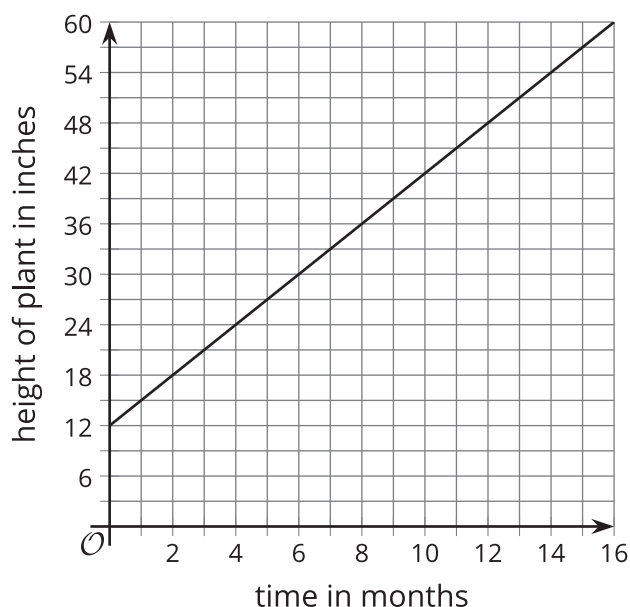# Lesson 10: Rate of Change

- Let's calculate the rate of change of some relationships.

10.1: Growing Bamboo

The graph represents function h, which gives the height in inches of a bamboo plant t months after it has been planted.

1. What does this statement mean? $h(4) = 24$

2. What is the value of $h(10)$?

3. What is c if $h(c) = 30$?

4. What is the value of $h(12) - h(2)$?

5. How many inches does the plant grow each month? How can you see this on the graph?

10.2: A Growing Account Balance

The balance in a savings account is defined by the function b. This graph represents the function.
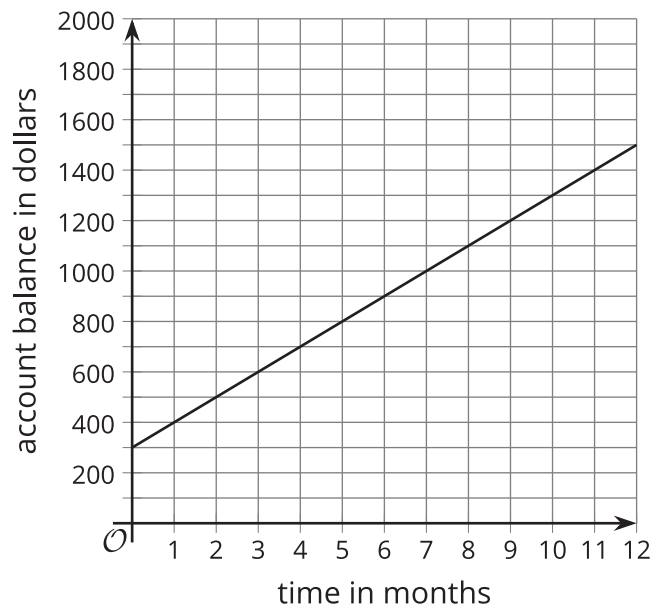
1. What is . . .
   a. $b(3)$

   b. $b(7)$

   c. $b(7) - b(3)$

   d. $7 - 3$

   e. $\dfrac{b(7) - b(3)}{7 - 3}$

2. Also calculate $\dfrac{b(11) - b(1)}{11 - 1}$

3. You should have gotten the same value, twice. What does this value have to do with this situation?

10.3: The Temperature Outside

Here are a graph and a table that represent the same function. The function relates the hour of day to the outside air temperature in degrees Fahrenheit at a specific location.

t	$p(t)$	t	$p(t)$
0	48	6	57
1	50	7	56
2	55	8	55
3	53	9	50
4	51.5	10	52
5	52.5		
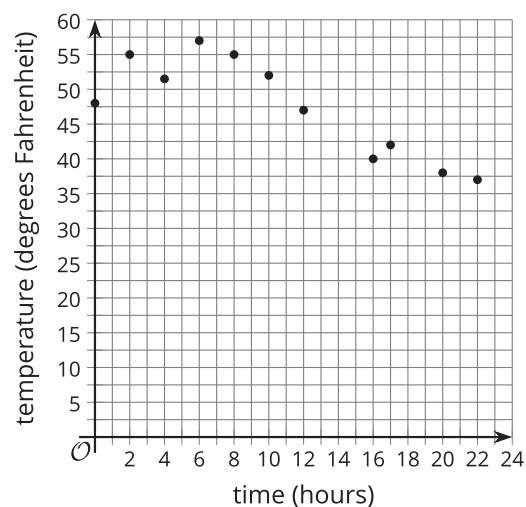
Match each expression to a value. Then, explain what the expression means in this situation.

1. $p(12)$

2. $p(8)$

3. $p(12) - p(8)$

4. $12 - 8$

5. $\frac{p(12)-p(8)}{12-8}$

6. $p(10)$

7. $p(20)$

8. $p(10) - p(20)$

9. $10 - 20$

10. $\frac{p(10)-p(20)}{10-20}$

- 4

- -2.75

- 44

- -1.4

- 55

- 14

- -11

- 38

- -10

- 52