Algebra EOC Practice Test #1

Multiple Choice

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

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.
$$20 + 0.05x \le 65$$
c. $20 + 0.05x \ge 65$ b. $20 + 5x \le 65$ d. $20 + 5x \ge 65$

____ 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?

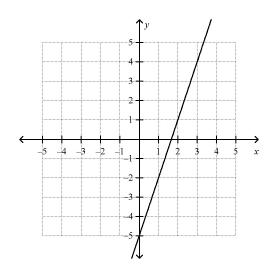
| a. | s > 7000 | с. | s > 70,000 |
|----|------------|----|-------------|
| b. | s > 35,000 | d. | s > 350,000 |

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

| a. | -4.5 | с. | 18 |
|----|------|----|-----|
| b. | -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

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



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

b. $y = -3x - 5$
c. $y = 3x - 5$
d. $y = 2x - 5$

- 8. Solve $m 8 \le 14$. a. $m \le 6$
 - b. $m \ge 6$

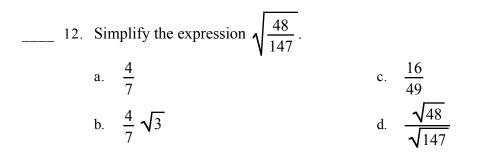
- y = 2x 5
- c. $m \le 22$ d. $m \ge 22$

- ____ 9. Graph the line with the slope $\frac{1}{2}$ and *y*-intercept 3.
 - a. c. 2 -5 -3 5 x -4-1 1 2 3 4 5x-3 -1 1 2 3 4 -4_1 -2 -2 b. d. -3 -2 -5 -4 1 2 3 4 5 x-5 -4-3 -2-1-1
 - 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 $(a^3b)^2$.

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

Name:



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

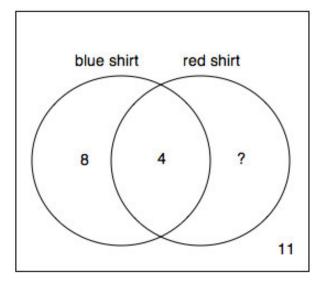
a.
$$I = Vr$$

b. $V = \frac{I}{r}$
c. $V = Ir$
d. $V = \frac{r}{I}$

____ 14. Which system has no solution?

a.
$$\begin{cases} y = x + 4 \\ y - x = -4 \end{cases}$$
b.
$$\begin{cases} 2y = 2x + 8 \\ -2x = 2y - 8 \end{cases}$$
c.
$$\begin{cases} y = \frac{1}{2}x + 6 \\ 2x + 5 = y \end{cases}$$
d.
$$\begin{cases} y = 4x + 1 \\ y - 1 = 4x \end{cases}$$

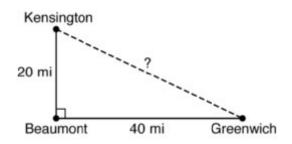
- Name:
- 15. 30 people were asked if they wore a blue shirt or a red shirt this week. The Venn diagram shows the results of the survey.



What is the missing value in the Venn diagram?

| a. | 7 | c. | 18 |
|----|----|----|----|
| b. | 12 | 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 | c. | \$1335.00 |
|----|----------|----|-----------|
| b. | \$148.33 | d. | \$13.35 |

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

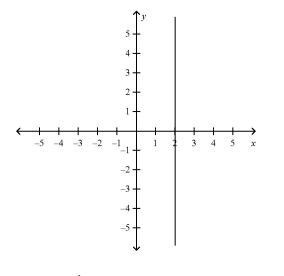
- a. $R: \{-1, -2, 0, 1, 3\}$ c. $R: \{5, 2, 1, 2, 10\}$ b. $R: \{4, 1, 0, 1, 9\}$ d. $R: \{3, 0, -1, 0, 8\}$
- 19. Solve $y + w \frac{3}{4}z = 0$ for z. a. $z = \frac{4}{3}(y + w)$ b. $z = \frac{3}{4}(y + w)$ c. $z = \frac{4}{3}w + y$ d. $z = \frac{4y}{3} + w$
- 20. Gloria earns 1.5 times her normal 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
- b. positive

c. undefinedd. 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 $(6a^2 + 3a) - (4a^2 + 2a)$.

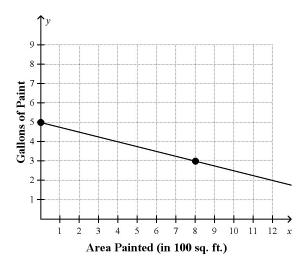
a. $2a^2 + a$ b. $2a^2 + 5a$ c. 3 d. $3a^3$

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

a.
$$y = -2x - 4$$

b. $y = 2x - 4$
c. $y = -2x + 4$
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.



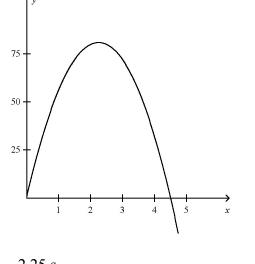
What is the equation of this linear function? What is the slope and what does it represent?

