

# ALGEBRA REVIEW

 7. The statement


“If  $\frac{1}{2}x = 5$ , then  $x = 10$ ”

is justified by the  $\longrightarrow$

- a. associative property of multiplication
- b. commutative property of multiplication
- c. addition property of equality
- d. multiplication property of equality

 8. Which property justifies writing  $3x - 5x$  as  $(3 - 5)x$ ?

- a. Associative Property of Multiplication
- b. Distributive Property
- c. Commutative Property of Multiplication
- d. Associative Property of Addition

 9. While solving an equation, Lenny wrote the following steps on the

$$(2x + 1) + 5 = 9$$

$$2x + (1 + 5) = 9$$

board.

What property of real numbers guarantees that the second equation is equivalent to the first?

- a. Associative Property of Addition
- b. Additive Inverse Property
- c. Commutative Property of Addition
- d. Distributive Property

 10. Which is an example of the commutative property of addition?

- a.  $3 + 5m = 3 + (1 + 4)m$
- b.  $3 + 5m = 5m + 3$
- c.  $3 + 5m = (3 + 5)m$
- d.  $3 + 5m = 3m + 5$

 11. What property of real numbers justifies the following statement?

$$4x(y + 2) - 3y \text{ is equivalent to } 4x(y) + 4x(2) - 3y$$

- a. Associative property of multiplication
- b. Commutative property of multiplication
- c. Distributive property
- d. Closure property of multiplication

 12. Which property of real numbers is utilized by rewriting  $7x + 13xy$  as  $x(7 + 13y)$ ?

- a. Closure property for multiplication
- b. Distributive property for multiplication over addition
- c. Commutative property for addition
- d. Associative property for addition

 13. Which property of real numbers is utilized by rewriting  $11x + 5xy$  as  $x(11 + 5y)$ ?

- a. Associative property for addition
- b. Commutative property for addition
- c. Closure property for multiplication



- c. 45 mpg
- d. 50 mpg

11. What is the value of  $\frac{4x - 5y}{2y}$

if  $x = -6$  and  $y = 2$

- a. -26.5
- b. -8.5
- c. -3.5
- d. -0.5

12. What is the value of  $3x + 4y$  if  $x = \frac{1}{3}$  and  $y = \frac{1}{2}$ ?

- a. 17
- b. 3
- c. 2
- d. 1

13. What is the value of

$$\frac{mn}{r^2}$$

if  $m = 7$ ,  $n = 18$ , and  $r = 6$ ?

- a. 3.5
- b. 10.5
- c. 21
- d. 63



7. What is the solution to the inequality  $7x - 5 \geq x + 1$ ?

a.  $x \leq 1$

c.  $x \geq -1$

b.  $x \geq 1$

d.  $x \leq \frac{5}{2}$

8. A rectangle has a perimeter of 68 inches. Its length is 2 inches less than 3 times its width. What are the length and width of the rectangle?

a. Length = 22 in., width = 12 in.

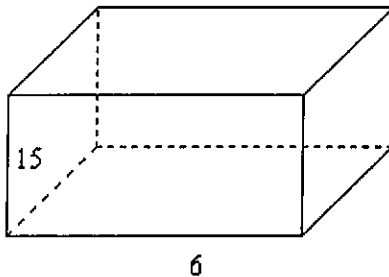
c. Length = 28 in., width = 10 in.

b. Length = 25 in., width = 9 in.

d. Length = 22 in., width = 8 in.

9. The volume of a rectangular solid is 90 cubic inches. The dimensions of the base are 6 inches by 15 inches.

Not drawn to scale.



What is the height of the solid?

a. 0.5 in.

b. 1 in.

c. 90 in.

d. 0 in.

10. What is the solution to

$$-3 - \frac{n}{1} = 16?$$

a. -13

b. -19

c. 19

d. 13

11. Karen makes \$6 per hour baby-sitting and \$13 per hour giving music lessons. One weekend, she worked a total of 8 hours and made \$55. How many hours did she spend baby-sitting?

a. 9

b. 1

c. 2

d. 7

12. What is the solution to the inequality shown below?

$$6m - 48 > 30$$

a.  $m < 22$

b.  $m > 5$

c.  $m > 38$

d.  $m > 13$

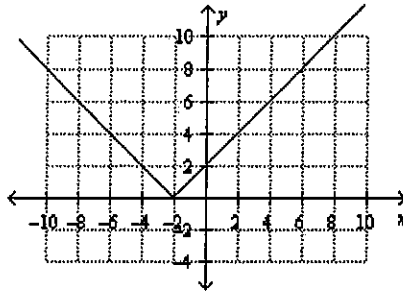
13. The formula for the surface area of a cylinder is  $SA = 2\pi r(h + r)$ . What is the value of SA when  $r = 3$  centimeters and  $h = 8$  centimeters?

