Ch. 3 Relations Practice Test

Multiple Choice
Identify the choice that best completes the statement or answers the question.

1. (1 point) Identify the domain of this relation.

    $\{(8,10),(5,7),(9,-11),(6,-8)\}$

    a. $\{-11,-8,7,10\}$
    b. $\{5,6,9,10\}$

    c. $\{-8,7,9,10\}$
    d. $\{5,6,8,9\}$

2. (1 point) Determine the range of the graph.

    a. $-4 \le y \le 0$
    b. $-1 \le x \le 3$

    c. $-4 \le y \le 3$
    d. $-1 \le y \le 0$

3. (1 point) Which set of ordered pairs does <u>not</u> represent a function?

    i) $\{(2,5),(3,8),(4,11),(2,-1)\}$

    ii) $\{(4,6),(5,-7),(7,9),(8,-10)\}$

    iii) $\{(-3,-8),(-1,-6),(-2,5),(0,7)\}$

    iv) $\{(7,0),(4,-1),(-6,5),(-8,0)\}$
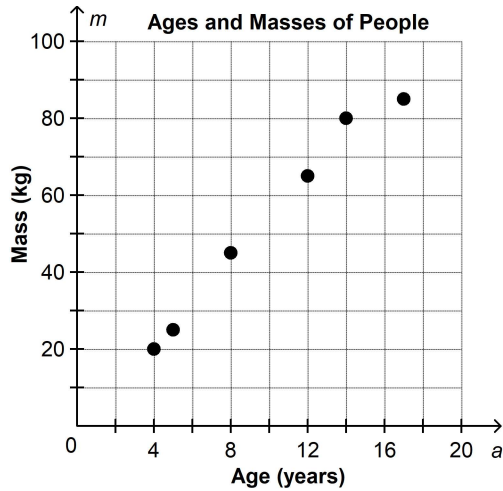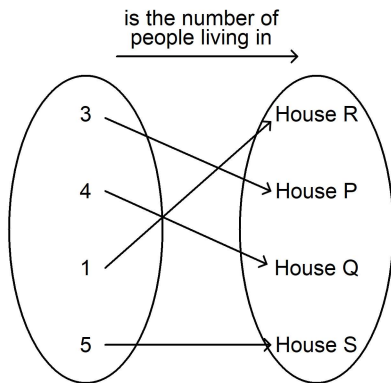
    a. iv   b. ii   c. iii   d. i

4. (1 point) This graph shows the masses of people, *m*, as a function of age, *a*. Determine the range of the graph.


a. $\{15,25,45,55,80,85\}$ c. $\{3,5,8,10,14,17\}$

b. $\{4,5,8,12,14,17\}$ d. $\{20,25,45,65,80,85\}$

5. (1 point) Consider the relation represented by this arrow diagram. Represent the relation as a set of ordered pairs.


a. $\{(3, \text{House P}), (4, \text{House Q}), (1, \text{House R}), (5, \text{House S})\}$
b. $\{(\text{House P}, 1), (\text{House Q}, 3), (\text{House R}, 4), (\text{House S}, 5)\}$
c. $\{(1, \text{House P}), (3, \text{House Q}), (4, \text{House R}), (5, \text{House S})\}$
d. $\{(\text{House P}, 3), (\text{House Q}, 4), (\text{House R}, 1), (\text{House S}, 5)\}$

6. (1 point) For the function $f(x) = -3x + 8$, determine x when $f(x) = -25$.