- 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?

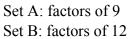
a.
$$(4x^2y)^2$$
c. $16x^4y^2$ b. $4x^4y^2$ d. $4^2x^4y^2$

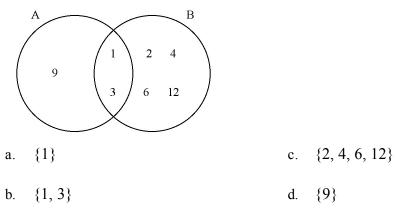
28. The height of a ball in feet is modeled by $y = -16x^2 + 72x$, where x is the time in seconds after the ball is hit. How long is the ball in the air?



- a.
 2.25 s
 c.
 9 s

 b.
 4.5 s
 d.
 81 s
- ____ 29. The diagram shows a Venn diagram for sets A and B. What is the intersection?





____ 30. Factor $p^2 - 40$.

a. $(p-20)^2$ b. (p-20)(p+20)c. $(p+20)^2$ d. cannot be factored

_·

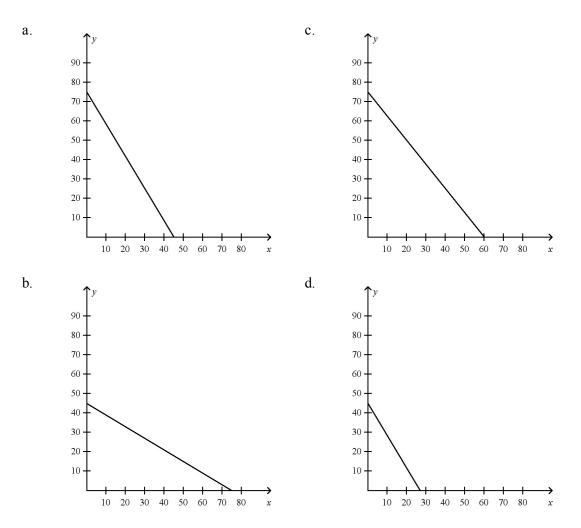
| 31. | Multiply: $(a + b)(a - b)$ | |
|-----|---|--|
| 32 | a. $a^2 + 2ab - b^2$ b. $a^2 + b^2$ Simplify $y^{10} \cdot y^5$. | c. $a^{2} - b^{2}$ d. $a^{2} - 2ab - b^{2}$ |
| 32. | a. y^2 b. y^5 | c. y^{15} d. y^{50} |
| 33. | Solve $7(x - 2) = 7x + 14$. a. no solution b. 0 | c. 2d. all real numbers |
| 34. | Find the slope of the line that contains the | points $(1, -1)$ and $(-2, 8)$. |
| | a5 b3 | c. $-\frac{7}{3}$ d. $-\frac{1}{3}$ |
| | For $f(x) = 24 - 2x$, find $f(2)$ and find x such a. 28; 12 b. 22; 4 If you graph $y = x^2 - 6x + 9$, the <i>y</i> -interces | c. 20; 7 d. 22; 7 |
| 50. | 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.

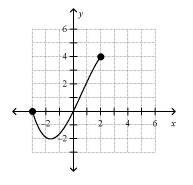
20x + 12y = 900

Name:

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



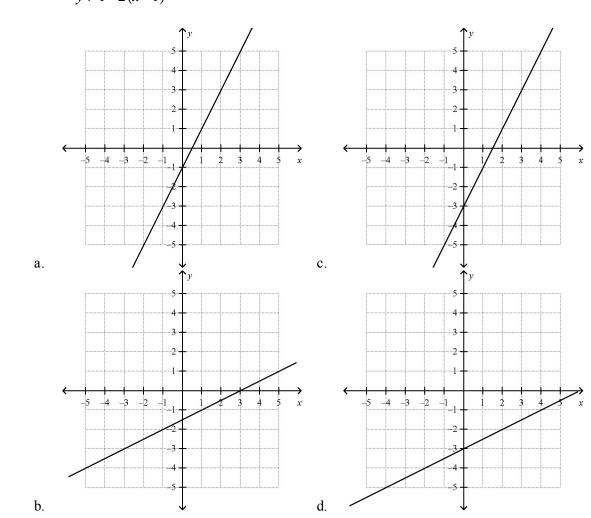
_____ 38. Give the domain and range of the relation.



