

Name _____

MATH SUMMER PACKET

2018-2019

- Students going to **7th grade** (former 6th grade student) please complete **packet A**.
- Students going to **8th grade** (former 7th grade student) please complete **packet B**.
- Students going to **Geometry** (former Algebra student) please complete **packet C**.

Dear Students ☺

Summer is a time to relax and have fun but it is also a great time to stay sharp on your math problem solving skills.

Due to the cumulative nature of mathematics, in order for you to be successful in the coming academic school year, you should be up to date on your prerequisite math skills.

Here's what to do:

- Print out the packet
- Work on it throughout the summer
- Show all of your work right on the packet

You will receive an extra credit grade for the entire packet. This will be your first grade of the year.

Remember to bring this packet on the first week of school and give it to your math teacher.

In case you need a little extra help, visit these websites:

- <http://www.classzone.com>
- <http://khanacademy.org>
- <http://www.purplemath.com>
- <http://www.mathdrills.com>

PACKET C

Multiple Choice

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

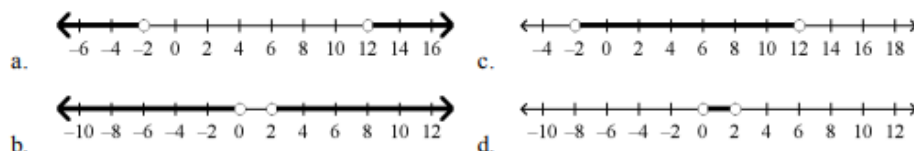
- _____ 1. George is helping the manager of the local produce market expand her business by distributing flyers around the neighborhood. He gets paid \$20 a day as well as \$0.05 for every flyer he distributes. George would like to earn at least \$65 each day. Which of the following represents this situation,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

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

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

a. $4x^3 - 3x^2 + 1$ c. $4x^4 - 3x^2 + 1$
b. $4x^4 - 3x^2$ 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. $s > 7000$ c. $s > 70,000$
b. $s > 35,000$ d. $s > 350,000$

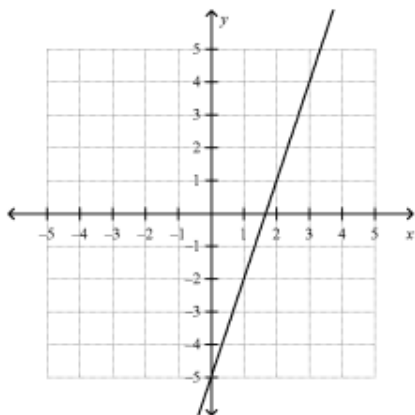
- _____ 5. Solve $\frac{4}{s} = \frac{-2}{9}$.

a. -4.5 c. 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 c. at least 88
b. at least 84 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 $m - 8 \leq 14$.

a. $m \leq 6$

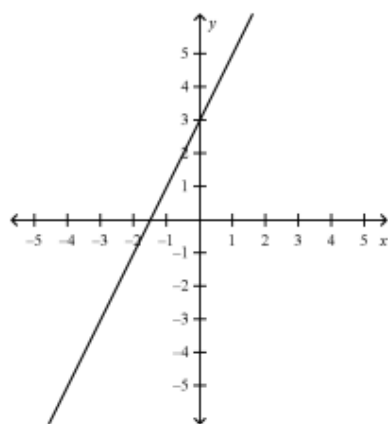
b. $m \geq 6$

c. $m \leq 22$

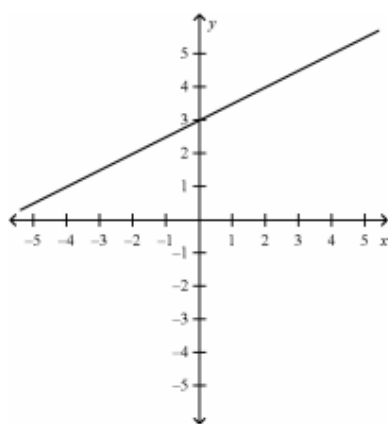
d. $m \geq 22$

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

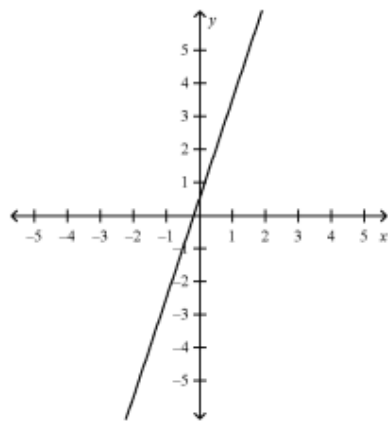
a.