a. 83   b. -67 c. -11 d. 11

7. (1 point) This graph shows the cost of parking, c, as a function of time, t. Determine the domain of the graph.
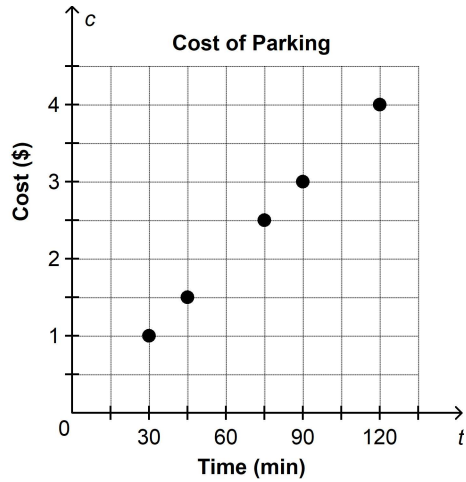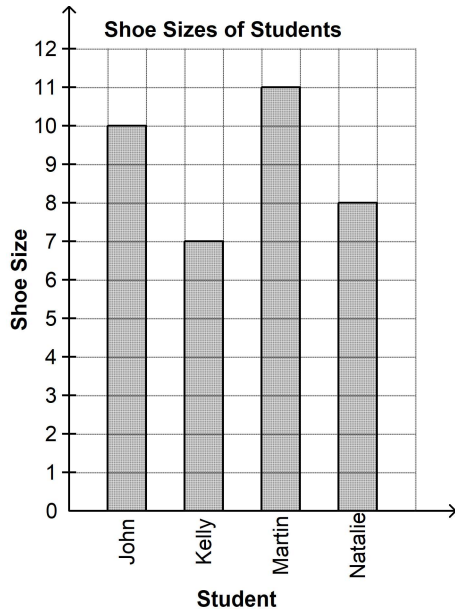

a. $\{30, 45, 75, 90, 120\}$
b. $\{1.00, 1.50, 2.50, 3.00, 4.00\}$
c. $\{15, 45, 75, 105, 120\}$
d. $\{0.50, 1.50, 2.50, 3.50, 4.00\}$

8. (1 point) For the function $f(x) = -3x + 8$, determine $f(-2)$.

a. 14   b. 2   c. 7   d. 3

9. (1 point) Determine the domain and range of the graph of this function.
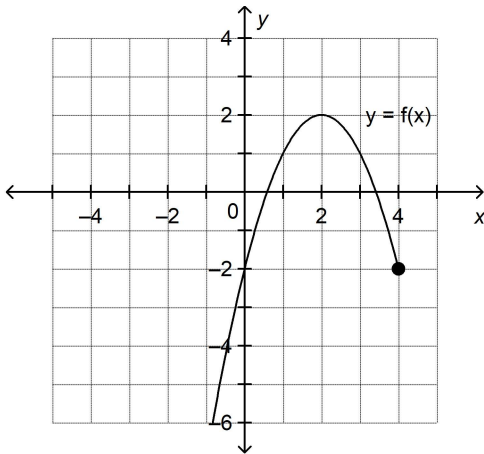
a. $x \leq 4;\ y \leq 2$
b. $x \leq 4;\ -2 \leq y \leq 2$
c. $x \leq 2;\ y \leq 4$
d. $2 \leq x \leq 4;\ y \leq 2$

10. (1 point) Consider the relation represented by this graph. Represent the relation as a table.

a.

Student	Shoe Size
John	10
Kelly	7
Martin	11
Natalie	8

c.

Student	Shoe Size
John	7
Kelly	10
Martin	8
Natalie	11

b.

Shoe Size	Student
7	John
10	Kelly
8	Martin
11	Natalie

d.

