Name: _____ **Class:** _____ **Date:** _____ **ID: A**

Algebra EOC Practice Test #2

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

____ 1. Which of the following lines is perpendicular to the line $y = -2$?

a. $y = \frac{1}{5}x + 3$
b. $y + 3 = -5(x + 2)$
c. $y = 2$
d. $x = -2$

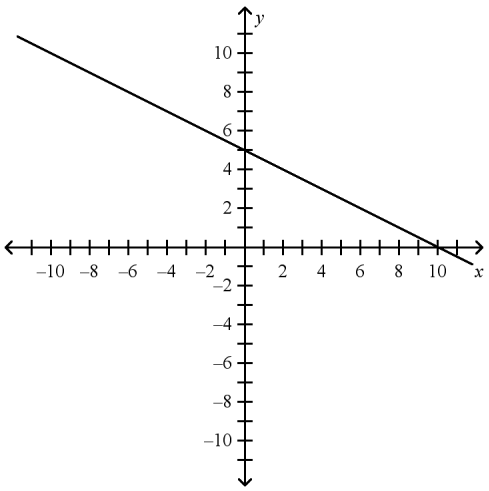
____ 2. Mrs. Nelson is buying folding chairs that are on sale for $10. If she has $50, which inequality can be solved to show the number of chairs c she can buy?

a. $10c \leq 50$
b. $10c \geq 50$
c. $10c > 50$
d. $10c < 50$

____ 3. Find the union and intersection of the pair of sets.
$M = \{1, 6, 8\}; N = \{3, 6, 8, 14, 15\}$

a. $M \cup N = \{1, 3, 6, 8, 14, 15\}$;
$M \cap N = \{6\}$
b. $M \cup N = \{6, 8\}$;
$M \cap N = \{1, 3, 6, 8, 14, 15\}$
c. $M \cup N = \{1, 3, 6, 8, 14, 15\}$;
$M \cap N = \{6, 8\}$
d. $M \cup N = \{1, 3, 6, 8\}$;
$M \cap N = \{6, 8\}$

____ 4. Find the x- and y-intercepts.



a. x-intercept: -10, y-intercept: 5
b. x-intercept: 5, y-intercept: 10
c. x-intercept: 10, y-intercept: -5
d. x-intercept: 10, y-intercept: 5

____ 5. Multiply $(x + 7)(x - 7)$.

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

____ 6. Factor $x^2 - 16$.

a. $(x - 4)^2$
b. $(x + 4)(x - 4)$
c. $(x + 4)^2$
d. cannot be factored

____ 7. Factor $16y^2 + 12y$ completely.

a. $y(16y + 12)$
b. $2y(8y + 6)$
c. $4(4y^2 + 3y)$
d. $4y(4y + 3)$

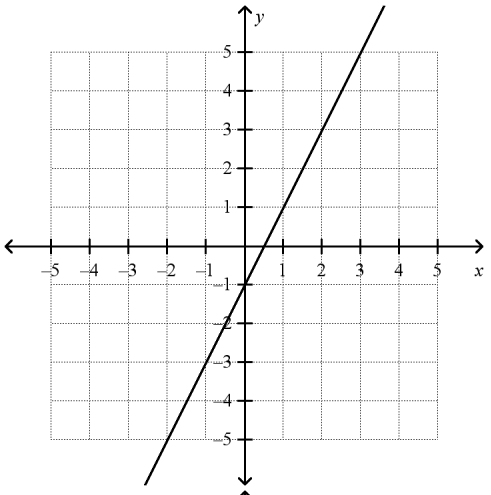
____ 8. Factor: $x(y - 1) + y(y - 1)$

a. $(x + y)(y - 1)$
b. $(x - 1)(y - 1)$
c. $(x - y)(y - 1)$
d. cannot be factored

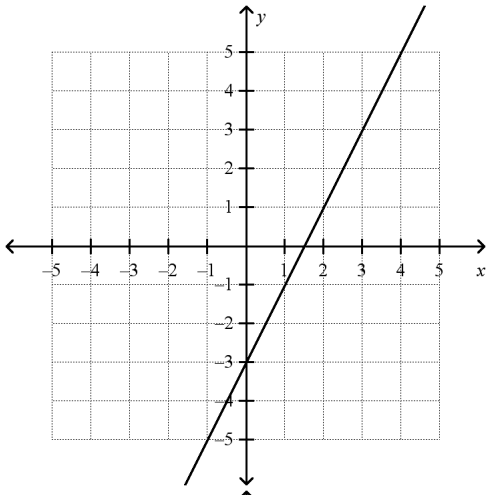
____ 9. Which of the following graphs shows the graph of this equation?

$y + 1 = 2(x - 1)$

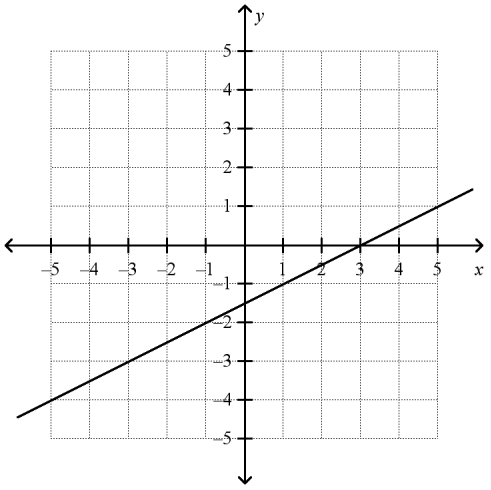
a.