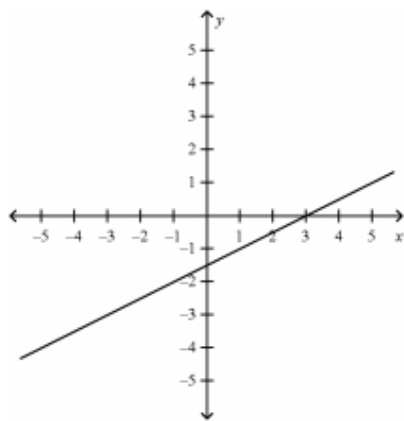
c.



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. $\frac{4}{7}$

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

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

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. $I = Vr$

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

c. $V = Ir$

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

_____ 14. Which system has no solution?

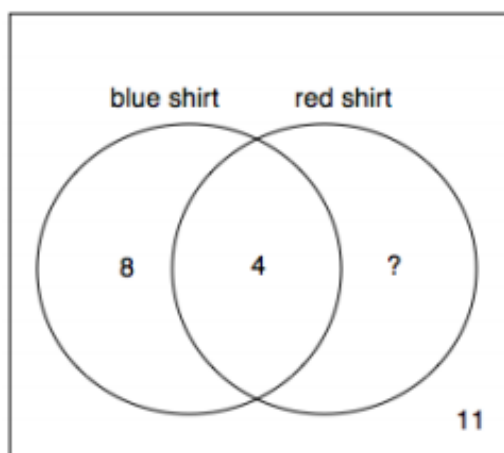
a.
$$\begin{cases} y = x + 4 \\ y - x = -4 \end{cases}$$

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

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

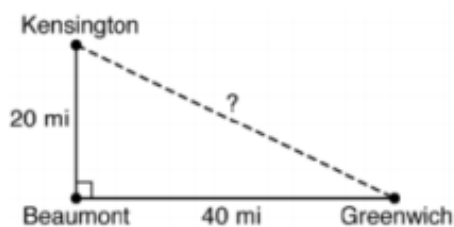
d.
$$\begin{cases} y = 4x + 1 \\ y - 1 = 4x \end{cases}$$

- ___ 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?

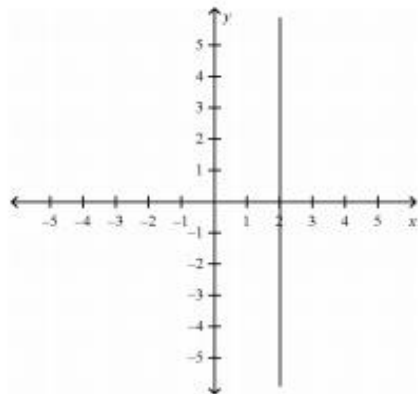
a. \$5.90

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?

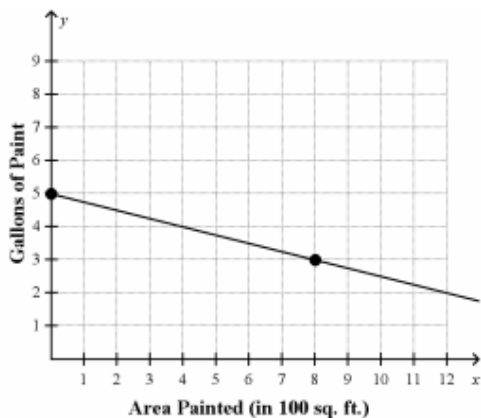
a. $y = -2x - 4$

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?

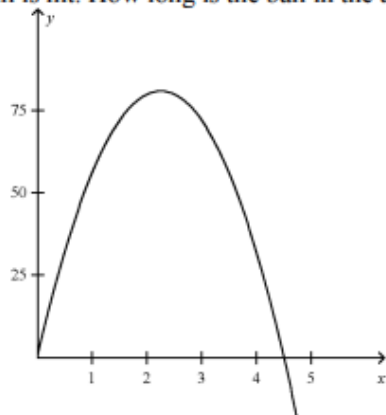
a. $(4x^2y)^2$

b. $4x^4y^2$

c. $16x^4y^2$

d. $4^2x^4y^2$

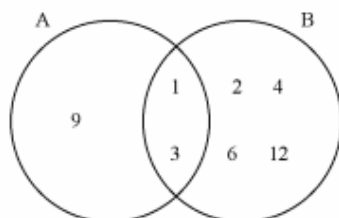
- ____ 28. The height of a ball in feet is modeled by $y = -16x^2 + 72x$, where x is the time in seconds after the ball is hit. How long is the ball in the air?



