a bicycle trip. One bike shop they contacted charges $100 plus $25 per bike to rent bikes for one week. If we let C be the total cost to rent the bikes and n be the number of people who go on the tour, we can write this equation:

$$C=100+25n$$

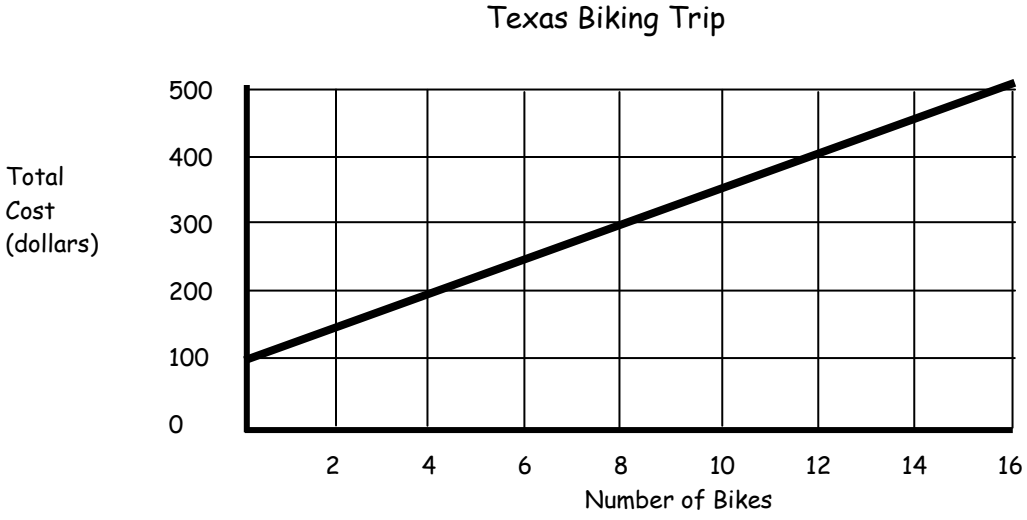
Remember that 25n means 25 times n. If a variable is multiplied by a number, we can omit the *times sign*.

For example, the total cost to rent bikes depends on the number of people on the tour. We say that the rental cost is a *function* of the number of people on the tour. The variables in this situation are the number of people and the cost. If you were interested in how the variables were related you might ask questions like:

- As the number of people on the tour increase, what happens to the cost to rent the bikes?

- If the tour partners want to decrease the cost of renting bikes, how will this affect the number of people who can go on the tour?

You can also graph the equation. From graphs, it is easy to see the relationship between the number of people and the rental cost. These are **linear relationships**.



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We will consider the following questions:

- How can you determine whether a situation is linear by examining a table of data or an equation?
- How does changing one of the quantities in a situation affect the constant rate of change and the graph?

Mr. Goldberg's gym class does an experiment to determine their walking rates from school to a local Sonic Drive In. Here are the results for three students.

Name	Walking rate
Sarah	1 meter per second
Sally	2 meters per second
Steven	2.5 meters per second

1. If Sarah, Sally, and Steven leave school together and walk toward the Sonic at the rates given in the table, how far apart will they be after 1 minute?

2. If the Sonic is 750 meters from school, how long will it take each student to walk there?

3. When Steven arrives at the Sonic, how far away will Sarah be?

4. What strategies did you use to get your answers for questions 1 – 3?

5. Does the Sonic walking trip involve a linear relationship? Explain why or why not?

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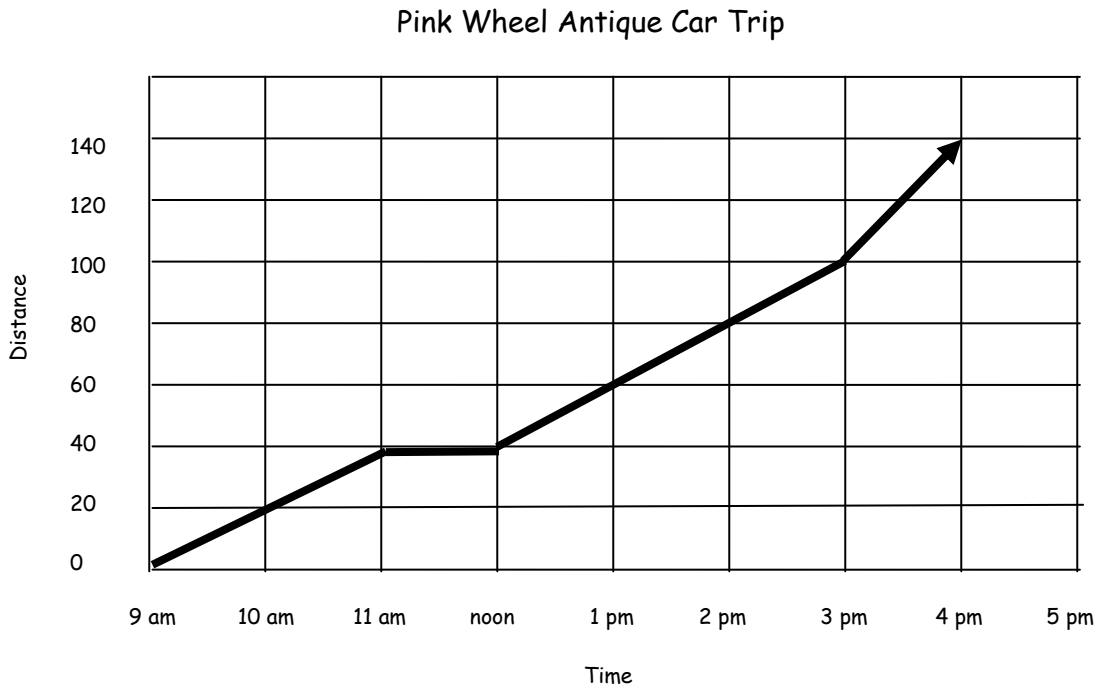
The Pink Wheel Antique Car Club went on a Saturday Car Trip to the coast. The graph shows the time and distance traveled by the club members.



The average rate of speed in miles per hours, r, can be found by the ratio $\mathbf{r} = \frac{\mathbf{d}}{\mathbf{t}}$, where d is the number of miles traveled and t is the number of hours.

6. What was the average rate of speed from 9 am to 11 am?

7. What was the average rate of speed from noon to 3 pm?