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

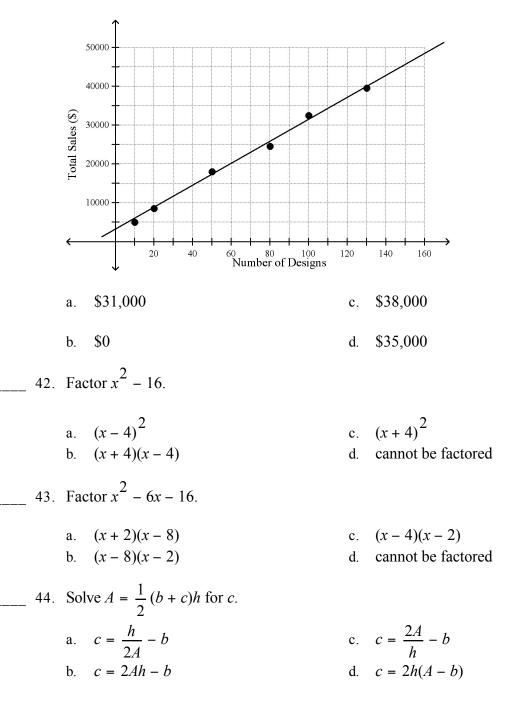
____ 39. Solve $x^2 - 7x - 8 = 0$ by factoring.

| a. | x = -1 or $x = 8$ | c. | x = -3 or x = 8 |
|----|-------------------|----|-------------------|
| b. | x = 1 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)

41. The scatter plot shows the relationship between the weekly total sales (\$) and the number of different rug designs a rug store has. Based on this relationship, use the line of best fit to predict what the total sales will be when the store has 110 different rug designs.

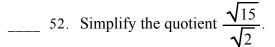


Name: _____

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?

| 46. | a. 6 b. 10 Solve $\begin{cases} 2x + 3y = 4\\ 3x - 3y = -9 \end{cases}$. | c. d. | 12 27 |
|---------|--|------------------|---|
| 47. | a. (2, 0) b. (-1, 2) Use the zero product property to solve the a. The solutions are 5 and -4. | | |
| | b. The solutions are -3 and 2. Divide: $(18x^3 + 9x^2) \div (3x)$ a. $6x^2 + 3$ b. $6x^2 + 3x$ Which of the following is the solution to this | d. | The solutions are 3 and -2. $3x^{2} + 3x$ $6x^{3} + 3x$ beguality? |
| | $3(5+2n) \ge 7+10n$ a. $n \ge 2$ b. $n \ge -2$ | c. | $n \le 2$ $n \le -2$ |
| | Multiply $(x + 7)(x - 7)$. a. $x^2 - 49$ b. $x^2 + 14x - 49$ U is the set of natural numbers less than 8. complement of set G in universe U? a. $\{1, 3, 5, 7\}$ b. G | d. G is c. | 2x - 14 $x^{2} + 49$ is the set of even integers less than 10. Which is the $\{2, 4, 6\}$ $\{1, 3, 5, 7, 8\}$ |
| | | | |

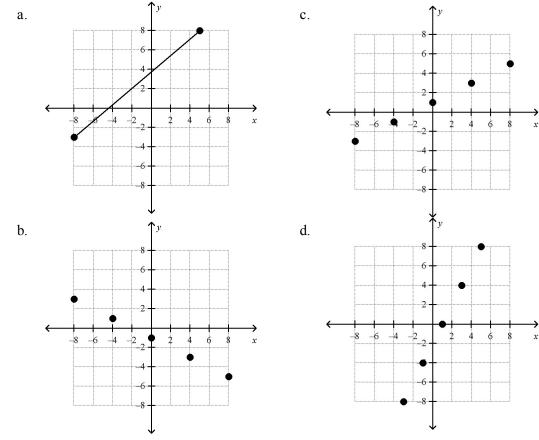
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a.
$$\frac{\sqrt{15}}{2}$$

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}.



Name:

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 d. "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."
 - 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 |
|----|----|----|---|---|-------------------|
| | у | 10 | 7 | 4 | 1 |
| | | | | | |
| a. | 2 | | | | c. $\frac{1}{2}$ |
| b. | -2 | | | | d. $-\frac{1}{2}$ |

Algebra EOC Practice Test #1 Answer Section

MULTIPLE CHOICE

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

| 41. | ANS: | D | PTS: 1 | STA: | MA.912.A.3.11 |
|-----|------|---|--------|------|---------------|
| 42. | ANS: | В | PTS: 1 | STA: | MA.912.A.4.3 |
| 43. | ANS: | А | PTS: 1 | STA: | MA.912.A.4.3 |
| 44. | ANS: | С | PTS: 1 | STA: | MA.912.A.3.3 |
| 45. | ANS: | С | PTS: 1 | STA: | MA.912.A.5.4 |
| 46. | ANS: | В | PTS: 1 | STA: | MA.912.A.3.14 |
| 47. | ANS: | С | PTS: 1 | STA: | MA.912.A.1.8 |
| 48. | ANS: | В | PTS: 1 | STA: | MA.912.A.4.4 |
| 49. | ANS: | С | PTS: 1 | STA: | MA.912.A.3.4 |
| 50. | ANS: | А | PTS: 1 | STA: | MA.912.A.4.2 |
| 51. | ANS: | А | PTS: 1 | STA: | MA.912.D.7.1 |
| 52. | ANS: | В | PTS: 1 | STA: | MA.912.A.6.2 |
| 53. | ANS: | С | 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 |