

### Algebra EOC Practice Test #1

#### Multiple Choice

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

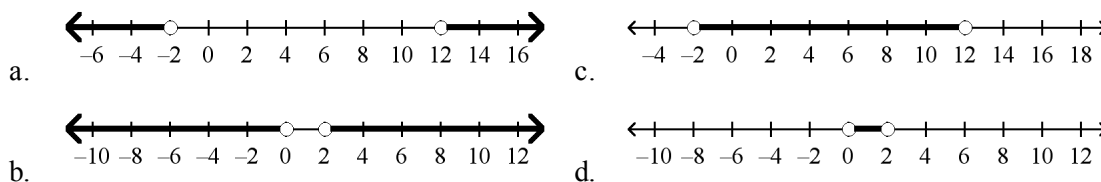
- \_\_\_\_\_ 1. George is helping the manager of the local produce market expand her business by distributing flyers around the neighborhood. He gets paid \$20 a day as well as \$0.05 for every flyer he distributes. George would like to earn at least \$65 each day. Which of the following represents this situation, where  $x$  is the number of flyers distributed.

- a.  $20 + 0.05x \leq 65$   
 b.  $20 + 5x \leq 65$   
 c.  $20 + 0.05x \geq 65$   
 d.  $20 + 5x \geq 65$

- \_\_\_\_\_ 2. Divide  $(16x^6 - 12x^4 + 4x^2)$  by  $4x^2$ .

- a.  $4x^3 - 3x^2 + 1$   
 b.  $4x^4 - 3x^2$   
 c.  $4x^4 - 3x^2 + 1$   
 d.  $12x^4 - 8x^2 + 0$

- \_\_\_\_\_ 3. Which graph represents the solutions of  $p + 1 < -1$  OR  $p - 5 > 7$ ?



- \_\_\_\_\_ 4. John is considering accepting one of two sales positions. ABC Company offers a yearly salary of \$45,000. XYZ Company offers a yearly salary of \$38,000 plus a 2% annual commission on sales. For what amount of sales  $s$  is the salary at XYZ Company greater than the salary at ABC Company?

- a.  $s > 7000$   
 b.  $s > 35,000$   
 c.  $s > 70,000$   
 d.  $s > 350,000$

- \_\_\_\_\_ 5. Solve  $\frac{4}{s} = \frac{-2}{9}$ .

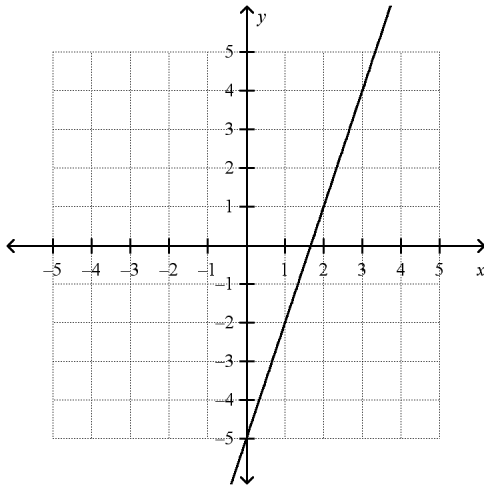
- a. -4.5  
 b. -18  
 c. 18  
 d. 4.5

- \_\_\_\_\_ 6. The average of Paula's two test scores must be 80 or more for her to get at least a B in the class. She got a 72 on her first test. What grades can she get on the second test to make at least a B in the class?
- a. at least 76  
 b. at least 84  
 c. at least 88  
 d. at least 92

Name: \_\_\_\_\_

ID: A

\_\_\_\_\_ 7. What is the equation of the line shown in the graph?



a.  $y = 3x + \frac{3}{2}$

c.  $y = 3x - 5$

b.  $y = -3x - 5$

d.  $y = 2x - 5$

\_\_\_\_\_ 8. Solve  $m - 8 \leq 14$ .

