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Period _____

Show Work for Credit. Arithmetic does not count as work.

Identify the choice that best completes the statement, No Work, No Credit.

1. Which equation written in standard form has a graph that has a slope of $-2\frac{1}{25}$ and passes through the point $(-10, 2)$?

-2.2

- A $11x + 5y = -100$ B $11x + 5y = -28$ C $11x + 5y = 120$ D $11x + 5y = 72$

• Graph
• Relation
• $\frac{dy}{dx}$
• Trace

2 The mileage for a motorcycle varies directly as the amount of gas used. The motorcycle travels 300 miles on a tank of gas, and the tank holds 4 gallons of gas. About how far can the motorcyclist travel if the tank currently contains 1.5 gallons of gas?

- F about 75 miles G about 112.5 miles H about 150 miles J about 800 miles

miles $\rightarrow \frac{300}{4} = \frac{x}{1.5}$
gallons \rightarrow

$x = \left(\frac{300}{4}\right)(1.5)$
 $x = 112.5$

3 Which of the following situations best describes causation?

- ? A The weather gets colder and more people become sick
? B Children who have a larger foot size have a higher reading ability
C An hourly employee works more hours, and therefore makes more money
? D As the temperature in Florida increases, there are more shark attacks

4 Several students performed an experiment by dropping marbles of uniform size into a jar of water. They measured the height of the water after every five marbles. The results are listed in the table below.

Which function best represents the problem situation and the approximate number of marbles it will take for the water to reach a height of 2 feet?

| Number of Marbles | Height of Water (Inches) |
|-------------------|--------------------------|
| 5 | 8 |
| 10 | 10 |
| 15 | 11 |
| 20 | 13 |

- F $f(x) = x + 3$; approximately 21 marbles
G $f(x) = 0.3x + 6.5$; approximately 58 marbles
H $f(x) = 0.3x + 8$; approximately 53 marbles
J $f(x) = x + 8$; approximately 16 marbles

• Graph 58 23.9
• $f(x) =$
• Table

5 A football team scored 12 times in a game for a total of 72 points. Each touchdown with the extra point is worth 7 points. Each field goal is worth 3 points. If t is the number of touchdowns and f is the number of field goals, which system of equations can be used to determine the number of touchdowns and field goals made in the football game?

- A $f + t = 72$
 $7t + 3f = 12$ B $t + f = 12$
 $3t + 7f = 72$ C $t + f = 12$
 $7t + 3f = 72$ D $t + f = 12$
 $10(t + f) = 72$

scores *t + f* *Points*
 $t + f = 12$ $7t + 3f = 72$

6 Renee is comparing prices from two different catering services, Kay's Catering and Weddings 'R' Us, to cater the meals for her wedding dinner. The graph below represents the catering cost, c , as a function of the number of meals served, m , for each catering service Renee is considering.

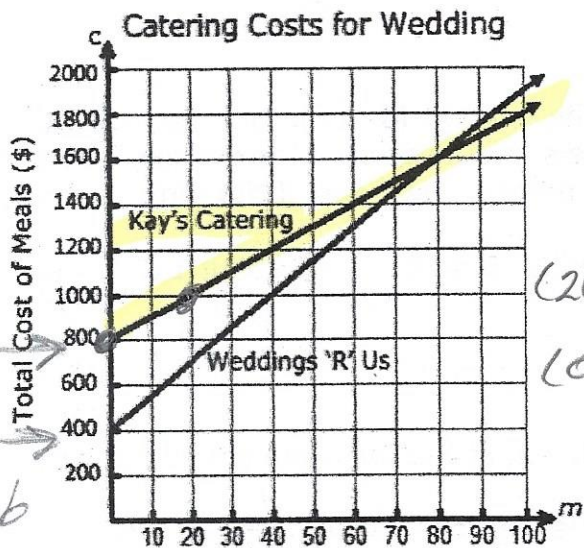
Which system of equations can be used to best represent the graph?

F Kay's Catering: $c = 10x + 800$ ✓
 Wedding 'R' Us: $c = 15x + 400$ ✓

G Kay's Catering: $c = \frac{5}{2}x + 800$ ✓
 Wedding 'R' Us: $c = \frac{5}{4}x + 400$ ✓

H Kay's Catering: $c = 800x + 10$
 Wedding 'R' Us: $c = 400x + 15$

J Kay's Catering: $c = \frac{5}{2}x + 1600$
 Wedding 'R' Us: $c = \frac{5}{4}x + 80$



$y = mx + b$

Kay's
 $b = 800$

wedding
 $b = 400$

$m = \frac{(1000) - (800)}{(20) - (0)} = m = 10$

7 The tables below represent values that correspond to a system of equations.

What is the solution to this system of equations?

same point

- A (-2, 6) B (0, 2)
 C (-1, -5) D (1, 0)