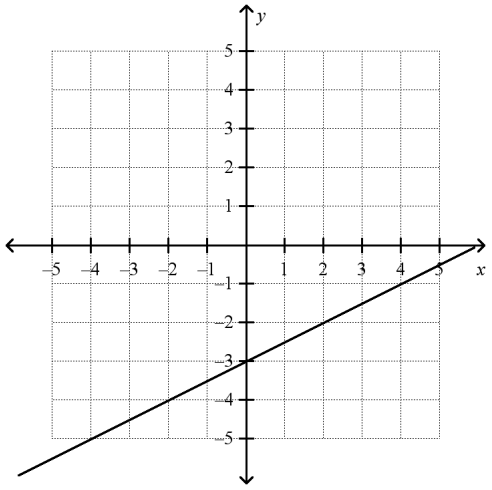
c.



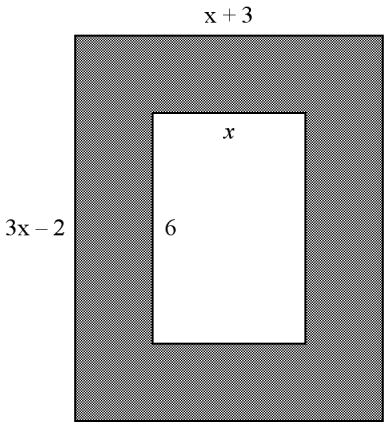
b.



d.



____ 10. The city of Plantation plans to build a new community park with a public swimming pool. The diagram below shows the area of the proposed swimming pool and the stone deck that will surround it.



If the area of the deck region is 24 square units, find the value for *x*.

a. $x = 2$ units
b. $x = 3$ units
c. $x = 4$ units
d. $x = 5$ units

____ 11. A family is on vacation in Key West and decides to rent bicycles to tour the island. The rental fee for a bike and helmet is $27.00 per person for each hour. There are four people in the family renting bicycles. Which input/output (I/O) model correctly displays the domain and range of the situation where *c*, the total cost for the bicycle rental is a function of *h*, the number of hours the bikes are rented?

I/O Model 1

input	1	2	3	4	5
output	$27	$54	$81	$108	$135

I/O Model 2

input	1	2	3	4	5
output	$108	$216	$324	$432	$540

I/O Model 3

input	$27	$54	$81	$108	$135
output	1	2	3	4	5

I/O Model 4

input	$108	$216	$324	$432	$540
output	1	2	3	4	5

a. I/O Model 1
b. I/O Model 2
c. I/O Model 3
d. I/O Model 4

____ 12. Divide. Simplify your answer.

$(2x^4 - 6x^3 + 4x^2 - 3x) \div (2x)$

a. $x^3 - 3x^2 + 2x - 3$

b. $x^3 - 3x^2 + 2x - \frac{3}{2}$

c. $2x^3 - 6x^2 + 4x - 1/2$

d. $x^4 - 4x^3 + 2x^2 - 1x$

____ 13. Which equation represents the data in the table?

x	1	2	3	4	5
y	–3	–2	–1	0	1

a. $y = 0.25x - 3$

b. $y = x - 3$

c. $y = x - 4$

d. $y = 4x - 4$

____ 14. Zahra spent $20.50 on 10 party favors for her party. They party favor for each kid was either a puzzle book or a magic trick. The boys each received a puzzle book that cost $1.75 each. The girls each received a magic trick that cost $2.25 each. How many boys and how many girls attended the party?

a. 4 boys and 6 girls

b. 5 boys and 5 girls

c. 6 boys and 4 girls

d. 7 boys and 3 girls

____ 15. 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. $s > 350,000$

____ 16. A manufacturing company is building a rectangular room in their warehouse to store their products. The length of the room is 1 more than 3 times its width. The area of the room is 80 square meters. What are the dimensions of the room?

a. $w = 4$ m, $l = 20$ m

b. $w = 5$ m, $l = 16$ m

c. $w = 5\frac{1}{3}$ m, $l = 15$ m

d. $w = 8$ m, $l = 10$ m

____ 17. At a store, 20 feet of fencing cost $36. At that rate, how much will 15 feet of fencing cost?

a. $27.00

b. $29.75

c. $30.25

d. $48.00

____ 18. Jeremy is training for a marathon. Part of his training is a "walk/run" session where he runs for x minutes and runs for y minutes for a total distance of 6000 meters. His walking speed is 125 meters per minute. His running speed is 225 meters per minute. This situation can be represented by the following equation:

$$125x + 225y = 6000$$

Which of the following represents the slope of the equation?

a. $-\frac{5}{9}$

b. $-\frac{9}{5}$

c. $\frac{5}{9}$

d. $\frac{9}{5}$

____ 19. 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. $-\frac{1}{2}$

____ 20. Add $(2x^2 - 7) + (7x^2 + 3)$.

a. $2x^2 - 4$

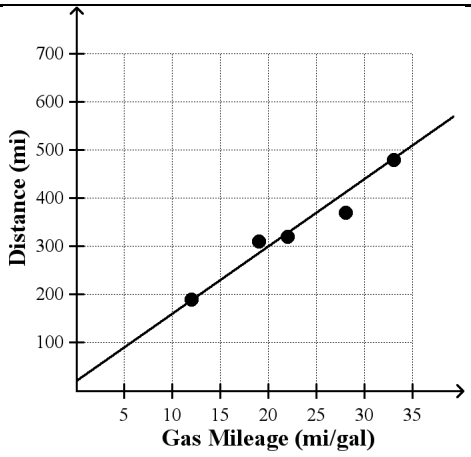
b. $9x^2 - 4$

c. $9x^2 - 7$

d. $9x^4 - 4$

____ 21. The table compares the gas mileage of a car to the distance the car can travel on one tank of gas. A scatter plot of the data is also shown. For this line of best fit, predict what the gas mileage must be for a car to travel 250 miles.