a.  $17\pi \text{ cm}^2$

Name: **More Practice: Functions: Identify, Domain, Range****Multiple Choice**

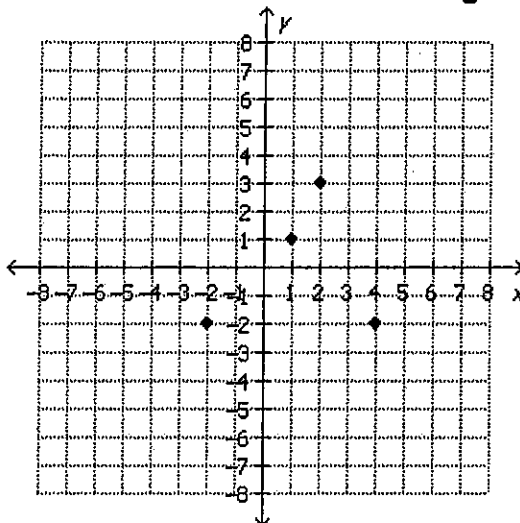
Identify the choice that best completes the statement or answers the question.

1. What is the domain of the function shown?



- a. {All real numbers greater than zero}      c. {All real numbers less than -2}  
 b. {All real numbers}      d. {All real numbers greater than -2}

2. What is the apparent range of the relation shown on the grid?



- a. {-2, 1, 3}      c. {1, 2, 3, 4}  
 b. {-2, 1, 2, 4}      d. {-2, 2, 3, 4}

3. Which set of ordered pairs is *not* a function?

- a. {(-2, 3), (4, 1), (2, 1), (1, 5)}      c. {(2, 3), (3, 2), (4, 4), (5, 2)}  
 b. {(1, 4), (2, 3), (3, 2), (4, 3)}      d. {(-2, 3), (1, 4), (2, 3), (1, 5)}

4. A lumber yard sells square scraps of plywood with sides varying from 1 foot to 4 feet. Ed wants to use some of these pieces to build storage cubes. The relationship between the length of the side of a cube and the volume of the cube is expressed by the function  $f(x) = x^3$  where  $x$  is the length of a side of the cube. What is the range of this function in cubic feet for the domain given?

- a. Range varies from 1 to 64      c. {1, 64}  
 b. Range varies from 1 to 16      d. {1, 16}

5. Which of these data sets represents a function?

- a.      c.

9. Which of the following does *not* represent a function of  $x$ ?

a. 

x	1	1	1	1
y	1	2	3	4

b. 

x	1	2	3	4
y	1	1	1	1

c. 

x	1	2	3	4
y	2	2	4	5

d. 

x	0	2	5	3
y	7	3	0	2

10. What is the range of the function

$$f(x) = (x - 1)^2$$

when the domain is  $\{-5, 0, 5\}$ ?

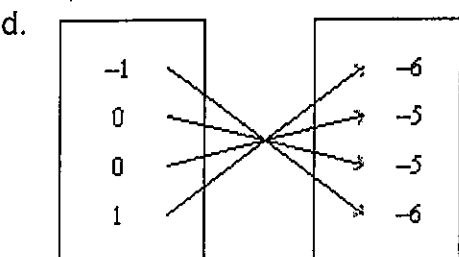
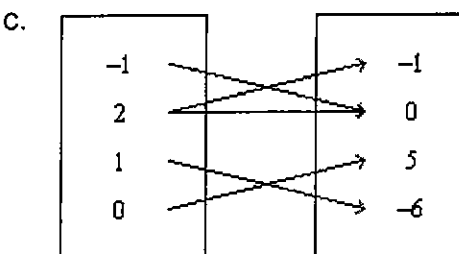
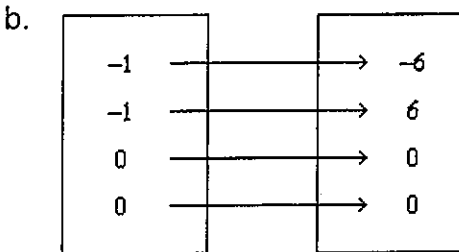
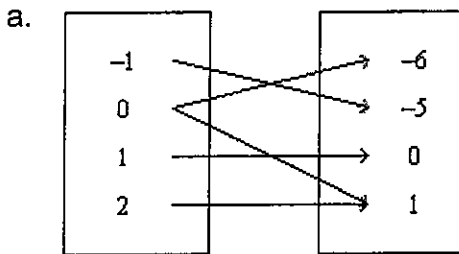
a.  $\{1, 16, 36\}$