a.  $m \leq 6$

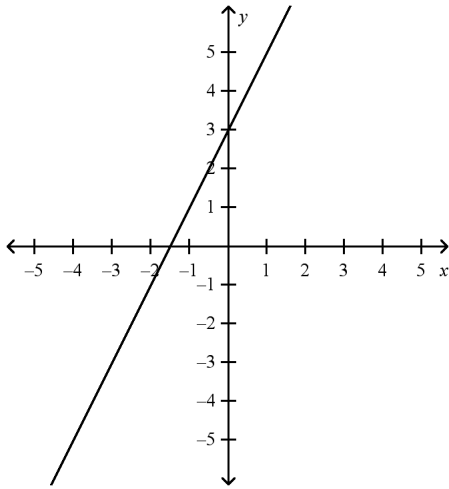
c.  $m \leq 22$

b.  $m \geq 6$

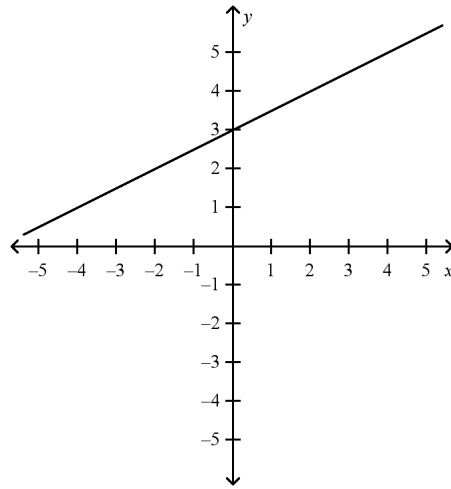
d.  $m \geq 22$

\_\_\_\_\_ 9. Graph the line with the slope  $\frac{1}{2}$  and y-intercept 3.

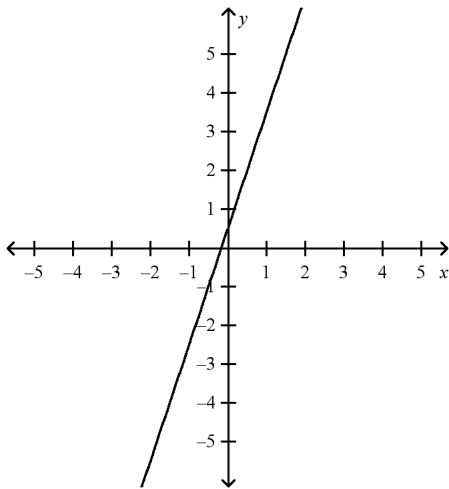
a.



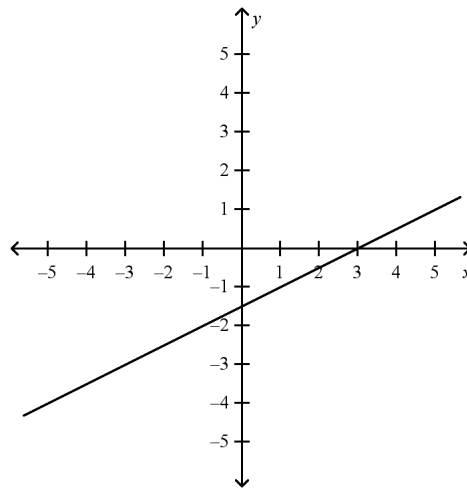
c.



b.



d.



\_\_\_\_\_ 10. Which of the following relations is a function?

- a.  $\{(-2, -2), (-2, -1), (-2, 0), (-2, 1), (-2, 2)\}$
- b.  $\{(1, 0), (-1, 0), (2, 1), (-2, 1), (3, 2), (-3, 2)\}$
- c.  $\{(-2, 1), (-1, 2), (0, 0), (-1, 1), (2, -2)\}$
- d.  $\{(-3, 3), (1, 3), (-3, 2), (1, 2), (-3, 1), (1, 1)\}$

\_\_\_\_\_ 11. Simplify  $(a^3 b)^2$ .

- a.  $a^3 b^2$
- b.  $a^6 b$
- c.  $a^6 b^2$
- d.  $a^9 b^2$

\_\_\_\_\_ 12. Simplify the expression  $\sqrt{\frac{48}{147}}$ .

a.  $\frac{4}{7}$

c.  $\frac{16}{49}$

b.  $\frac{4}{7}\sqrt{3}$

d.  $\frac{\sqrt{48}}{\sqrt{147}}$

\_\_\_\_\_ 13. The formula for the resistance of a conductor with voltage  $V$  and current  $I$  is  $r = \frac{V}{I}$ . Solve for  $V$ .

a.  $I = Vr$

c.  $V = Ir$

b.  $V = \frac{I}{r}$

d.  $V = \frac{r}{I}$

\_\_\_\_\_ 14. Which system has no solution?

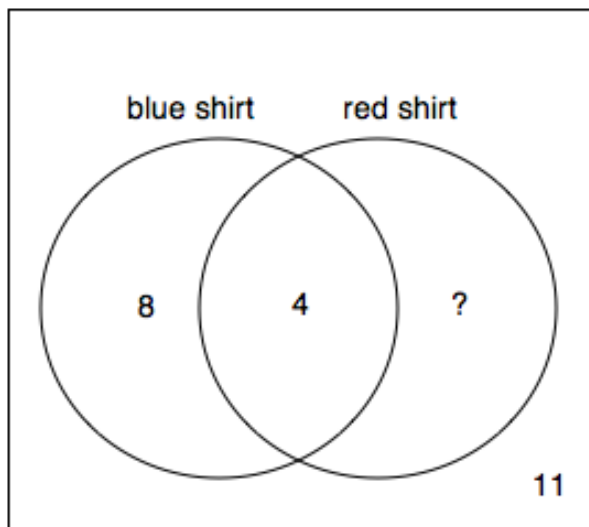
a. 
$$\begin{cases} y = x + 4 \\ y - x = -4 \end{cases}$$