Gas Mileage (mi/gal)	Distance (mi)
22	320
19	310
33	480
28	370
12	190



a. 15 mi/gal
b. 17 mi/gal
c. 19 mi/gal
d. 20 mi/gal

____ 22. You've already earned $48 washing cars and plan to earn $12 for each additional car you wash. Write an equation to represent *d,* the amount earned in dollars, as a function of *c*, the number of additional cars you wash.

a. $d = 12c$
b. $c = 12d$
c. $d = 48 + 12c$
d. $c = 48 + 12d$

____ 23. What are the missing exponents in the equation below? Give the missing exponent on the left side first.

$$2(m^{7}n)^{?} = 2m^{?}n^{3}$$

a. 7; 14
b. 3; 10
c. 3; 21
d. 7; 21

____ 24. 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. $n \leq -2$

____ 25. Write an equation for the line that has a y-intercept of 2 and is perpendicular to the line $3x + y = 6$.

a. $y = -3x + 2$
b. $y = -3x - 2$
c. $y = \frac{1}{3}x + 2$
d. $y = -\frac{1}{3}x + 2$

____ 26. Two snow resorts offer private lessons to their customers. Big Time Ski Mountain charges $5 per hour plus $50 insurance. Powder Hills charges $10 per hour plus $30 insurance. For what number of hours is the cost of lessons the same for each resort?

a. 3 hours
b. 4 hours
c. 5 hours
d. 6 hours

____ 27. Find the intersection of the pair of sets.
W = the set of whole numbers
P = the set of nonzero integers

a. {}
b. {0}
c. the set of negative integers
d. the set of positive integers

____ 28. Multiply. Write the product in simplest form.
$\sqrt{6}\left(\sqrt{4} + \sqrt{6}\right)$

a. $\sqrt{24} + \sqrt{36}$
b. $2\sqrt{6} + 6$
c. $12 + 6\sqrt{6}$
d. $2\sqrt{15}$

____ 29. Employees at the dairy factory are packing cartons of eggs. One carton can hold x eggs. Today the employees have E eggs to pack. When they have finished, they have packed C cartons and have 3 eggs left over.

Use the equation $\frac{E}{x} = C + \frac{3}{x}$ to find C, the number of cartons that were packed.

a. $C = \frac{E - 3}{x}$
b. $C = \frac{E}{x} - 3$
c. $C = \frac{E}{x - 3}$
d. $C = 3 - \frac{E}{x}$

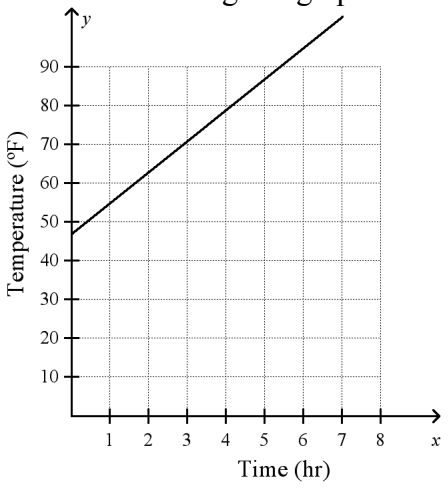
____ 30. The temperature of air in a room that began at 55°F is increasing by 8°F per hour. The following equation represents this situation:

$y = 55 + 8x$

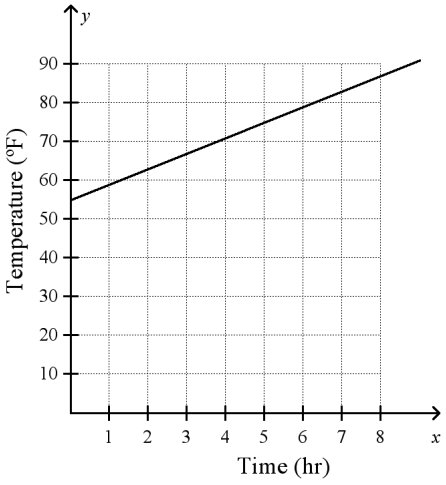
where x represents the number of hours and y represents the temperature.

Which of the following is a graph of this equation?

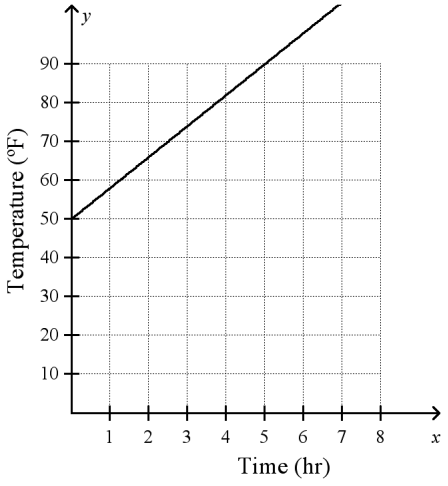
a.