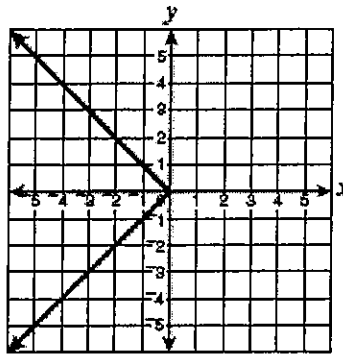
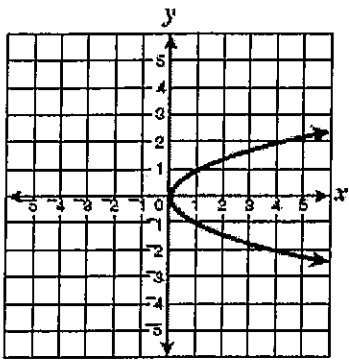
b.  $\{1, 24\}$

c.  $\{1, 26\}$

d.  $\{-12, -2, 8\}$

11. Which of these data sets represents a function?





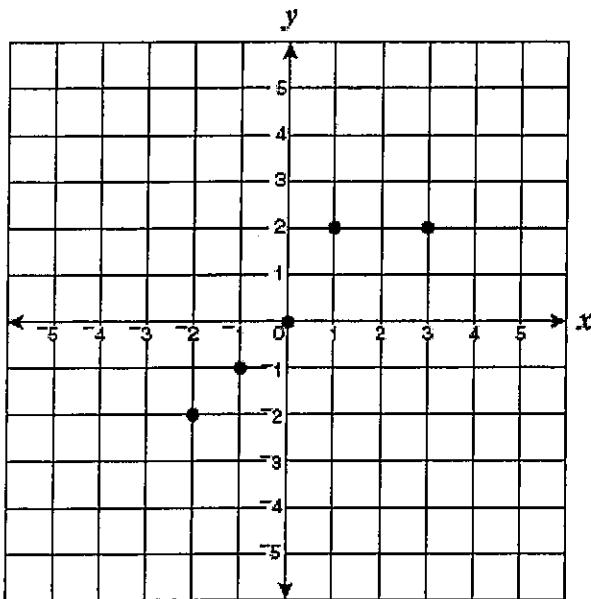
17. The function below contains ordered pairs of the form  $(x,y)$ .

$$f = \{(6,5), (2,3), (1,4)\}$$

What is the range of the function?

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

- 18.



What is the range of the relation plotted on the graph?

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

19. The ordered pairs in the sets shown below are of the  $(x,y)$ . In which set of ordered pairs is  $y$  a function of  $x$ ?

- a.  $\{(-6,12), (1,8), (1,13)\}$                       c.  $\{(7,-1), (7,-2), (7,-3)\}$   
 b.  $\{(0,2), (0,4), (4,0)\}$                       d.  $\{(1,3), (2,4), (3,5)\}$

20. What is the range of the function  $f(x) = \frac{1}{2}x - 2$  when the domain is  $\{2,4,6\}$ ?

- a.    c.