c. 
$$\begin{cases} y = \frac{1}{2}x + 6 \\ 2x + 5 = y \end{cases}$$

b. 
$$\begin{cases} 2y = 2x + 8 \\ -2x = 2y - 8 \end{cases}$$

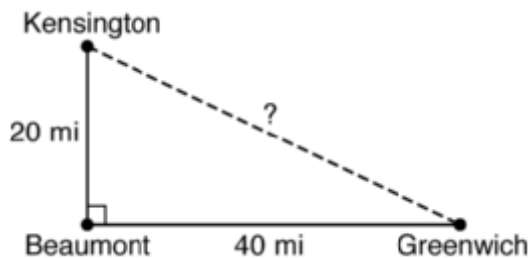
d. 
$$\begin{cases} y = 4x + 1 \\ y - 1 = 4x \end{cases}$$

- \_\_\_\_\_ 15. 30 people were asked if they wore a blue shirt or a red shirt this week. The Venn diagram shows the results of the survey.



What is the missing value in the Venn diagram?

- a. 7  
b. 12  
c. 18  
d. 19
- \_\_\_\_\_ 16. Look at the map below.



Which is the distance between Kensington and Greenwich?

- a.  $20\sqrt{3}$  mi  
b.  $20\sqrt{5}$  mi  
c.  $40\sqrt{3}$  mi  
d.  $40\sqrt{5}$  mi
- \_\_\_\_\_ 17. A sales clerk earns a 3% commission on each sale. What is the commission earned on a sale of \$4450?
- a. \$133.50  
b. \$148.33  
c. \$1335.00  
d. \$13.35

\_\_\_\_\_ 18. Given  $f(x) = x^2 + 1$  with domain  $D: \{-2, -1, 0, 1, 3\}$ . What is the range,  $R$ ?

a.  $R: \{-1, -2, 0, 1, 3\}$

c.  $R: \{5, 2, 1, 2, 10\}$

b.  $R: \{4, 1, 0, 1, 9\}$

d.  $R: \{3, 0, -1, 0, 8\}$

\_\_\_\_\_ 19. Solve  $y + w - \frac{3}{4}z = 0$  for  $z$ .

a.  $z = \frac{4}{3}(y + w)$

c.  $z = \frac{4}{3}w + y$

b.  $z = \frac{3}{4}(y + w)$

d.  $z = \frac{4y}{3} + w$

\_\_\_\_\_ 20. Gloria earns 1.5 times her normal hourly pay for each hour that she works over 40 hours in a week. Her normal pay is  $p$  dollars per hour. Last week Gloria worked 47 hours and earned \$489.85. The following equation represents this situation where  $p$  is Gloria's normal hourly pay in dollars per hour.

$$40p + 7(1.5p) = 489.85$$

What is Gloria's normal hourly pay?

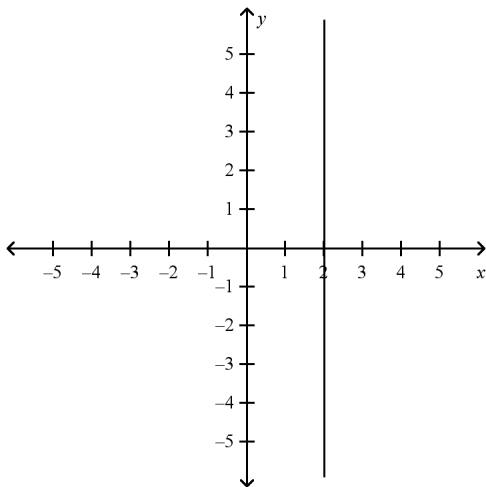
a. \$5.90

c. \$8.70

b. \$6.95

d. \$9.70

\_\_\_\_\_ 21. Tell whether the slope of the line is positive, negative, zero, or undefined.



a. negative

c. undefined

b. positive

d. zero

\_\_\_\_\_ 22. Let  $A = \{a, b, d, f, g\}$  and  $B$  be a sets in the universe  $U = \{\text{letters of the alphabet}\}$ . If  $A \cap B = \{b, d\}$ , which could be set  $B$ ?

a.  $B = \{b, d, g\}$

c.  $B = \{b, d, 5, e\}$

b.  $B = \{b, d, k\}$

d.  $B = \{a, f, g\}$

\_\_\_\_\_ 23. Leah scored  $p$  points in the first half of the basketball game. In the second half, she scored 3 more than  $\frac{1}{2}$  the number of points she scored in the first half of the game. Altogether, she scored 21 points in the game. The following equation represents this situation where  $p$  represents the number of points Leah scored in the first half.

$$p + \left(\frac{1}{2}p + 3\right) = 21$$

How many points did Leah score in the first half?

a. 6

c. 12

b. 9

d. 18

\_\_\_\_\_ 24. Subtract  $(6a^2 + 3a) - (4a^2 + 2a)$ .

a.  $2a^2 + a$

c. 3

b.  $2a^2 + 5a$

d.  $3a^3$

\_\_\_\_\_ 25. Which of the following is the equation of the line that has  $x$ -intercept =  $-2$  and  $y$ -intercept =  $-4$ ?