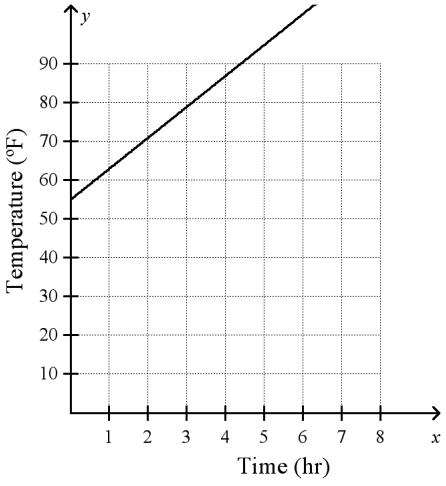
c.



b.



d.



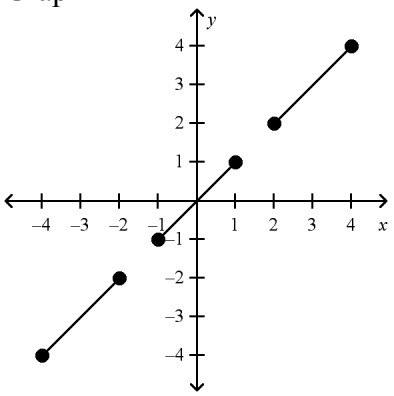
____ 31. Find the value of a.

$$4x^2 + ax = 2x(2x + 1)$$

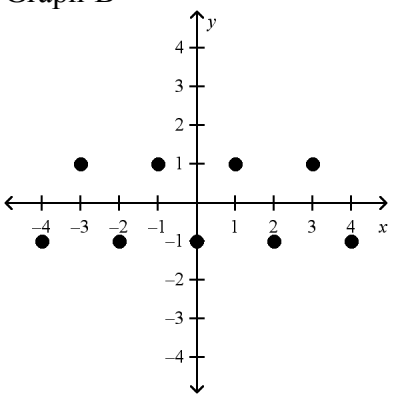
a. 2
b. 4
c. 6
d. 8

____ 32. Determine which of the following graphs represent a function.

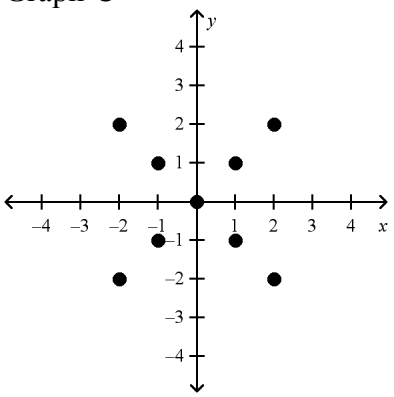
Graph A



Graph B



Graph C



a. None of the graphs are functions.
b. All of the graphs are functions.
c. Graphs A and B are functions.
d. Graphs B and C are functions.

____ 33. Kush simplified the expression below on the board for the class.

$$\sqrt{20} + \sqrt{5x} + 3\sqrt{5}$$

If Kush simplified the expression correctly, which of the following is his answer?

a. $5\sqrt{5} + \sqrt{5x}$
b. $7\sqrt{5} + \sqrt{5x}$
c. $3\sqrt{5} + \sqrt{5x}$
d. $4\sqrt{5} + \sqrt{5x}$

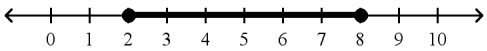
____ 34. Write an equation in slope-intercept form for the line that passes through (3, 7) and (7, 4).

a. $y = -\frac{3}{4}x + \frac{37}{4}$
b. $y = \frac{3}{4}x + \frac{37}{4}$
c. $y = -\frac{4}{3}x + \frac{37}{4}$
d. $y = -\frac{3}{4}x + \frac{4}{37}$

____ 35. Solve $y + w - \frac{3}{4}z = 0$ for z.

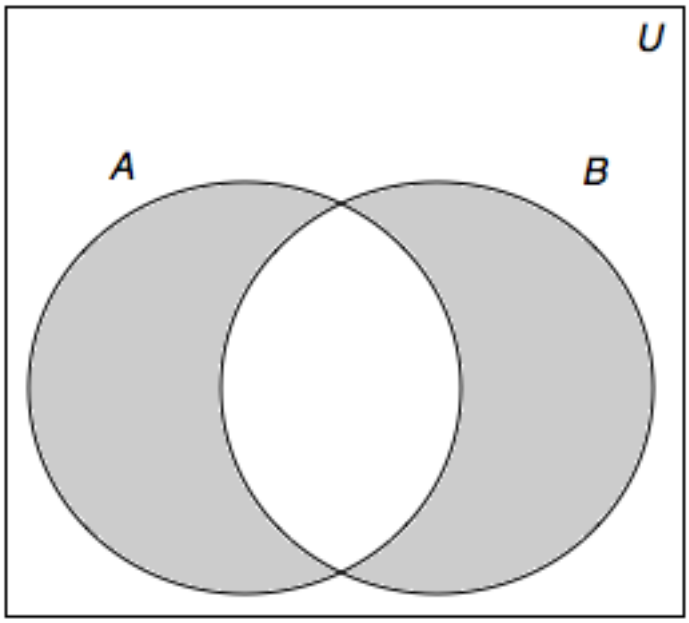
a. $z = \frac{4}{3}(y + w)$
b. $z = \frac{3}{4}(y + w)$
c. $z = \frac{4}{3}w + y$
d. $z = \frac{4y}{3} + w$