- a. 0
- b. 8

- c. 13
- d. 15

17. Which is a zero of the function defined by the following equation?

$$f(x) = 5x - 20$$

- a. -20
- b. 0

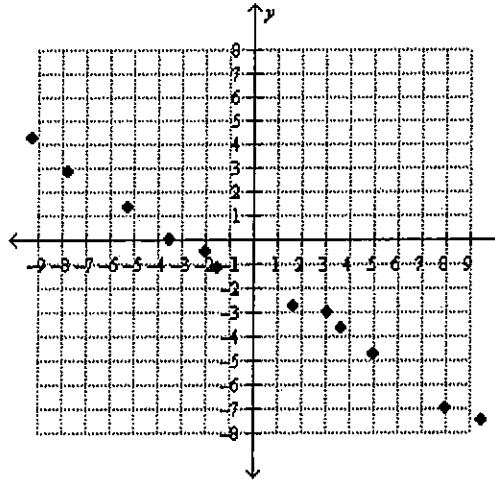
- c. 4
- d. 5



b. 4

d. 56

4. Which equation best represents the data shown on the scatterplot?



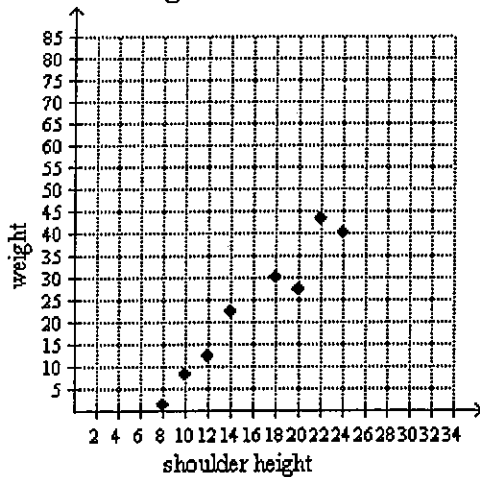
a.  $y = \frac{-3}{5}x - 2$

c.  $y = \frac{-3}{5}x$

b.  $y = \frac{x}{2} + 2$

d.  $y = \frac{3}{5}x + \frac{10}{3}$

5. Connie made a scatterplot comparing the shoulder heights of her friends' dogs to their weights. Connie's dog stands 27 inches to his shoulder.



Using the line of best fit for the plot, which is the best prediction for her dog's weight?

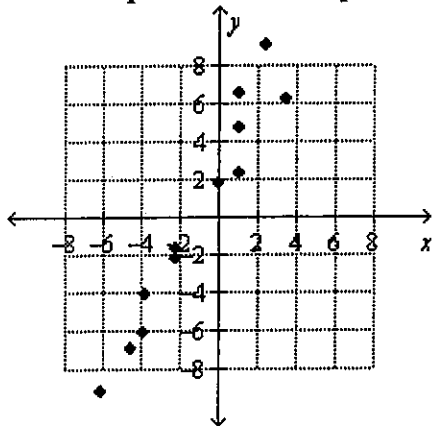
a. 54

b. 48

c. 62

d. 59

6. Which equation best represents the data shown in the scatterplot?



a.  $y = 2x - 2$

c.  $y = 2x + 2$

$x$	-3	-2	-1	0
$y$	-1	0	1	2

- $y = 2x$
- $y = -2 - x$
- $y = x + 2$
- $y = x - 2$

12. The table gives the average per capita income,  $d$ , in a region of the country as a function of the percent unemployed,  $u$ .

$u$	1	2	3	4
$d$	20,900	20,800	20,700	20,600

Which equation represents this data algebraically?

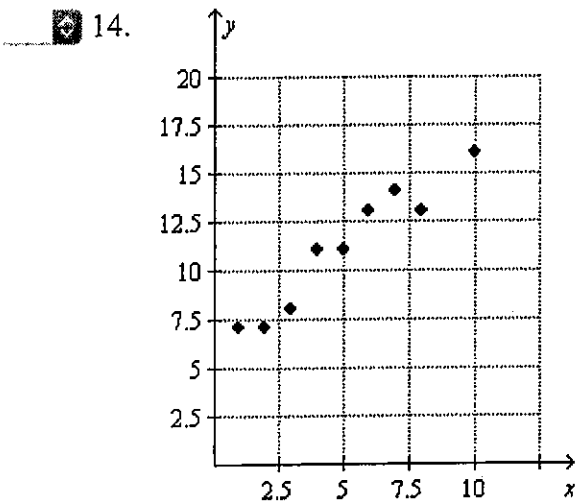
- $d = 20,400 + 200u$
- $d = 20,800 + 100u$
- $d = 21,000 - 100u$
- $d = 21,400 - 300u$

13.

$x$	1	2	3	4	5
$y$	\$0.5	\$1.00	\$1.50	\$2.00	\$2.50

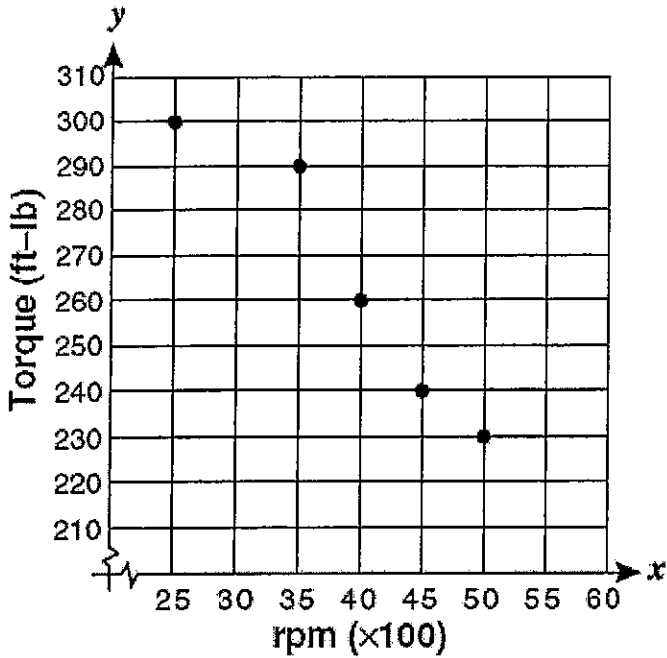
Which is an equation for the variation that includes all the data in the table?

