Lesson 3-4: Construct Functions to Model Linear Relationships

1. Sample answer: You can use the initial value, *b*, and the constant rate of change, *m*, of a relationship to write a function in the form $y = mx+b$ to represent the relationship.

2. 2; Sample answer:
   $\frac{10-5}{x-3}$ = -5,
   -5(x - 3) = 5
   -5x + 15 = 5
   -5x = -10
   X+2

3. Sample answer: All linear functions that show a proportional relationship share the initial value 0.

4. y = x + 3.1

5. 30
   25

6. $y = \frac{1}{2}x + 5$

7. y = x + 15

8. y = -1.5x + 2.5

9. d = 105t

10. $w = \frac{1}{7}t$

11. c = 3t + 7

12. a. y = 6.5x + 3.99
    b. Sample answer: The constant rate of change would increase by the shipping cost of $3.99 for each sweatshirt. The function would become y = 10.49x.

13. a. y = x + 6.75
    b. The first store offers a better deal; sample answer: Assuming the constant rate of change is the same, the second store would sell a poster and 6 comics for $13.99 compared to $12.75.

14. a. Refrigerator thawing: 6 hours per pound; cold water thawing: $\frac{1}{2}$ hour per pound
    b. t = 6w

15. a. The constant rate of change is 25; Sample answer: It represents the cost in dollars of one cubic yard of mulch.
    b. The initial value is 50; Sample answer: It represents a flat fee in dollars. For example, it could represent the delivery cost of the mulch.

16. A

17. a. y = 40x + 200
    b. 11 hours