____ 36. Which compound inequality is shown by the graph below?



a. $x \geq 2$ AND $x \leq 8$
b. $x \geq 2$ OR $x \geq 8$
c. $x \geq 2$ OR $x \leq 8$
d. $x \leq 2$ OR $x \leq 8$

____ 37. Look at the Venn diagram below. It shows set A and set B in the universe U. Which description represents the shaded regions?



a. the complement of $(A \cap B)$ in U
b. $(A \cup B) \cup$ (the complement of A)
c. (the complement of $(A \cap B)$ in U) $\cap$ $(A \cup B)$
d. $A \cup B$

____ 38. Solve $3(a - 4) + 2(a + 1) = 10 - 5a$.

a. 0
b. 2
c. all real numbers
d. no solution

____ 39. There were T people waiting for buses at the station. When the first bus arrived, n people boarded it. The remaining p people waited for buses to other places.

Use the equation $T - n = p$, to find n, the number of people who boarded the first bus.

a. $n = p - T$
b. $n = \dfrac{T}{p}$
c. $n = T - p$
d. $n = T + p$

____ 40. Divide $(4x^5 + 3x^3 - 2x^2)$ by 2x.

a. $2x^4 + \dfrac{3x^2}{2} - x$
b. $2x^4 + 3x^2 - x$
c. $4x^4 + 3x^2 - 2x$
d. $2x^4 + x^2 - x$

____ 41. Which monomial below writes the product $(3x)(3x)(3x)(3x)(3x)(3x)$ in a more compact form?

a. $6(3x)$
b. $3x^6$
c. $(3x)^6$
d. $18x^6$

____ 42. A printer holds 500 sheets of paper. After printing it held 210 sheets. Of the sheets that were printed, $\frac{1}{2}$ of them were color and $\frac{1}{2}$ of them were grayscale. Which equation can be used to find s, the number of sheets that were printed in color?

a. $\frac{s}{2} - 500 = 210$
b. $500 - \frac{1}{2}s = 210$
c. $210 - 500 = 2s$
d. $500 - 2s = 210$

____ 43. Jamie needs to simplify the expression below before she substitutes values for a and b.

$$\frac{a^{15}b^{12} - a^5b^8}{a^3b^2}$$

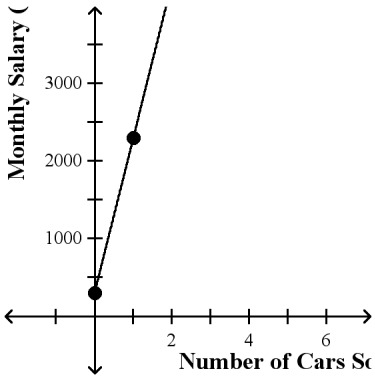
If $a \neq 0$ and $b \neq 0$, which of the following is a simplified version of the expression above?

a. $a^5b^6 - a^5b^4$
b. $a^{12}b^{10} - a^2b^6$
c. a^6b^4
d. a^7b^2

____ 44. Thomas is a car salesman. The table shows the monthly salary that Thomas earns for the number of cars he sells. Use the data to graph the linear function. Write the equation of the line, identify the slope of the line and explain what the slope means.

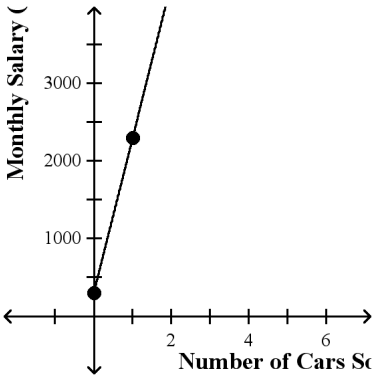
Number of Cars Sold	Monthly Salary Earned
0	$2000
1	$2300
2	$2600
3	$2900
4	$3200

a.



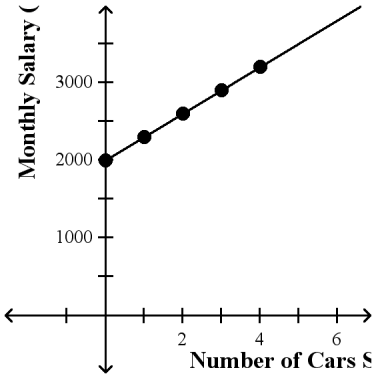
$y = 2000x + 300$; The slope of the line is 300. This means that for every car Thomas sells, he earns and additional $300.

c.



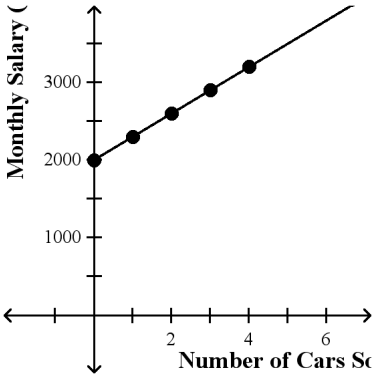
$y = 2000x + 300$; The slope of the line is 2000. This means that for every car Thomas sells, he earns $2000.

b.