Equation A

| X | Y |
|----|----|
| -2 | 6 |
| 0 | 2 |
| 1 | 0 |
| 2 | -2 |

Equation B

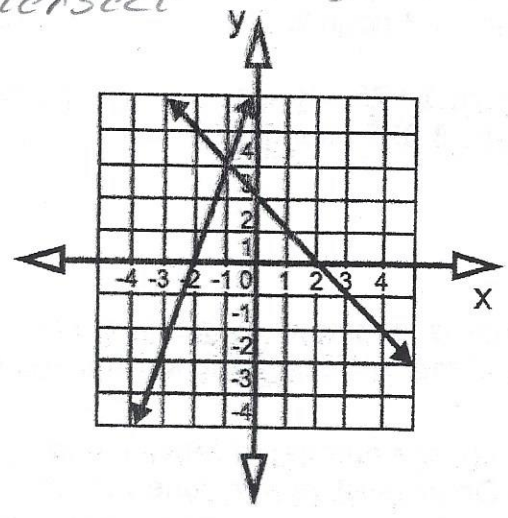
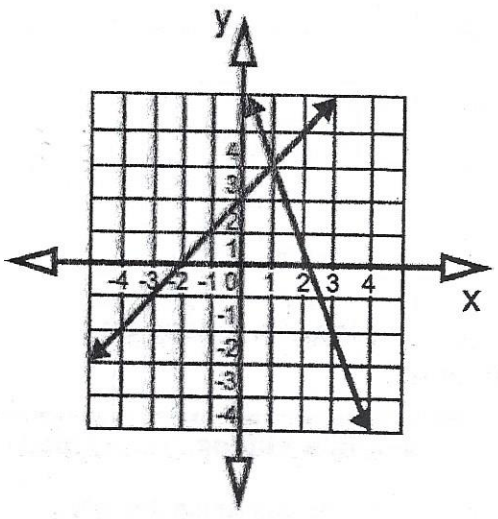
| X | Y |
|----|----|
| -2 | -9 |
| -1 | -6 |
| 0 | -3 |
| 1 | 0 |

8 Which of these graphs below represents the correct solution to the following system of equations? $-x + y = 2$

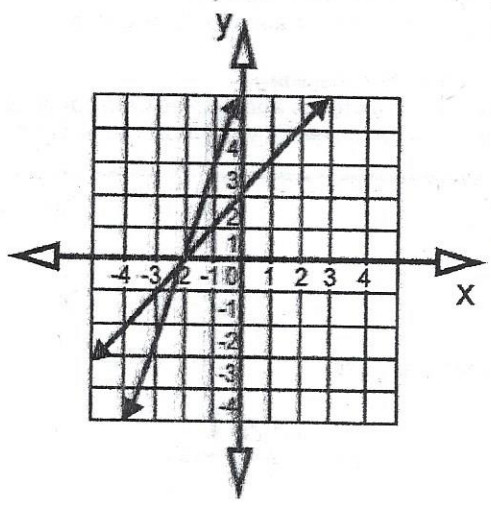
$3x + y = 6$

Graph
Relation
Intersect (1,3)
G

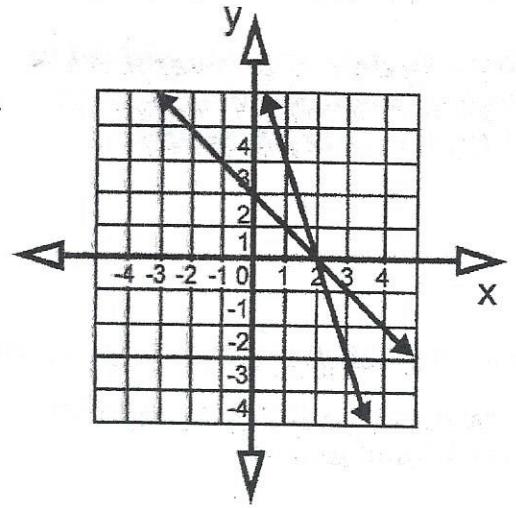
F



H



J



9 A system of two linear equations with two variables is shown below.

Which answer is the solution to the system of linear

equations? $3 - y = 2x$

$x + \frac{1}{2}y = \frac{3}{2}$

Graph
Relation
same line

- A (0, 0) B No solution C (0, 3) **D all points on the line $y = -2x + 3$**

10 Kevin purchased fish at a grocery store at \$5 per pound for salmon and \$3 per pound for catfish. He spent a total of \$36.60 on the salmon and catfish. Kevin purchased a total of 10 pounds of salmon and catfish at the grocery store. Determine how many pounds of each type of fish Kevin purchased.

F Salmon: 6.7 pounds
Catfish: 3.3 pounds

G Salmon: 8.325 pounds
Catfish: 1.675 pounds

H Salmon: 1.675 pounds
Catfish: 8.325 pounds

J Salmon: 3.3 pounds
Catfish: 6.7 pounds

$S + C = 10$
 $5s + 3c = 36.60$
• Graph
• Relation
• Intersect
(3.3, 6.7)
↑ ↑
sal cat

11 Omar is an avid video game player and movie watcher. At Melvin's Videos and Games, Omar notices the following sign on the entrance door.