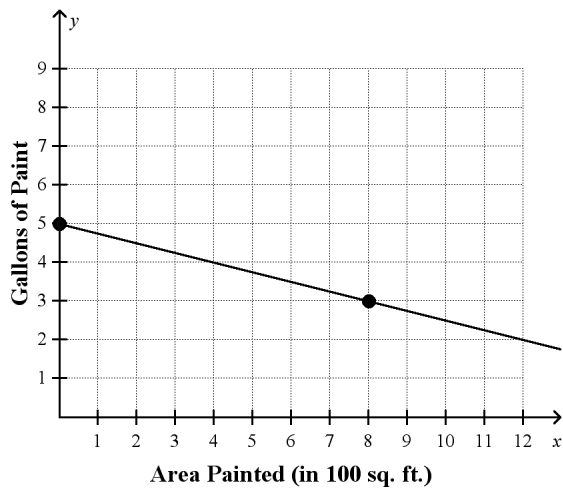
a.  $y = -2x - 4$

c.  $y = -2x + 4$

b.  $y = 2x - 4$

d.  $y = -\frac{1}{2}x - 4$

- \_\_\_\_\_ 26. Janell has 5 gallons of paint. After painting 800 square feet of walls in her house, she has 3 gallons left. The graph below show's Janell's situation.



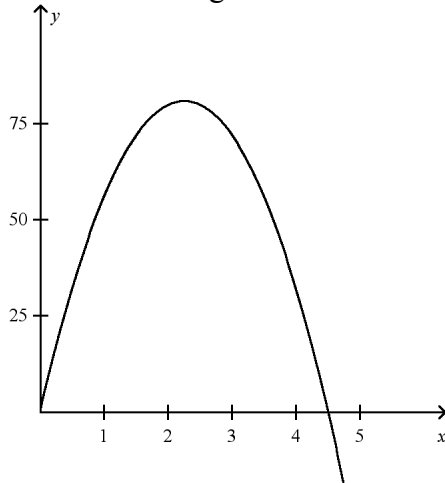
What is the equation of this linear function? What is the slope and what does it represent?

- a.  $y = -\frac{1}{400}x + 5$ ; slope =  $-\frac{1}{400}$ ; this means that for every gallon of paint used, 400 sq. ft. of area is painted.
- b.  $y = -\frac{1}{40}x + 5$ ; slope =  $-\frac{1}{40}$ ; this means that for every gallon of paint used, 40 sq. ft. of area is painted.
- c.  $y = -\frac{1}{800}x + 5$ ; slope =  $-\frac{1}{800}$ ; this means that for every gallon of paint used, 800 sq. ft. of area is painted.
- d.  $y = -\frac{1}{4}x + 5$ ; slope =  $-\frac{1}{400}$ ; this means that for every gallon of paint used, 4 sq. ft. of area is painted.
- \_\_\_\_\_ 27. Which expression is NOT equivalent to the other expressions?

- a.  $(4x^2y)^2$                       c.  $16x^4y^2$   
 b.  $4x^4y^2$                         d.  $4^2x^4y^2$



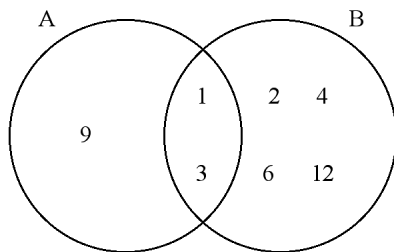
- \_\_\_\_\_ 28. The height of a ball in feet is modeled by  $y = -16x^2 + 72x$ , where  $x$  is the time in seconds after the ball is hit. How long is the ball in the air?



- a. 2.25 s  
b. 4.5 s  
c. 9 s  
d. 81 s
- \_\_\_\_\_ 29. The diagram shows a Venn diagram for sets  $A$  and  $B$ . What is the intersection?