$y = 300x + 2000$; The slope of the line is 300. This means that for every car Thomas sells, he earns an additional $300.

d.



$y = 300x + 2000$; The slope of the line is 2000. This means that for every car Thomas sells, he earns $2000.

____ 45. Give the domain and range of the relation.

x	*y*
3	7
6	13
0	0
–7	–13

a. D: {3, 6, –7, 7, 13, –13}; R: {0}
b. D: {–7, 0, 3, 6}; R: {–13, 0, 7, 13}
c. D: {–7, 3, 6}; R: {–13, 7, 13}
d. D: {–13, 0, 7, 13}; R: {–7, 0, 3, 6}

____ 46. When solving the equation, what property was used to go from Step 2 to Step 3?

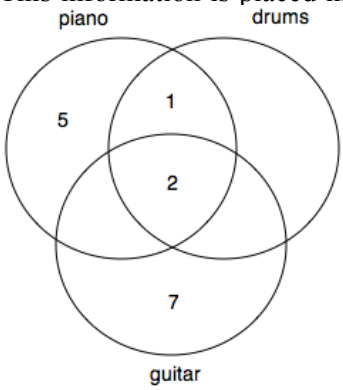
Step 1: $-(2x + 3) = x - 18$
Step 2: $-2x - 3 = x - 18$
Step 3: $-3 = 3x - 18$

a. Addition Property of Equality
b. Subtraction Property of Equality
c. Multiplication Property of Equality
d. Division Property of Equality

____ 47. In Mr. Rojo's music class, 14 students play piano, 18 students play guitar, and 9 play drums. No student plays any other istruments. The following information is also true:

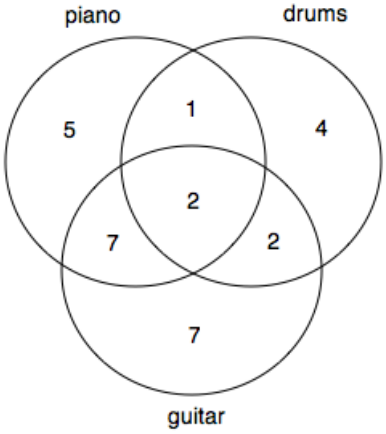
7 students play only guitar;
2 students play all three instruments;
5 students play only piano;
1 student plays piano and drums, but not guitar

This information is placed in a Venn diagram as shown:



Which of the following correcly shows the completed Venn diagram?

a.



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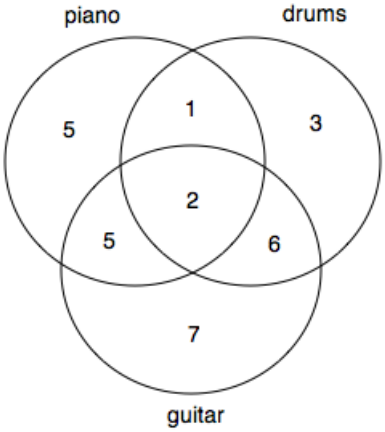
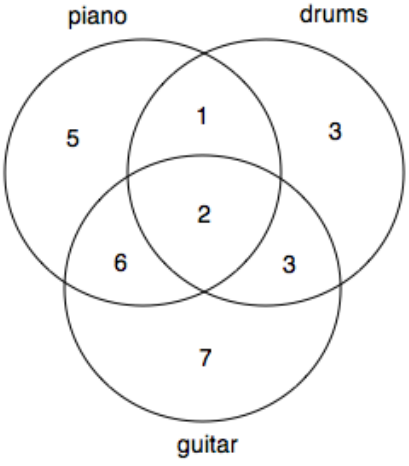
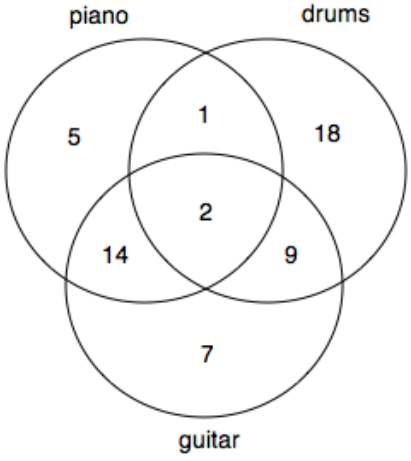


b.



d.



____ 48. Which of the following is a member of $M \times N$?

$M = \{20, 30, 55, 60\}; N = \{30, 55, 65\}$

a. (20, 20)
b. (30, 30)
c. (55, 60)
d. (30, 60)

____ 49. Marc sold 461 tickets for the school play. Student tickets cost $3 and adult tickets cost $4. Marc's sales totaled $1624. How many adult tickets and how many student tickets did Marc sell?

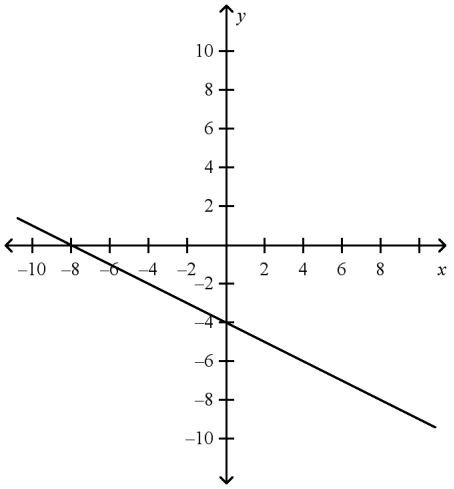
a. 220 adult, 241 student
b. 225 adult, 236 student
c. 236 adult, 225 student
d. 241 adult, 220 student

____ 50. If the exchange rate for 1 U.S. dollar is 1.5 Canadian dollars, how many U.S. dollars will Margie get for 81 Canadian dollars?