Determine the number of movies and/or video games Omar must rent for one month for the cost to be equal between non-membership and membership in Melvin's Videos and Games Club.

Melvin's Videos and Games

Video and Game Rentals

Option 1 (Non-membership)
\$2.50 rental fee for any movie or game

Option 2 (Membership)
Join Melvin's Videos and Games Club for \$12 per month and rent any video or game for \$1

Record your answer and fill in the bubbles on your answer document. Be sure to use the correct place value.

$y = 2.5x$
 $y = 1x + 12$

• Graph
• Eqn
• Intersect
(8, 20)
↑ ↑
X Y
MOVIE COST

12 A location of a wall mural is being marked off as shown below.

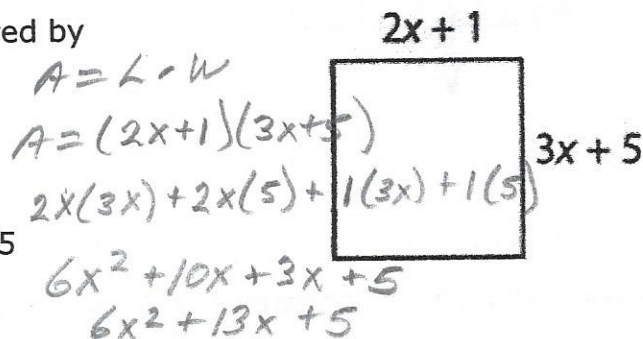
Which expression represents the area covered by the wall mural?

F $5x + 6$

G $10x + 12$

H $6x^2 + 13x + 5$

J $6x^2 + 7x + 5$



13 An algebraic expression involving integral and rational exponents is shown below.

Which simplified expression best represents the original algebraic expression?

$$\left[\frac{28x^3y^4z^{-2}}{252xy^{-2}z^2} \right]^{3/2}$$

A $\frac{x^3y^9}{9z^6}$

B $\frac{x^3y^9}{27}$

C $\frac{x^3y^9}{27z^6}$

D $\frac{x^3y^9}{9}$

$\left(\frac{1}{9} x^{3-1} y^{4-(-2)} z^{-2-2} \right)^{3/2}$
 $\left(\frac{1}{9} x^2 y^6 z^{-4} \right)^{3/2}$
 $\left(\frac{1}{9} \right)^{3/2} (x^2)^{3/2} (y^6)^{3/2} (z^{-4})^{3/2}$
 $\frac{1}{27} x^3 y^9 z^{-6}$

14 Which of the following is equivalent to $2y^{-3}$? $\rightarrow \frac{2}{y^3}$

F $\left[\frac{2}{y}\right]^3$

G $\frac{2^3}{y^3}$

H $\frac{1}{2y^3}$

J $\frac{2}{y^3}$

15 The volume of a rectangular prism can be represented by the expression $216x^3y^2$. If the length is $8y$ and the width is $9x$, what is the height of the rectangular prism?

$V = L \cdot W \cdot H$
 $H = \frac{V}{L \cdot W}$

A $2x^2y$

B $2x^3y^2$

C $3x^2y$

D $3x^3y^2$
 $H = \frac{216x^3y^2}{(8y)(9x)}$

16 An algebraic expression involving rational exponents is shown below.

$\frac{64(8a^3b^4c^{-5})(32a^4b^3c^5)}{(256a^9b^6c^{-5})}$

$\frac{64(32)a^{3+4}b^{4+3}c^{-5+5}}{256a^9b^6c^{-5}} = \frac{8a^7b^7c^0}{a^9b^6c^{-5}}$

$\frac{216}{72} x^{3-1} y^{2-1} = 3x^2y$

F $\frac{8b}{a^2c^5}$

G $\frac{8bc^5}{a^2}$

H $\frac{4bc^5}{a^2}$

J $8a^3b^6c^5$
 $= 8a^{7-9}b^{7-6}c^{0-(-5)}$
 $= 8a^{-2}b^1c^5$
 $= \frac{8bc^5}{a^2}$

17 Which expression is equivalent to $\left[\frac{20x^3y^6z^9}{5xy^4z^3}\right]^{3/2}$?

$\left[\frac{20x^3y^6z^9}{5xy^4z^3}\right]^{3/2}$

A $\frac{8y^6z^9}{x^3}$

B $\frac{8y^6z^9}{x^6}$

C $\frac{6y^6z^9}{x^3}$

D $\frac{6y^6z^9}{x^6}$

$\left(\frac{20}{5} x^{-3-1} y^{8-4} z^{9-3}\right)^{3/2}$
 $(4x^{-4}y^4z^6)^{3/2}$
 $(4)^{3/2} (x^{-4})^{3/2} (y^4)^{3/2} (z^6)^{3/2}$
 $8x^{-6}y^6z^9 \rightarrow \frac{8y^6z^9}{x^6}$