Set A: factors of 9

Set B: factors of 12



- a.  $\{1\}$   
b.  $\{1, 3\}$   
c.  $\{2, 4, 6, 12\}$   
d.  $\{9\}$
- \_\_\_\_\_ 30. Factor  $p^2 - 40$ .
- a.  $(p - 20)^2$   
b.  $(p - 20)(p + 20)$   
c.  $(p + 20)^2$   
d. cannot be factored

\_\_\_\_\_ 31. Multiply:  $(a + b)(a - b)$

a.  $a^2 + 2ab - b^2$

b.  $a^2 + b^2$

c.  $a^2 - b^2$

d.  $a^2 - 2ab - b^2$

\_\_\_\_\_ 32. Simplify  $y^{10} \cdot y^5$ .

a.  $y^2$

b.  $y^5$

c.  $y^{15}$

d.  $y^{50}$

\_\_\_\_\_ 33. Solve  $7(x - 2) = 7x + 14$ .

a. no solution

b. 0

c. 2

d. all real numbers

\_\_\_\_\_ 34. Find the slope of the line that contains the points  $(1, -1)$  and  $(-2, 8)$ .

a. -5

b. -3

c.  $-\frac{7}{3}$ d.  $-\frac{1}{3}$ 

\_\_\_\_\_ 35. For  $f(x) = 24 - 2x$ , find  $f(2)$  and find  $x$  such that  $f(x) = 10$ .

a. 28; 12

b. 22; 4

c. 20; 7

d. 22; 7

\_\_\_\_\_ 36. If you graph  $y = x^2 - 6x + 9$ , the  $y$ -intercept of the graph of the equation is \_\_\_\_\_.

a. -3

b. 9

c. 2

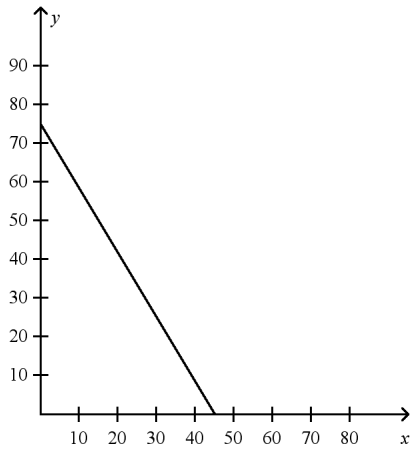
d. 0

- \_\_\_\_\_ 37. Reserved tickets for the football game cost \$20 each and general admission tickets cost \$12 each. The total ticket sales brought in \$900. The equation below can be used to find out how many of each type of ticket were sold, where  $x$  is the number of reserved tickets and  $y$  is the number of general admission tickets.

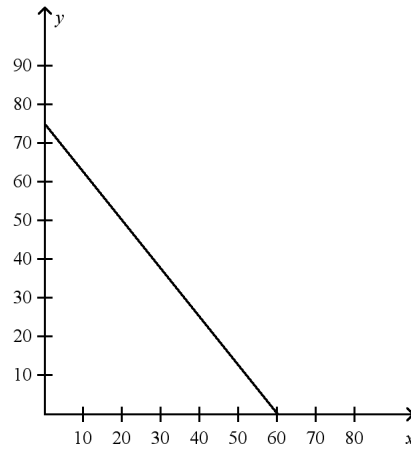
$$20x + 12y = 900$$

Which of the following graphs shows the graph of this equation?

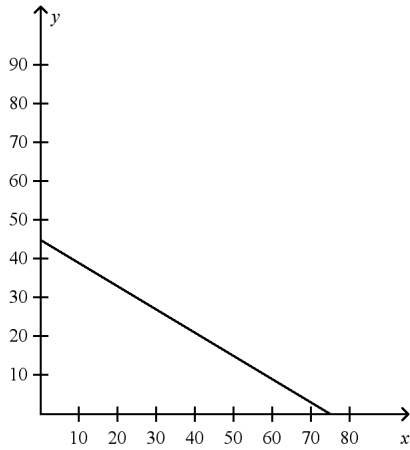
a.



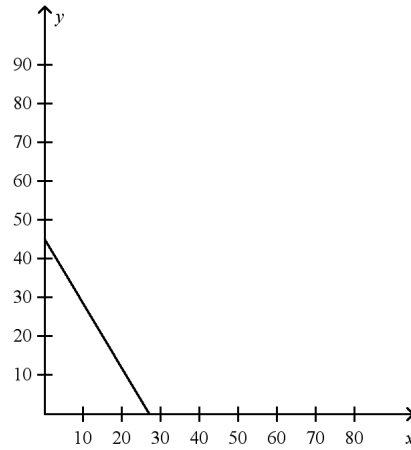
c.



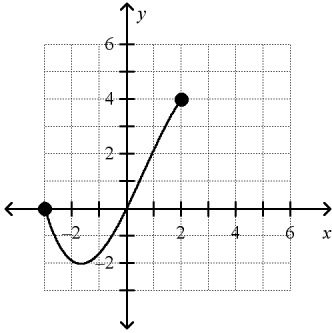
b.



d.



\_\_\_\_\_ 38. Give the domain and range of the relation.