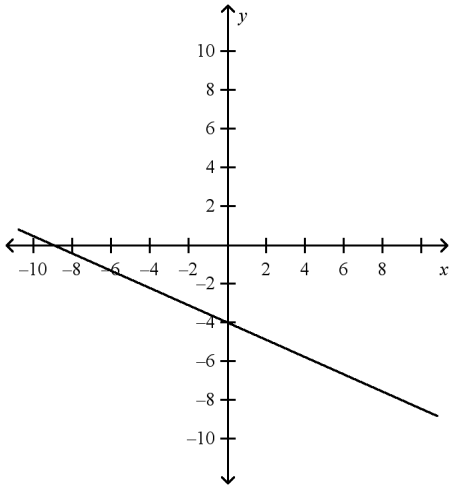
a. 28
b. 52
c. 54
d. 112

____ 51. Graph the line described by the equation $-2x - 4y = 16$.

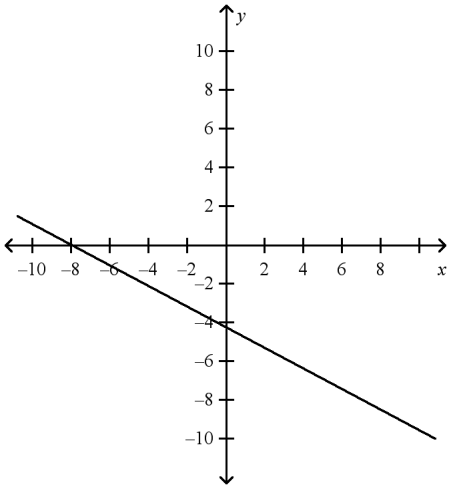
a.



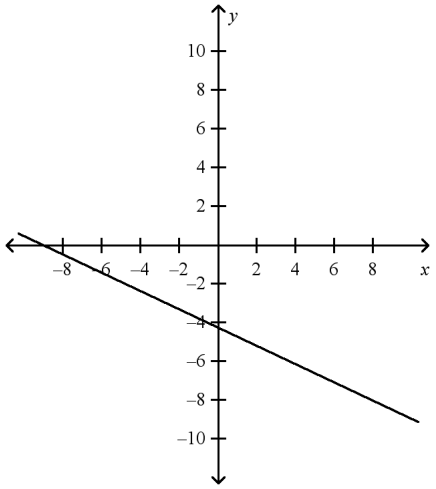
c.



b.



d.



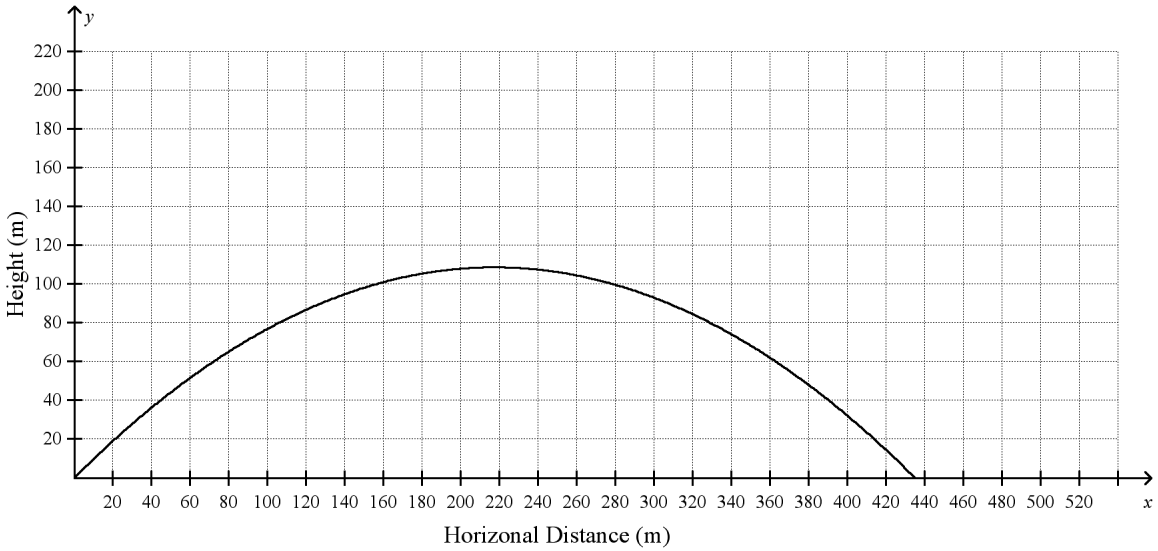
____ 52. An object is thrown upward with an initial velocity of 35 meters per second. The object's distance, d, above the ground at any time, t, can be represented by the equation $d = 35t - 5t^2$. When will the object be 50 feet above the ground?

a. $t = 1$ sec and $t = 0.4$ sec
b. $t = 2$ sec and $t = 5$ sec
c. $t = 2$sec and $t = 10$ sec
d. $t = 5$ sec and $t = 10$ sec