- $xy = 0.50$
- $y = x + 0.50$
- $y = 0.50x$
- $y = \frac{x}{0.50}$



Using the data plotted on the scatterplot, which equation most closely describes a line of best fit for the data?

- $y = x + 6$
- $y = 2x - 4$
- $y = 2x + 5$
- $y = 3x - 4$



Which equation most closely defines the line of best fit for the data?

- a.  $y = 4.1x + 414$       b.  $y = -4.1x + 414$       c.  $y = 3.1x + 383$       d.  $y = -3.1x + 383$

19. Which equation defines the linear line of best fit for the data in the table?

$x$	$y$
70	4
75	7
80	8.5
85	12
90	11
95	13.5
100	15

Which equation defines the linear line of best fit for the data in the table?

- a.  $y = 19.5x - 0.35$       c.  $y = -19.5x + 0.35$   
 b.  $y = -0.35x + 19.5$       d.  $y = 0.35x - 19.5$

20. The numbers in the table follow a linear pattern.

$x$	$y$
2	14
4	26
6	38
8	50
28	170
30	?



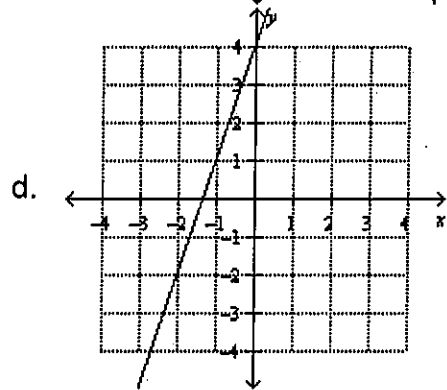
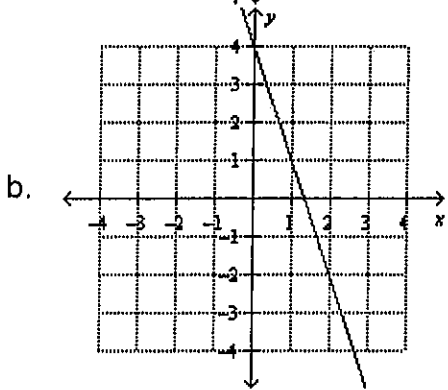
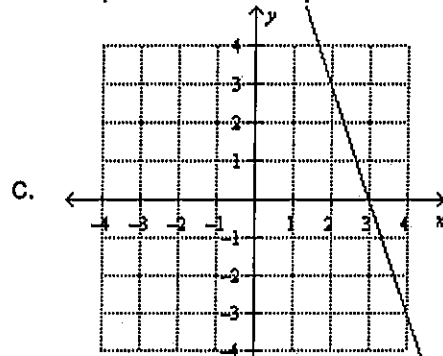
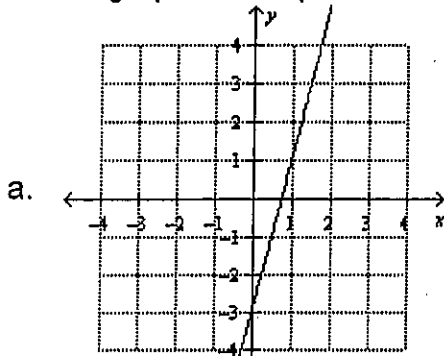
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**Quick Check #7: Algebra 1 SOLs - Equations of Lines**

