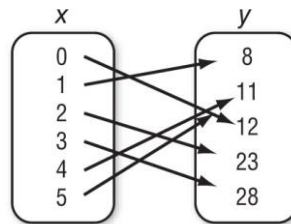# Unit 2 Test

Review

Represent the relation.

1. **DATA COLLECTION** Margaret collected data to determine the number of books her schoolmates were bringing home each evening. She recorded her data as a set of ordered pairs. She let x be the number of textbooks brought home after school, and y be the number of students with x textbooks. The relation is shown in the mapping.

   a. Express the relation as a set of ordered pairs.

   b. What is the domain of the relation?

   c. What is the range of the relation?

2. Use the set $\{-1, 0, 1, 2\}$ as a domain and the set $\{-3, -1, 4, 5\}$ as a range. Express the relation as a table, a graph, and a mapping.
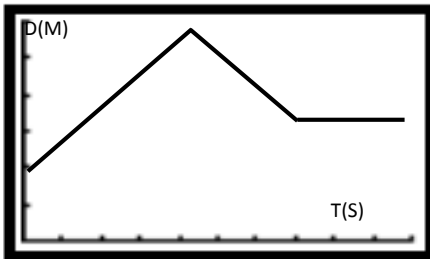
Draw and label the graphs of the parent functions of a linear and quadratic function

3. **Identify the independent and dependent variables, and domain and range for each relation.**
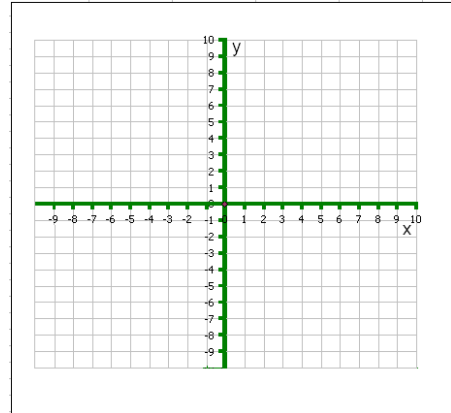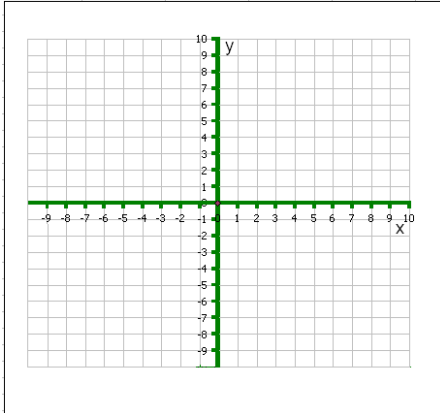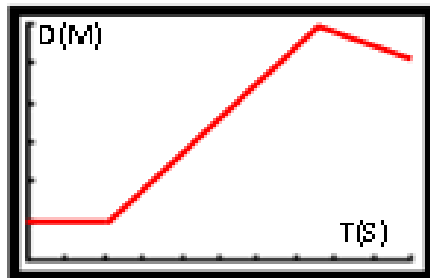

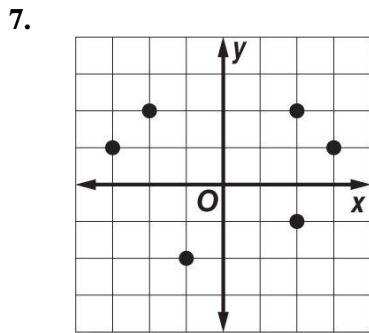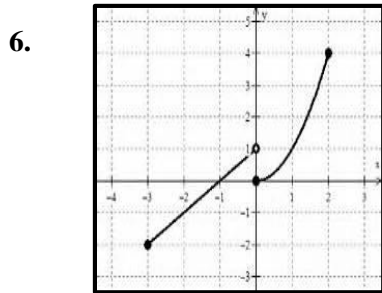**Identify the independent and dependent variables, and domain and range for each relation.**

4. **a.**
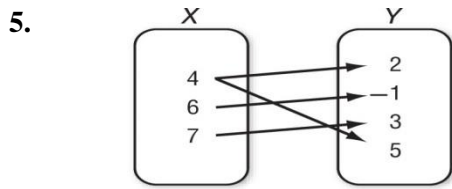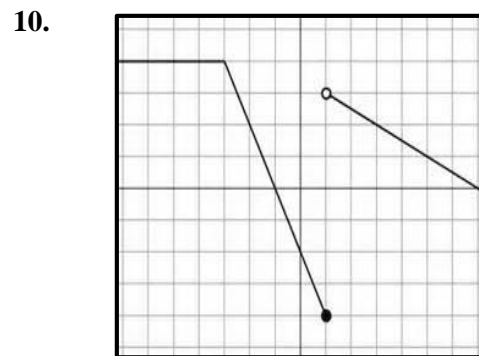

b.

Identify Functions
Determine whether each relation is a function.

5.

6.

7.

8. y=11

9. $\{(6, -1), (-4, 2), (5, 2), (4, 6), (6, 5)\}$

10.

If $f(x) = 5x + 3$ and $g(x) = x^2 - x$, find each value.

11. $f(4)$

12. $f(-2)$

13. $f(2)$

14. $f(x + 1)$

15. $g(-3)$

16. $g(0)$

17. $g(2) + 3$

18. $g(-4)$

19. $g(3) - 1$

20. $f(-3) -9$

Application of Functions

21. **TEXT MESSAGING** Many cell phones have a text messaging option in addition to regular cell phone service. The function for the monthly cost of text messaging service from KANUT Wireless Company is $f(x) = 0.12x + 7$, where x is the number of text messages that are sent. Find $f(10)$ and $f(30)$, the cost of 10 text messages in a month and the cost of 30 text messages in a month.

22. **GEOMETRY** The area for any square is given by the function $y = x^2$, where x is the length of a side of the square and y is the area of the square. Write the equation in function notation and find the area of a square with a side length of 2.5 inches.

23. **CONSUMER CHOICES** Alex just received a $55 paycheck from her new job. She spends some of it buying music online and saves the rest in a bank account. Her savings is given by $f(x) = 55 - .75x$, where x is the number of songs she downloads at $.75 per song.

a. Graph the function.
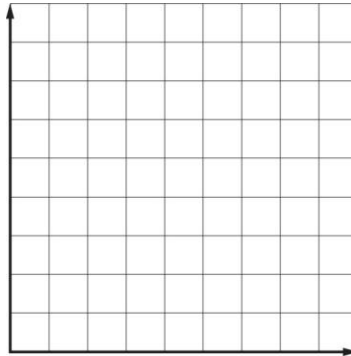
b. Find $f(5)$, $f(12)$, and $f(33)$. What do these values represent?

c. How many songs can Alex buy and still have $25 left?

24. $y = 2 \cdot 3^x$

$a =$ _____ $b =$ _____

x	$y = 2 \cdot 3^x$	y	Successive Ratios
0	$y = 2 \cdot 3^0$	2	
1	$y = 2 \cdot 3^1$	6	
2	$y = 2 \cdot 3^2$		
3			
4			

Where does the *a* value appear in the table?

Where does the *b* value appear in the table?

25. Complete and analyze the graphs to determine the effects of *a* and *b* on the graph of an exponential function, $y = a \cdot b^x$.
- Plot the points from the data.
- Draw a smooth curve through the points.
- Verify results using the graphing calculator.

$y = 5 \cdot 4^x$