____ 53. Jasmine and her sister are saving to buy MP3 players. Jasmine has $50 and plans to save $10 per week. Her sister has $80 and plans to save $7 per week. In how many weeks will Jasmine have more money saved than her sister?

a. 2 weeks
b. 4 weeks
c. 10 weeks
d. 11 weeks

____ 54. The trajectory of a potato launched from a potato cannon on the ground at an angle of 45 degrees with an initial speed of 65 meters per second can be modeled by the parabola: $f(x) = x - 0.0023x^2$, where the x-axis is the ground. Find the height of the highest point of the trajectory and the horizontal distance the potato travels before hitting the ground.



a. height: 109 m; distance: 435 m
b. height: 121 m; distance: 418 m
c. height: 118 m; distance: 421 m
d. height: 102 m; distance: 409 m

____ 55. 40 candidates apply for a unique job. The job has both a height requirement and a weight requirement. The following information is known about the candidates:

21 candidates meet the height requirement;
17 candidates meet the weight requirement;
8 candidates meet both the weight and height requirements.

How many candidates meet only the height requirement?

a. 8
b. 9
c. 13
d. 21

Algebra EOC Practice Test #2
Answer Section

MULTIPLE CHOICE

1. ANS: D PTS: 1 STA: MA.912.A.3.10
2. ANS: A PTS: 1 STA: MA.912.A.3.4
3. ANS: C PTS: 1 STA: MA.912.D.7.1
4. ANS: D PTS: 1 STA: MA.912.A.3.9
5. ANS: A PTS: 1 STA: MA.912.A.4.2
6. ANS: B PTS: 1 STA: MA.912.A.4.3
7. ANS: D PTS: 1 STA: MA.912.A.4.3
8. ANS: A PTS: 1 STA: MA.912.A.4.3
9. ANS: C PTS: 1 STA: MA.912.A.3.8
10. ANS: B PTS: 1 STA: MA.912.A.7.8
11. ANS: B PTS: 1 STA: MA.912.A.2.4
12. ANS: B PTS: 1 STA: MA.912.A.4.4
13. ANS: C PTS: 1 STA: MA.912.A.3.11
14. ANS: A PTS: 1 STA: MA.912.A.3.15
15. ANS: D PTS: 1 STA: MA.912.A.3.5
16. ANS: B PTS: 1 STA: MA.912.A.7.8
17. ANS: A PTS: 1 STA: MA.912.A.5.4
18. ANS: A PTS: 1 STA: MA.912.A.3.9
19. ANS: D PTS: 1 STA: MA.912.A.3.9
20. ANS: B PTS: 1 STA: MA.912.A.4.2
21. ANS: B PTS: 1 STA: MA.912.A.3.11
22. ANS: C PTS: 1 STA: MA.912.A.2.3
23. ANS: C PTS: 1 STA: MA.912.A.4.1
24. ANS: C PTS: 1 STA: MA.912.A.3.4
25. ANS: C PTS: 1 STA: MA.912.A.3.10
26. ANS: B PTS: 1 STA: MA.912.A.3.15
27. ANS: D PTS: 1 STA: MA.912.D.7.1
28. ANS: B

Distribute $\sqrt{6}$. Use the Product Property of Square Roots to multiply the factors in each term. If the radicand in either term contains any perfect square factors, factor the radicand(s) and simplify. Combine like terms if applicable.

PTS: 1 STA: MA.912.A.6.2

29. ANS: A PTS: 1 STA: MA.912.A.3.3
30. ANS: D PTS: 1 STA: MA.912.A.3.8
31. ANS: A PTS: 1 STA: MA.912.A.4.2
32. ANS: C PTS: 1 STA: MA.912.A.2.3

33. ANS: A

PTS: 1 STA: MA.912.A.6.2

34. ANS: A PTS: 1 STA: MA.912.A.3.10
35. ANS: A PTS: 1 STA: MA.912.A.3.3
36. ANS: A PTS: 1 STA: MA.912.A.3.4
37. ANS: C PTS: 1 STA: MA.912.D.7.2
38. ANS: B PTS: 1 STA: MA.912.A.3.2
39. ANS: C PTS: 1 STA: MA.912.A.3.3
40. ANS: A PTS: 1 STA: MA.912.A.4.4
41. ANS: C PTS: 1 STA: MA.912.A.4.1
42. ANS: D PTS: 1 STA: MA.912.A.3.5
43. ANS: B PTS: 1 STA: MA.912.A.4.4
44. ANS: B PTS: 1 STA: MA.912.A.3.11
45. ANS: B PTS: 1 STA: MA.912.A.2.4
46. ANS: A PTS: 1 STA: MA.912.A.3.2
47. ANS: B PTS: 1 STA: MA.912.D.7.2
48. ANS: B PTS: 1 STA: MA.912.D.7.1
49. ANS: D PTS: 1
50. ANS: C PTS: 1 STA: MA.912.A.5.4
51. ANS: A PTS: 1 STA: MA.912.A.3.8
52. ANS: B PTS: 1 STA: MA.912.A.7.8
53. ANS: D PTS: 1 STA: MA.912.A.3.5
54. ANS: A PTS: 1 STA: MA.912.A.7.8
55. ANS: C PTS: 1 STA: MA.912.D.7.2