- 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

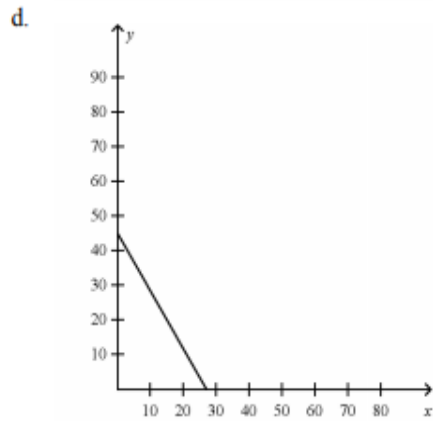
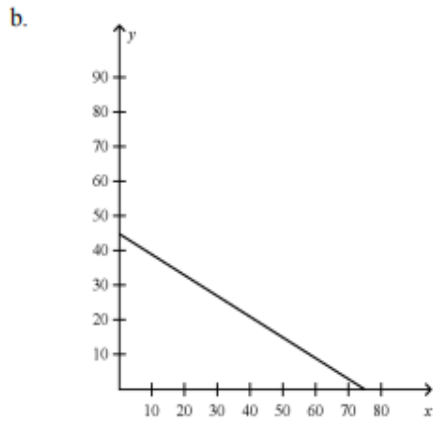
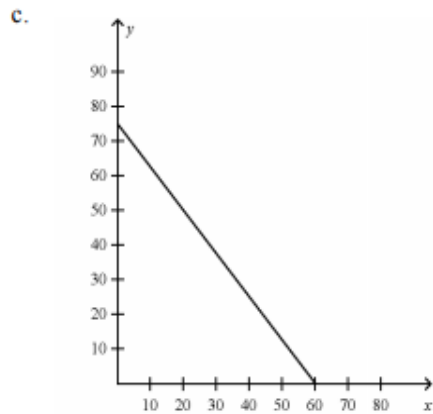
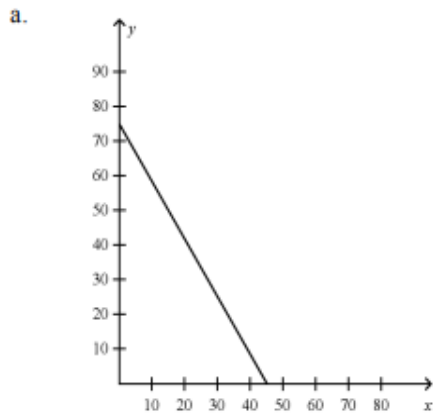
c. 2

d. 0

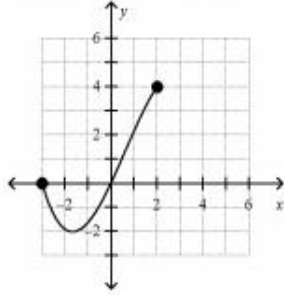
- _____ 37. Reserved tickets for the football game cost \$20 each and general admission tickets cost \$12 each. The total ticket sales brought in \$900. The equation below can be used to find out how many of each type of ticket were sold, where x is the number of reserved tickets and y is the number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

$$20x + 12y = 900$$

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



_____ 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.

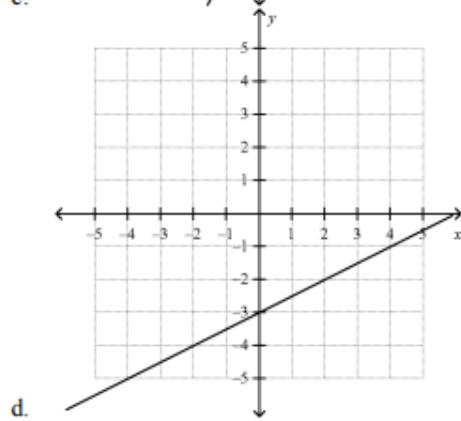
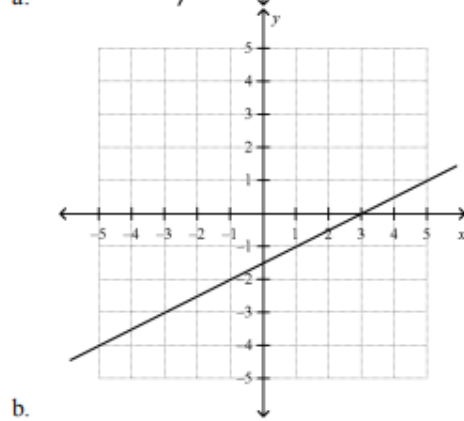
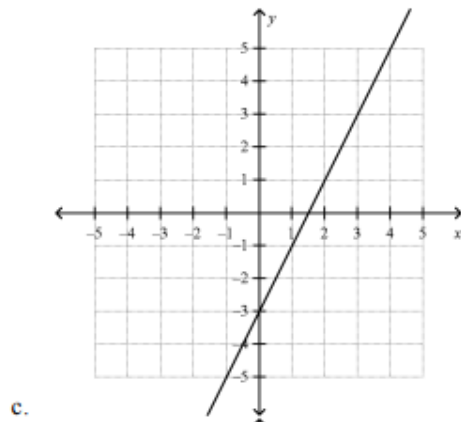
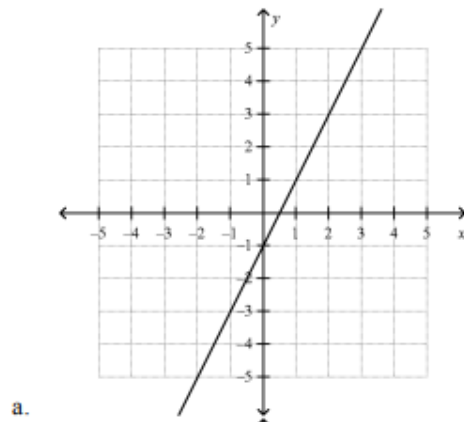
a. $x = -1$ or $x = 8$