- a. D:  $-2 \leq x \leq 4$ ; R:  $-3 \leq y \leq 2$   
b. D:  $-3 \leq x \leq 2$ ; R:  $-2 \leq y \leq 4$

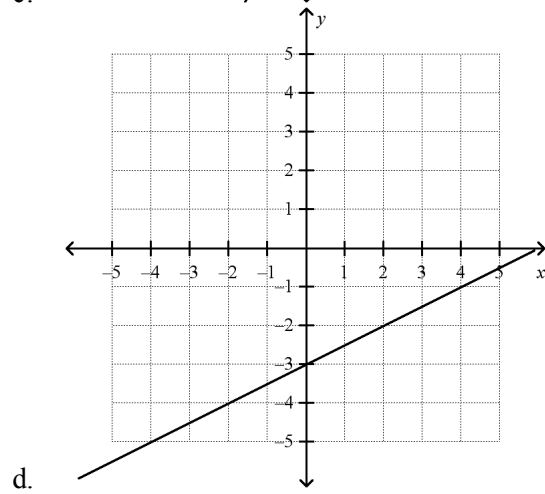
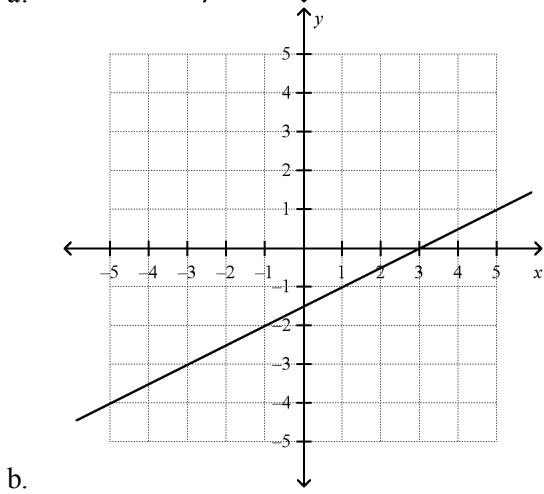
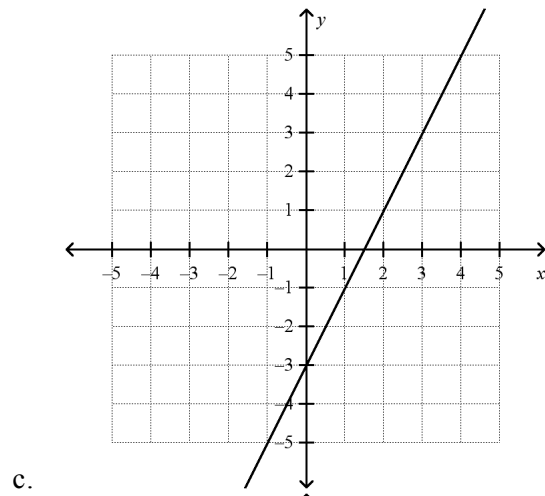
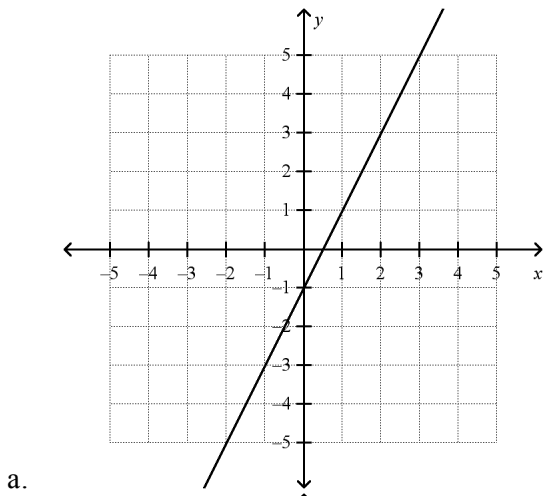
- c. D:  $-3 \leq x \leq 2$  R:  $-3 \leq y \leq 6$   
d. D:  $-3 \leq x \leq 2$  ; R:  $0 \leq y \leq 4$

\_\_\_\_\_ 39. Solve  $x^2 - 7x - 8 = 0$  by factoring.

- a.  $x = -1$  or  $x = 8$   
b.  $x = 1$  or  $x = -8$

- c.  $x = -3$  or  $x = 8$   
d.  $x = -3$  or  $x = 8$

\_\_\_\_ 40. Which of the following graphs shows the graph of this equation?  
 $y + 1 = 2(x - 1)$





\_\_\_\_\_ 45. The ratio of boys to girls in a class is 2:3. If there are 18 girls in the class, how many boys are there?

- a. 6  
b. 10  
c. 12  
d. 27

\_\_\_\_\_ 46. Solve  $\begin{cases} 2x + 3y = 4 \\ 3x - 3y = -9 \end{cases}$ .

