

Worksheet #3 - Linear Functions

Spring 2007

Objectives

- Use variables names that make sense to the problem. Using x and y sometimes does not convey any additional meaning. Use t for time. Use q for quantity.
- Understand the wording that makes the linear model appropriate in a word problem.
- Basic form of a linear model includes a slope or a rate of change and one data point.

Problems

- Rowing: From the little display on your rowing machine, you can see that you are averaging 500 meters in 2 minutes and 20 seconds.
 - What are the units being used in this problem?
 - Build a chart of known t (time) and d (distance) values. How many data points do you have in your chart?
 - Write a formula that models the distance that you row after rowing t minutes.

Time t	Distance d

- Your throwing a party. Chicken Wings are \$4.50 for 10 wings. Cokes are \$1.50 for a 24 ounce bottle.
 - For a party, how much will you spend if you order 80 wings and 6 Cokes? What if you order 100 wings and 5 Cokes?
 - Write a formula that describes how much money you have spent using W for the number of wings that you've ordered and C for the number of Cokes.
 - Suppose you know you will order two Cokes, write a formula that describes how much money you have spent using W for the number of wings that you've ordered.

More Problems

- Papa Jazz: New CD's: \$12 each, Used CD's: \$5 each.
 - How much would you spend if you bought 3 new CD's and 6 used CD's.
 - Write a cost formula that describes how much money you will spend shopping for CD's? Use appropriate variable name.
 - What if you only have \$100 to spend? Write a constraint equation in which you are allowed to spend \$100.
 - Solve for one of the variables of the constraint equation. Graph this equation. What is the meaning of the intercepts of the graph when you substitute \$100 in for the amount?

- Bicycle Riding: For the first 3 hours, you averaged 12 miles per hour. You know the next section of road is a little tougher and you hope to average 8 miles per hour.
 - How many miles do you expect to ride if you cycle for a total of 5 hours?

 - Write a formula that describes how far you have cycled a total of t hours. Since the ride is broken into two parts, your function will have to be written in two parts.

 - What do the slopes represent in this application? What are the units of the slopes of each of these lines?