# Assignment

## Write

In your own words, describe how to estimate an inequality using the graph of an equation. Include an example in your description.

## Remember

The unit rate of change is the amount that the dependent value changes for every one unit that the independent value changes.

## Practice

The Transverse Tire Company produces all types of tires at its factory. Due to fixed costs associated with running the factory, the company starts with a loss of $200,000, or a profit of −$200,000, at the beginning of each month. The first major hurdle the company faces each month is to break even, or reach the point at which the profit is zero. The tires are sold in batches of 1000. The company earns $40,000 for each batch of tires they manufacture and sell.

1. Identify the two quantities that are changing in this situation, identify the independent and dependent quantities, and define the variables for these quantities. Then write an equation to represent the profit the company will make when they manufacture and sell batches of tires.
2. Use your equation to complete a table for this problem situation.
3. What is the unit rate of change in this problem?
4. How much profit would the company make if they manufactured and sold 3 and one-half batches (3500 tires)?
5. How many batches of tires does the company have to manufacture and sell to have a profit of −$190,000?
6. Construct a graph for the problem situation.

## Stretch

Timothy and his manager have discussed the use of an herbicide to help decrease the growth of plants that will grow near the trees, because they will take nutrients away from the tree and thus the trees will grow at a slower rate. They decide to do some research on the subject to decide. They find a study that indicates that the growth of the seedlings without using herbicides was $8(2h + 2) - 4(2h + 9)$ and the growth of the seedlings with herbicides was $7h + 1\frac{3}{4}(4h - 2\frac{1}{8})$. Graph each expression. Sketch the portion of the graphs that make sense to this problem. Are the two growth rates the same? Explain your reasoning.

# Review

1. One grocery basket is 12 inches in height. When two baskets are stacked inside of each other, the total height of the two baskets is 13.5 inches.

   a. Determine the stack height for 1 basket, 2 baskets, 3 baskets, 4 baskets, and 5 baskets.

   b. Write an equation to represent the stack height, $s$, of a given number of baskets, $b$.

   c. Solve the equation if there are 250 baskets.

   d. Solve the equation if the stack height is 125.875 feet tall.

2. Rewrite each expression with the fewest terms possible.

   a. $(-2y + 3) + (-7y - 14)$

   b. $(9x - 4) - 5(2x - 7)$