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

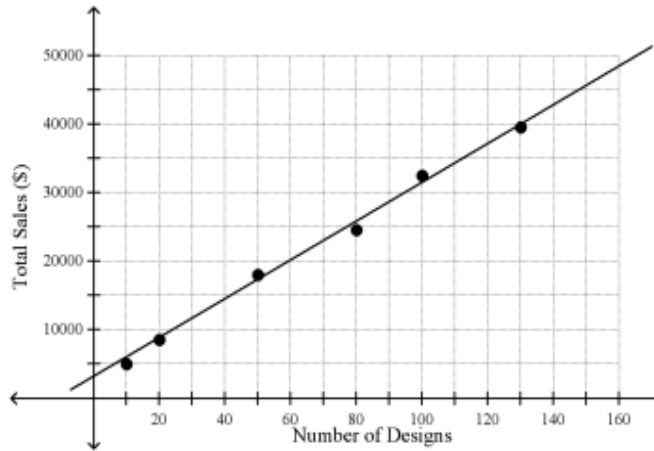
c. $x = -3$ or $x = 8$

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

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



- ___ 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.



- a. \$31,000
b. \$0
c. \$38,000
d. \$35,000
- ___ 42. Factor $x^2 - 16$.
- a. $(x - 4)^2$
b. $(x + 4)(x - 4)$
c. $(x + 4)^2$
d. cannot be factored
- ___ 43. Factor $x^2 - 6x - 16$.
- a. $(x + 2)(x - 8)$
b. $(x - 8)(x - 2)$
c. $(x - 4)(x - 2)$
d. cannot be factored
- ___ 44. Solve $A = \frac{1}{2}(b + c)h$ for c .
- a. $c = \frac{h}{2A} - b$
b. $c = 2Ah - b$
c. $c = \frac{2A}{h} - b$
d. $c = 2h(A - b)$

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

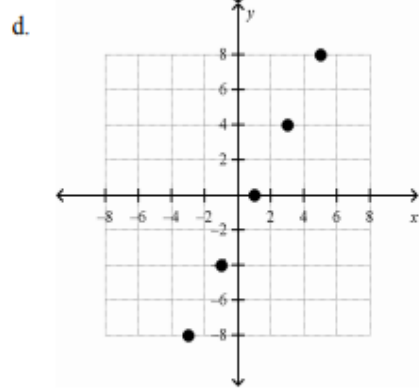
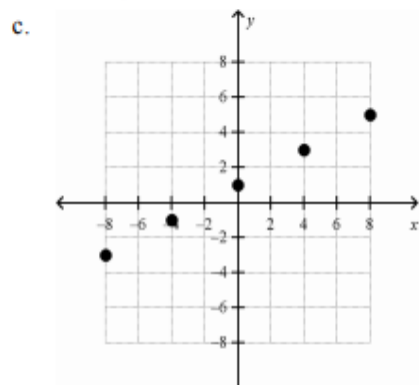
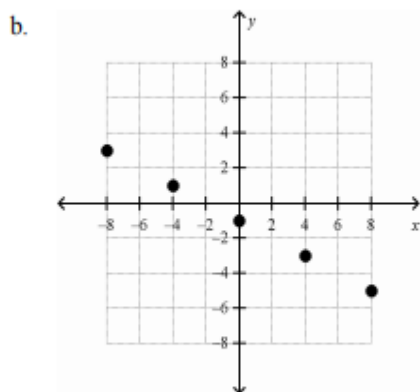
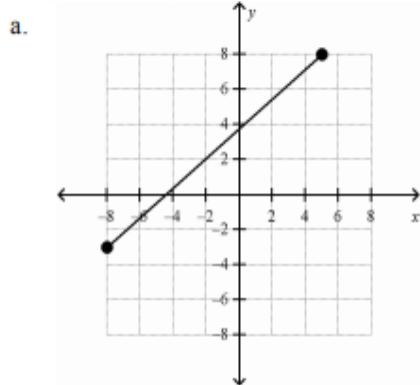
a. $\frac{\sqrt{15}}{2}$

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