- a. (2, 0)  
b. (-1, 2)  
c. (1, -2)  
d. (-5, 2)

\_\_\_\_\_ 47. Use the zero product property to solve the equation  $(x + 3)(x - 2) = 14$ .

- a. The solutions are 5 and -4.  
b. The solutions are -3 and 2.  
c. The solutions are -5 and 4.  
d. The solutions are 3 and -2.

\_\_\_\_\_ 48. Divide:  $(18x^3 + 9x^2) \div (3x)$

- a.  $6x^2 + 3$   
b.  $6x^2 + 3x$   
c.  $3x^2 + 3x$   
d.  $6x^3 + 3x$

\_\_\_\_\_ 49. Which of the following is the solution to this inequality?

$$3(5 + 2n) \geq 7 + 10n$$

- a.  $n \geq 2$   
b.  $n \geq -2$   
c.  $n \leq 2$   
d.  $n \leq -2$

\_\_\_\_\_ 50. Multiply  $(x + 7)(x - 7)$ .

- a.  $x^2 - 49$   
b.  $x^2 + 14x - 49$   
c.  $2x - 14$   
d.  $x^2 + 49$

\_\_\_\_\_ 51.  $U$  is the set of natural numbers less than 8.  $G$  is the set of even integers less than 10. Which is the complement of set  $G$  in universe  $U$ ?

- a.  $\{1, 3, 5, 7\}$   
b.  $G$   
c.  $\{2, 4, 6\}$   
d.  $\{1, 3, 5, 7, 8\}$

\_\_\_\_ 52. Simplify the quotient  $\frac{\sqrt{15}}{\sqrt{2}}$ .

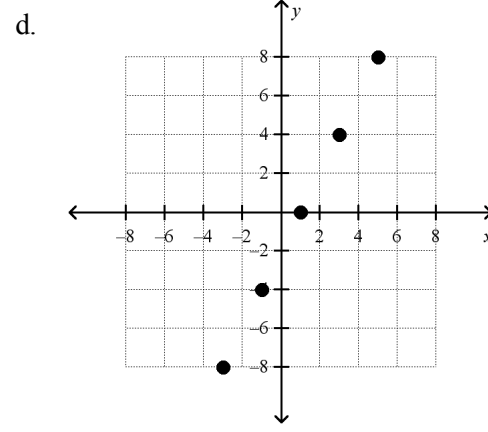
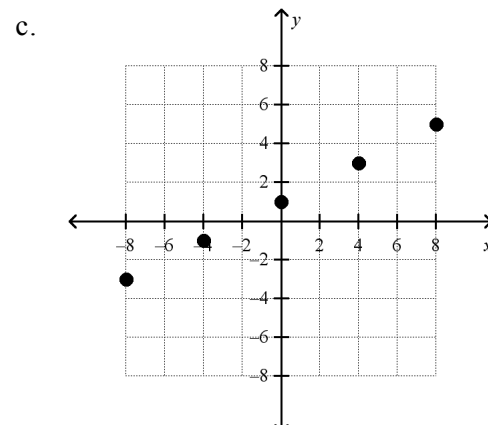
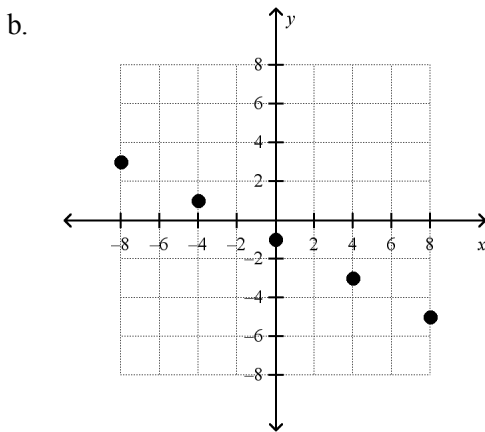
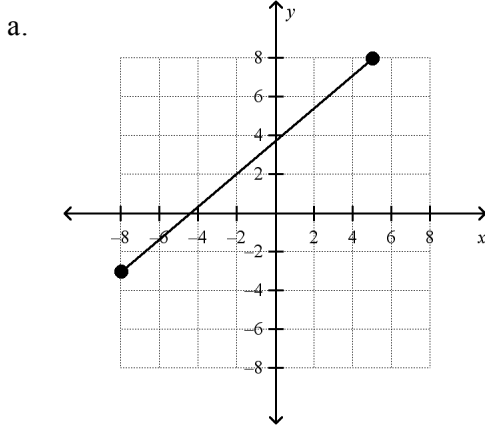
a.  $\frac{\sqrt{15}}{2}$

b.  $\frac{\sqrt{30}}{2}$

c.  $\sqrt{7.5}$

d.  $\frac{2}{\sqrt{30}}$

\_\_\_\_ 53. Graph  $-2x + 4y = 4$  for the domain D:  $\{-8, -4, 0, 4, 8\}$ .