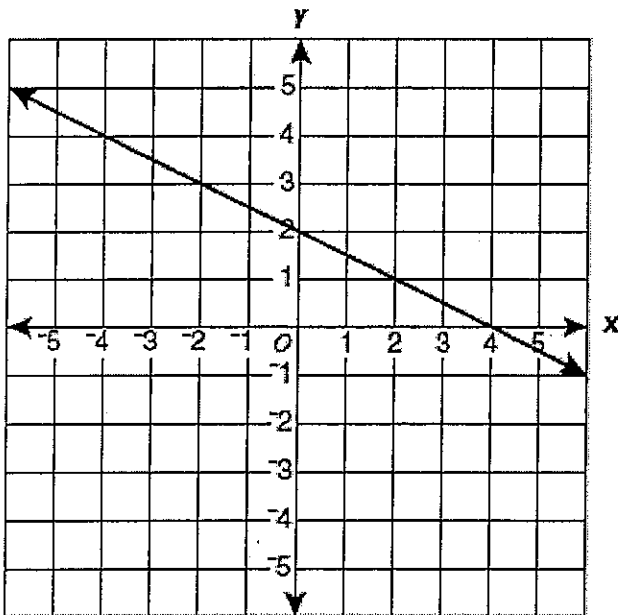
**Multiple Choice**

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

1. Which graph best represents a line with a y-intercept of 4 and slope -3?



2.



Which could be an equation for the line shown on the grid?

- a.   $y = -2x + 2$       c.   $y = -2x + 2$

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

**More Practice 8: Slope****Multiple Choice**

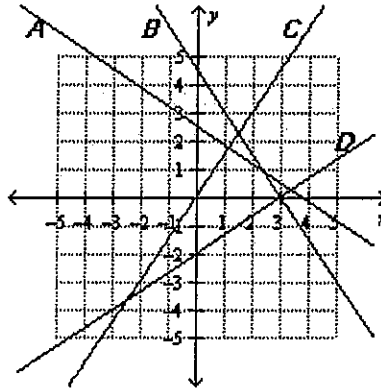
Identify the choice that best completes the statement or answers the question.

  1. What is the slope of the line that contains points (2, 3) and (2, -4)?

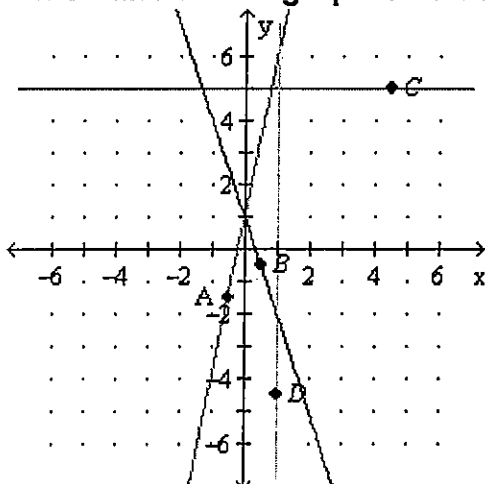
- a. Undefined      b. 0      c.  $-\frac{1}{4}$       d. -4

  2. What is the slope of the line represented by the equation  $-2y = x - 1$  ?

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

  3. Which line on the grid appears to have slope  $\frac{2}{3}$  ?


- a. A      c. C  
b. B      d. D

  4. Which line on the graph below has a negative slope?


- a. D      c. B  
b. C      d. A



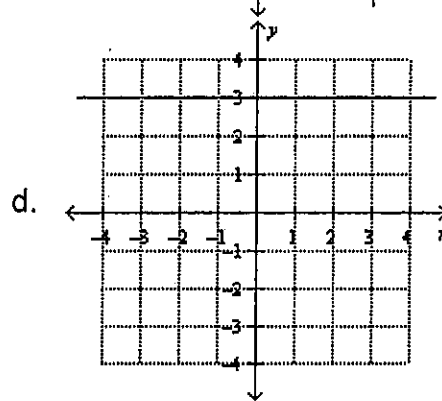
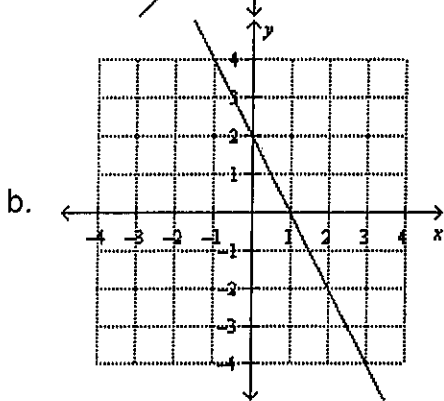
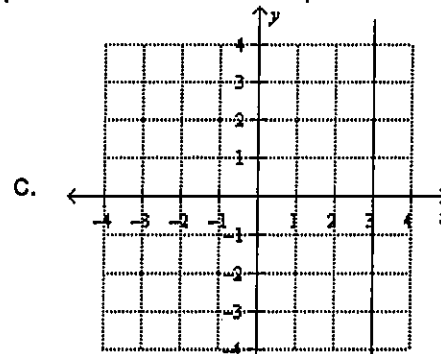
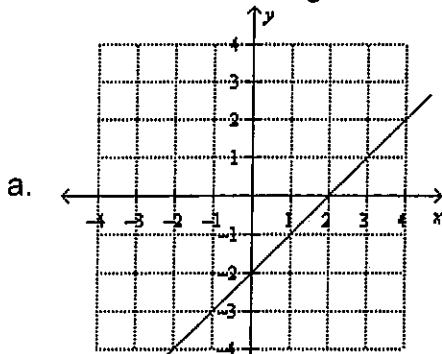
d.  $-2$ 