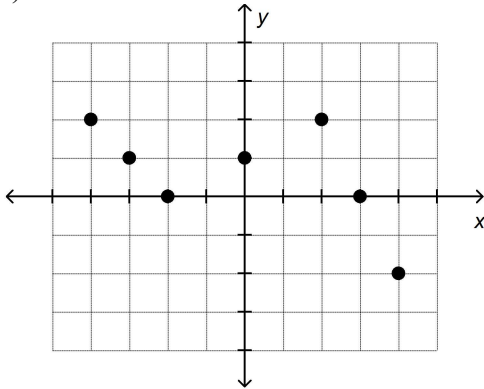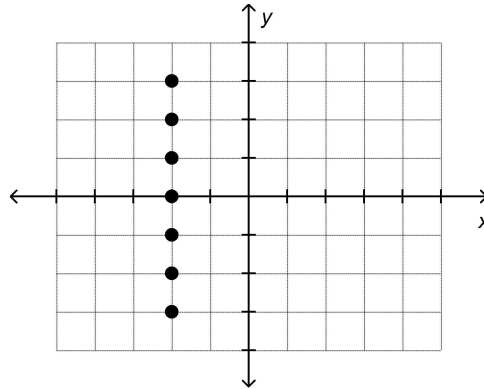| Shoe Size	Student
10	John
7	Kelly
11	Natalie
8	Martin

11. (1 point) Identify the range of this relation.
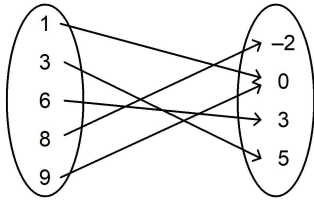
a. $\{-2,0,3,5\}$

b. $\{3,6,8\}$

c. $\{-2,3,5\}$

d. $\{1,3,6,8,9\}$
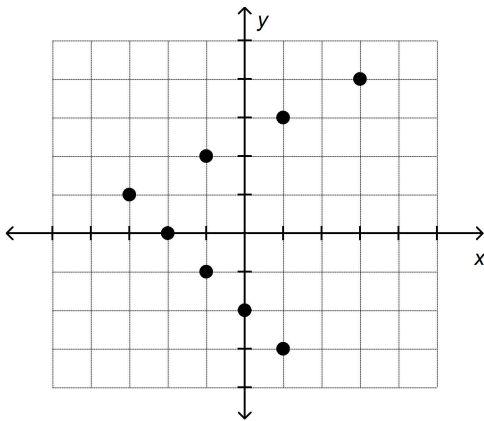
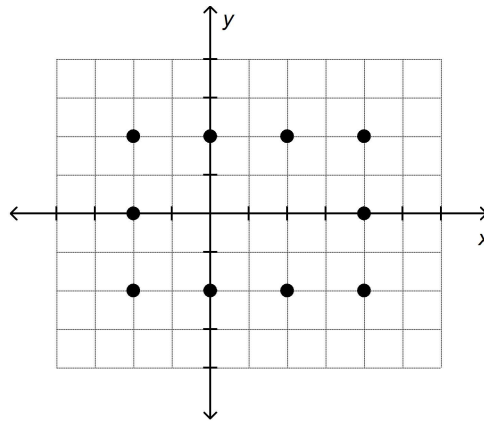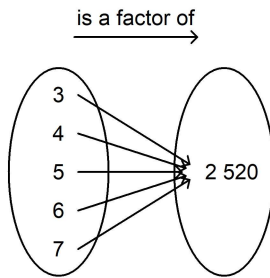12. (1 point) Which of these graphs represents a function?
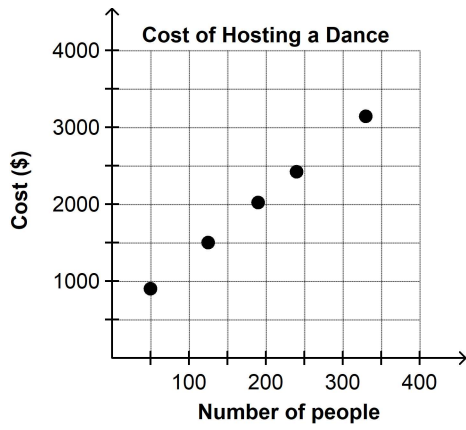
i)

ii)

iii)

iv)

a. iv

b. iii

c. i

d. ii

Short Answer

13. (2 points) Identify the domain and range of this relation.