- \_\_\_\_\_ 54. Determine whether the pairing is a function. If it is a function, describe the rule that relates the input value to the output value.

input	-3	-1	0	1	3
output	0	2	3	4	6

- a. The pairing is not a function.
- b. The pairing is a function. The rule is “input value multiplied by 2 then add 3.”
- c. The pairing is a function. The rule is “input value multiplied by 3 then add 3.”
- d. The pairing is a function. The rule is “input value plus 3.”

- \_\_\_\_\_ 55. The values in the table show a linear relationship. Find the slope.

$x$	-4	2	8	14
$y$	10	7	4	1

- a. 2
- b. -2
- c.  $\frac{1}{2}$
- d.  $-\frac{1}{2}$

**Algebra EOC Practice Test #1**  
**Answer Section****MULTIPLE CHOICE**

1. ANS: C	PTS: 1	STA: MA.912.A.3.5
2. ANS: C	PTS: 1	STA: MA.912.A.4.4
3. ANS: A	PTS: 1	STA: MA.912.A.3.4
4. ANS: D	PTS: 1	STA: MA.912.A.3.5
5. ANS: B	PTS: 1	STA: MA.912.A.5.4
6. ANS: C	PTS: 1	STA: MA.912.A.3.5
7. ANS: C	PTS: 1	STA: MA.912.A.3.10
8. ANS: C	PTS: 1	STA: MA.912.A.3.4
9. ANS: C	PTS: 1	STA: MA.912.A.3.8
10. ANS: B	PTS: 1	STA: MA.912.A.2.3
11. ANS: C	PTS: 1	STA: MA.912.A.4.1
12. ANS: A	PTS: 1	STA: MA.912.A.6.1
13. ANS: C	PTS: 1	STA: MA.912.A.3.3
14. ANS: A	PTS: 1	STA: MA.912.A.3.14
15. ANS: A	PTS: 1	STA: MA.912.D.7.2
16. ANS: B	PTS: 1	STA: MA.912.A.6.1
17. ANS: A	PTS: 1	STA: MA.912.A.5.4
18. ANS: C	PTS: 1	STA: MA.912.A.2.4
19. ANS: A	PTS: 1	STA: MA.912.A.3.3
20. ANS: D	PTS: 1	STA: MA.912.A.3.1
21. ANS: C	PTS: 1	STA: MA.912.A.3.9
22. ANS: B	PTS: 1	STA: MA.912.D.7.1
23. ANS: C	PTS: 1	STA: MA.912.A.3.1
24. ANS: A	PTS: 1	STA: MA.912.A.4.2
25. ANS: A	PTS: 1	STA: MA.912.A.3.10
26. ANS: A	PTS: 1	STA: MA.912.A.3.11
27. ANS: B	PTS: 1	STA: MA.912.A.4.1
28. ANS: B	PTS: 1	STA: MA.912.A.7.1
29. ANS: B	PTS: 1	STA: MA.912.D.7.2
30. ANS: D	PTS: 1	STA: MA.912.A.4.3
31. ANS: C	PTS: 1	STA: MA.912.A.4.2
32. ANS: C	PTS: 1	STA: MA.912.A.4.1
33. ANS: A	PTS: 1	STA: MA.912.A.3.1
34. ANS: B	PTS: 1	STA: MA.912.A.3.9
35. ANS: C	PTS: 1	STA: MA.912.A.2.3
36. ANS: B	PTS: 1	STA: MA.912.A.7.1
37. ANS: A	PTS: 1	STA: MA.912.A.3.8
38. ANS: B	PTS: 1	STA: MA.912.A.2.4
39. ANS: A	PTS: 1	STA: MA.912.A.7.2
40. ANS: C	PTS: 1	STA: MA.912.A.3.8

41. ANS: D	PTS: 1	STA: MA.912.A.3.11
42. ANS: B	PTS: 1	STA: MA.912.A.4.3
43. ANS: A	PTS: 1	STA: MA.912.A.4.3
44. ANS: C	PTS: 1	STA: MA.912.A.3.3
45. ANS: C	PTS: 1	STA: MA.912.A.5.4
46. ANS: B	PTS: 1	STA: MA.912.A.3.14
47. ANS: C	PTS: 1	STA: MA.912.A.1.8
48. ANS: B	PTS: 1	STA: MA.912.A.4.4
49. ANS: C	PTS: 1	STA: MA.912.A.3.4
50. ANS: A	PTS: 1	STA: MA.912.A.4.2
51. ANS: A	PTS: 1	STA: MA.912.D.7.1
52. ANS: B	PTS: 1	STA: MA.912.A.6.2
53. ANS: C	PTS: 1	STA: MA.912.A.2.4
54. ANS: D	PTS: 1	STA: MA.912.A.2.3
55. ANS: D	PTS: 1	STA: MA.912.A.3.9