9. What is the slope of the line?

$$10x + 4y = 28$$

a.  $-\frac{5}{2}$ b.  $-\frac{2}{5}$ c.  $\frac{5}{2}$ d.  $-\frac{5}{2}$ 

10. Which of the following is most likely the graph of a line with a slope of zero?

11. What is the slope of the line through  $(1, 1)$  and  $(4, -1)$ ?a.  $\frac{-1}{5}$ b.  $\frac{-2}{5}$ c.  $\frac{-2}{3}$ d.  $\frac{-3}{2}$ 12. What is the slope of the line  $3y = 4x + 5$ ?

a. 4

b. 2

c.  $\frac{5}{3}$ d.  $\frac{4}{3}$ 13. What is the slope of the line  $y = 4x - 2$ ?

a. 4

c.  $\frac{1}{4}$ 

b. 2

d.  $-2$



5. What is the solution to the system of equations shown?

$$\begin{cases} 4x - 3y = 1 \\ y = -2x + 13 \end{cases}$$

- a. (4,5)  
b. (5,6)  
c. (6,7)  
d. (6,5)

6. The Arcadia Theater charges \$8 for adult tickets and \$2 for student tickets. Mr. Steele purchased 9 tickets (some student and some adult) for \$30. Which system of equations could be used to find  $a$ , the number of adult tickets, and  $s$ , the number of student tickets Mr. Steele purchased?

- a.  $\begin{cases} a + s = 30 \\ 8a + 2s = 9 \end{cases}$   
b.  $\begin{cases} 8a + 2s = 30 \\ a + s = 9 \end{cases}$   
c.  $\begin{cases} 2a + 8s = 30 \\ a + s = 9 \end{cases}$   
d.  $\begin{cases} 2a + 8s = 9 \\ a + s = 30 \end{cases}$

7. Which is the solution to the system of equations shown?

$$\begin{cases} 3x + y = 11 \\ y = x + 3 \end{cases}$$

- a. (4, 7)                      b. (2, 17)                      c. (2, 5)                      d.  $\left(\frac{1}{2}, 3\frac{1}{2}\right)$

8. Mrs. Crews bought 4 pencils and 3 pens for \$5.60. Miss Houston bought 2 pencils and 3 pens of the same kind for \$4.60. What was the price of each pencil and each pen?

- a. \$1.70 per pencil, \$0.20 per pen                      c. \$0.17 per pencil, \$1.64 per pen  
b. \$0.50 per pencil, \$1.20 per pen                      d. \$0.80 per pencil, \$0.80 per pen

9. What is the solution to the following system of linear equations?

$$\begin{cases} 4x - y = -6 \\ x - 2y = -5 \end{cases}$$

- a. (-1,2)                      c. (1,2)  
b. (0,6)                      d. (2,-1)

10.  $x - y = 7$   
 $2x + y = -1$

Which is the solution to the system of equations shown?

- a.  $x = -5, y = 2$                       c.  $x = -1, y = -7$   
b.  $x = -2, y = 5$                       d.  $x = 2, y = -5$

- 11.

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

**More Practice 10: Polynomials/Monomials: add, subtract, multiply****Multiple Choice**

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

1. Which is equivalent to  $(2x^2)^3$  ?

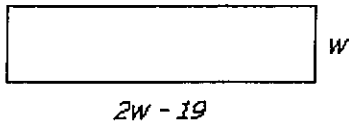
a.  $8x^6$

c.  $8x^5$

b.  $6x^6$

d.  $6x^5$

2. The length of a rectangular classroom floor is 19 feet less than twice the width.



Which expression represents the area of the classroom floor?

a.  $3w - 19$

c.  $2w^2 - 19w$

b.  $6w - 38$

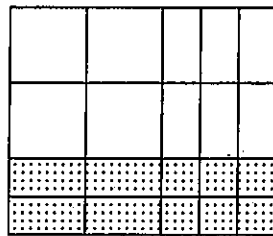
d.  $2w^2 - 19$

3. Consider the following models

$$\square = x^2 \quad \square = x \quad \square = 1$$

$$\square = -x^2 \quad \square = -x \quad \square = -1$$

What polynomial is represented by this diagram?



