

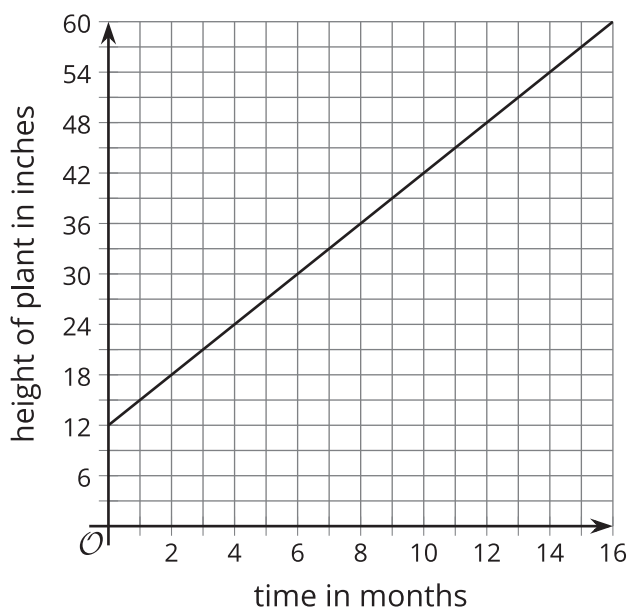


# Rate of Change

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

## 13.1 Growing Bamboo

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

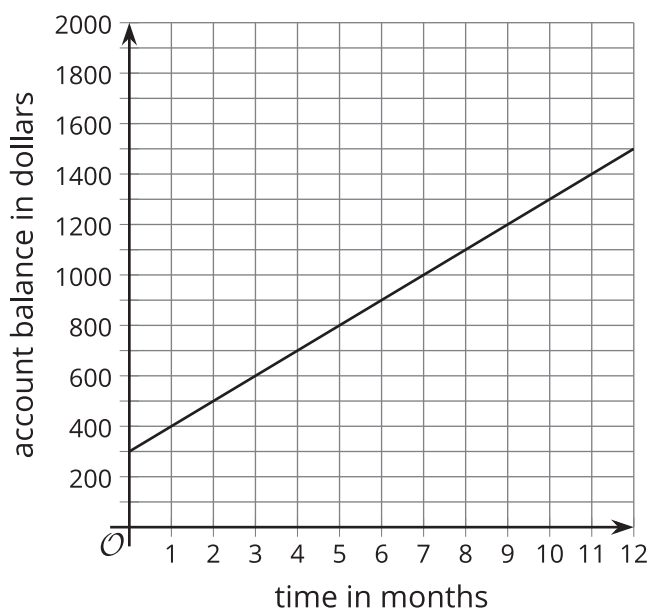


1. What does this statement mean?  $h(4) = 24$
2. What is the value of  $h(10)$ ?
3. What is  $t$  if  $h(t) = 30$ ?
4. What is the value of  $h(12) - h(2)$ ?
5. How many inches does the plant grow each month? How can you see this on the graph?



## 13.2 A Growing Account Balance

The balance in a savings account is defined by the function  $b$ . This graph represents the function.



1. Find the values:

- a.  $b(3)$
- b.  $b(7)$
- c.  $b(7) - b(3)$
- d.  $7 - 3$
- e.  $\frac{b(7) - b(3)}{7 - 3}$

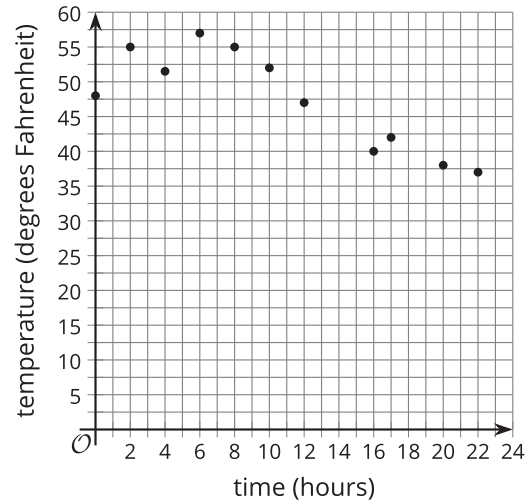
2. Calculate  $\frac{b(11) - b(1)}{11 - 1}$ .

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

## 13.3 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. $p(12)$                          | • 4    |
| 2. $p(8)$                           | • -2   |
| 3. $p(12) - p(8)$                   | • 47   |
| 4. $12 - 8$                         | • -1.4 |
| 5. $\frac{p(12) - p(8)}{12 - 8}$    | • 55   |
| 6. $p(10)$                          | • 14   |
| 7. $p(20)$                          | • -8   |
| 8. $p(10) - p(20)$                  | • 38   |
| 9. $10 - 20$                        | • -10  |
| 10. $\frac{p(10) - p(20)}{10 - 20}$ | • 52   |