is a factor of
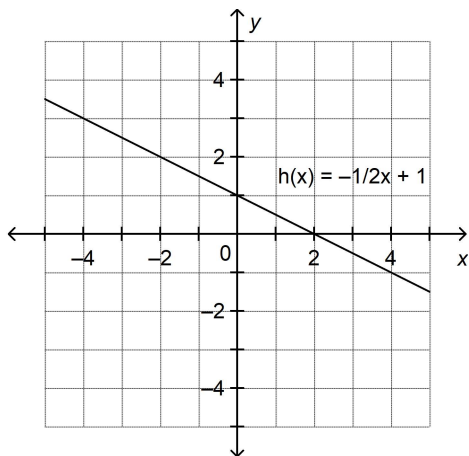

14. (2 points) How can you tell that this graph represents a function?
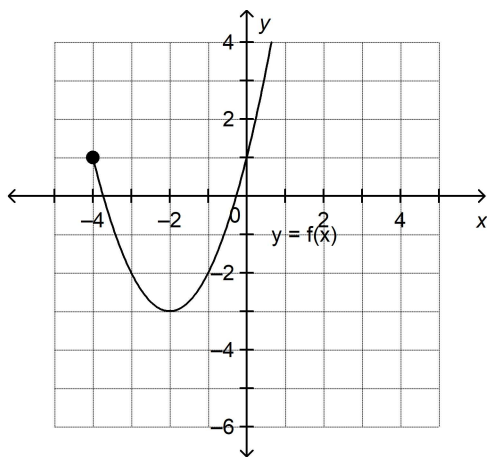
15. (2 points) This is a graph of the function $h(x) = -\frac{1}{2}x + 1$.

$h(x) = -1/2x + 1$

a) Determine the range value when the domain value is –2.

b) Determine the domain value when the range value is –1.

16. (2 points) Determine the domain and range of the graph of this function.

$y = f(x)$

17. (2 points) This table shows the refund, r dollars, for different numbers of juice tetra paks, n. Is this relation a function? Explain.

Number of Juice Tetra Paks, n	Refund, r ($)
5	0.25
12	0.60
17	0.85
24	1.20
30	1.50

Problem

18. (6 points) The equation $C = 11g + 250$ represents the total cost, C dollars, for a sports banquet when g people attend.
    a) Describe the function.

    Write the function in function notation.

    b) Determine $C(46)$.

    What does this number represent?

    c) Determine the value of g when $C(g) = 1581$.

    What does this number represent?

Ch. 3 Relations Practice Test
Answer Section

MULTIPLE CHOICE

1. D
2. A
3. D
4. D
5. A
6. D
7. A
8. A
9. A
10. A
11. A
12. C

SHORT ANSWER

13. domain: $\{3,4,5,6,7\}$
     range: $\{2\ 520\}$
14. The graph represents a function because there is only one cost for each number of people.
15. a)   When the domain value is –2, the range value is 2.
     b)   When the range value is –1, the domain value is 4.
16. Domain: $x \geq -4$
     Range: $y \geq -3$
17. For each number in the first column, there is only one number in the second column. So, the relation is a function.

PROBLEM

18. a) The total cost of the banquet is a function of the number of people attending. In function notation:
$C(g) = 11g + 250$

  b) To determine $C(46)$, use:

$C(g) = 11g + 250$ Substitute: $g = 46$

$C(46) = 11(46) + 250$

$C(46) = 506 + 250$

$C(46) = 756$
$C(46)$ is the value of C when $g = 46$.
This means that when 46 people attend the banquet, the total cost is $756.

  c) To determine the value of g when $C(g) = 1581$, use:
$C(g) = 11g + 250$ Substitute: $C(g) = 1581$

$1581 = 11g + 250$

$1331 = 11g$

$g = 121$
$C(121) = 1581$ means that when $g = 121$, $C = 1581$; that is, when 121 people attend the banquet, the total cost is $1581.