a.  $4x^2 - 10x - 6$

c.  $4x^2 + 2x - 6$

b.  $4x^2 - 2x - 6$

d.  $4x^2 + 10x + 6$

4. Which is equivalent to  $\frac{x^9 y^3 z^9}{(xy)^{-6}}$  ?

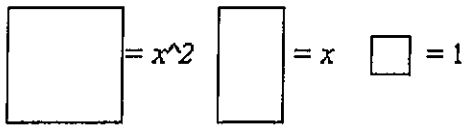
a.  $\frac{x^3 z^9}{y^{12}}$

c.  $\frac{-x^8 y^3 z^9}{3}$

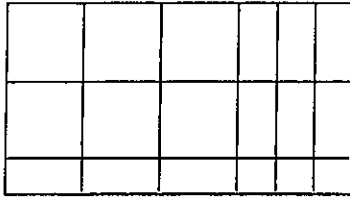
b.  $x^3 y^{-3} z^9$

d.  $x^{15} y^9 z^9$

5. Consider the following models.



Consider the models above.



What polynomial is represented by this diagram?

- a.  $6x^2 + 12x$
- b.  $2x^2 + 3x + 1$
- c.  $6x^2 + 9x + 3$
- d.  $9x^2 + 6x + 3$

11. If  $ab \neq 0$ , which is equivalent to

$$\frac{-24a^7b^6}{8a^4b^6} ?$$

- a.  $3a^3b$
- b.  $-3a^3$
- c.  $-8a^3b$
- d.  $8a^{11}b^{12}$

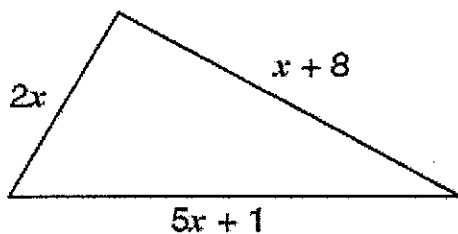
12. If  $z \neq 0$ ,  $\frac{24y^2z^3}{6z} =$

- a.  $18y^2z^2$
- b.  $16y^2z^2$
- c.  $4yz^3$
- d.  $4y^2z^2$

13.  $(3xy)(5x^2 + 2xy + 3y^2)$  is equivalent to --

- a.  $15x^3y + 6x^2y^2 + 9xy^3$
- b.  $15x^3y + 2xy + 3y^2$
- c.  $15x^2y + 6x^2y^2 + 9xy^2$
- d.  $15x^2 + 5xy + 3y^2$

14. What is the perimeter of the triangle shown in the drawing



- a.  $7x + 9$
- b.  $8x + 9$
- c.  $8x^3 + 9$
- d.  $10x^3 + 9$

When simplified,  $(2x^2y^3)^4$  equals  $\longrightarrow$

a.  $8x^6y^7$

c.  $16x^6y^7$

b.  $8x^8y^{12}$

d.  $16x^8y^{12}$

22.  $x^2 - 81y^2 = ?$

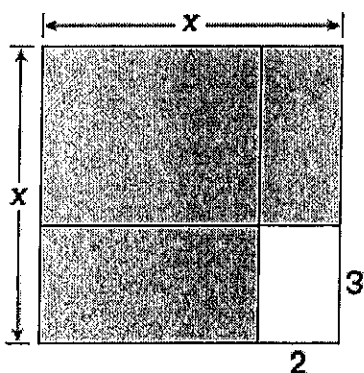
a.  $(x+3y)(x-27y)$

c.  $(x+9y)(x-9y)$

b.  $(x-9y)(x-9y)$

d.  $(x-3y)(x+27y)$

23.



The figure above is composed of rectangles. Which expression represents the shaded area?

a.  $4x - 10$

c.  $x^2 - 5x + 6$

b.  $x^2 - 6$

d.  $x^2 + 5x - 6$

24. Which polynomial is equivalent to the following expression?

$$(2x^2 - 5x + 6) + (5x^2 - 3x + 4)$$

a.  $7x^2 - 8x + 10$

c.  $7x^2 - 8x + 2$

b.  $7x^2 - 2x + 10$

d.  $7x^2 - 2x + 2$

25. Which is a simplified form of the following expression?

$$(xy^3)(xy)^4$$

a.  $x^2y^7$

c.  $x^5y^7$

b.  $x^4y^{12}$

d.  $x^5y^{12}$

