

Directions: Answer the following question(s).

1 Teresa wants to know what score she will need on her final exam in science to have an overall grade of 90.

- Her final homework average is 87 and is worth 40% of her overall grade.
- Her final quiz average is 94 and is worth 30% of her overall grade.
- Her final test average is 89 and is worth 20% of her overall grade.
- The final exam is worth 10% of her overall grade.

What score will Teresa need on her final exam to have an overall grade in science of exactly 90?

- A. 90
- B. 91
- C. 92
- D. 99

Master ID: 2114990 Revision: 3

Correct: C

Rationale:

- A. This answer is the result of finding $(87 + 94 + 89)/3$.
- B. This answer is the result of using the median of the three averages, 89, and then solving $(89 + x)/2 = 90$.
- C. This answer is correct as follows: $87(.4) + 94(.3) + 89(.2) + 0.1x = 90 \rightarrow 80.8 + 0.1x = 90 \rightarrow x = 92$.
- D. This answer is the result of finding the sum of the points gained so far, 80.8, and then solving $(80.8 + x)/2 = 90$.

Rubric: 1 Point(s)

Standards:

MGSE9-12.A.CED.1

Directions: Answer the following question(s).

2 Miyo works for an ice cream cart vendor. She receives \$25 for taking the cart out for a shift plus a commission of \$0.10 for each item she sells. Miyo worked a shift Saturday and earned \$52.90. Which equation can be used to solve for x , the number of items Miyo sold?

- A. $52.90 = 0.10 + x + 25$
- B. $52.90 = 0.10x + 25$
- C. $52.90 = 25x + 0.10$
- D. $52.90x = 0.10x + 25$

Master ID: 308146 Revision: 5

Correct: **B**

Rationale:

- A. This answer results from including the commission rate and the number of items sold as separate addends instead of including their product.
- B. This equation sets the total earned (\$52.90) equal to the sum of the shift fee (\$25) and the commission (\$0.10 times x , the number of items sold).
- C. This answer switches the amount of the shift fee with the amount of the commission per item. It states that Miyo earns \$0.10 per shift plus \$25 for each item she sells.
- D. This answer mistakenly multiplies the total Miyo earned by the number of items sold.

Rubric: 1 Point(s)

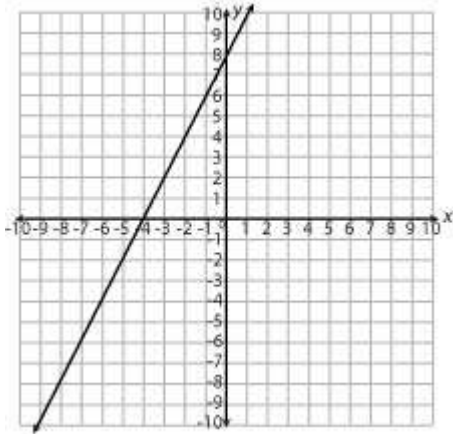
Standards:

MGSE9-12.A.CED.1

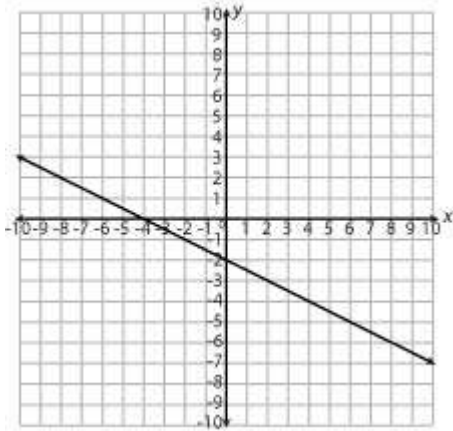
Directions: Answer the following question(s).

3 Which represents the graph of the equation $2x - 4y = 8$?

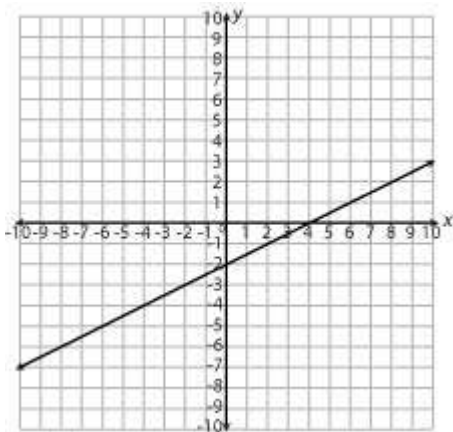
A.



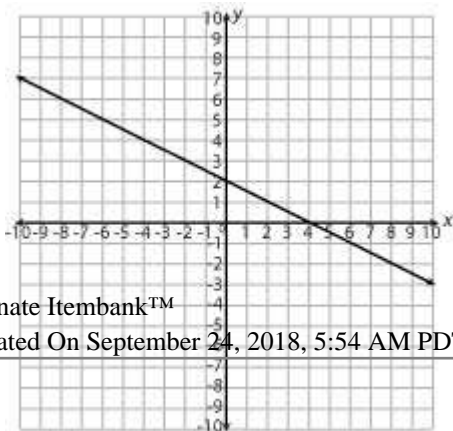
B.



C.



D.



Directions: Answer the following question(s).

Master ID: 308201 Revision: 5

Correct: C

Rationale:

- A. This graph results from identifying 2 as the slope and 8 as the y-intercept without putting this equation into slope-intercept form.
- B. This graph results from mistakenly solving for the slope as a negative value.
- C. Rewriting the equation of the line in slope-intercept form gives $-4y = -2x + 8$, $y = (1/2)x - 2$. So the slope is $1/2$ and the y-intercept is -2 , which is represented in this graph.
- D. This graph results from using the wrong signs for the slope and y-intercept.

Rubric: 1 Point(s)

Standards:

MGSE9-12.A.CED.2

Directions: Answer the following question(s).

- 4 A computer technician charges \$190 for a 3-hour appointment and \$370 for a 7-hour appointment. Which of these represents a linear function that models the charge for hiring the technician for x hours?
- A. $y = 45x + 55$
B. $y = 55x + 45$
C. $y = 45x + 190$
D. $y = 55x + 190$

Master ID: 502027 Revision: 5

Correct: A

Rationale:

- A. This is the result of first calculating the slope of the function by using the points (3, 190) and (7, 370). The slope is given by $m = \frac{370 - 190}{7 - 3} = 45$. The slope is substituted into the slope-intercept form of the linear equation to give $y = mx + b$ or $y = 45x + b$. Plugging in the point (7, 370) gives $b = 55$, which means that the equation can be written as $y = 45x + 55$.
- B. This is the result of incorrectly switching the values of the slope and the y -intercept in the slope-intercept form of the linear equation, $y = mx + b$.
- C. This is the result of correctly calculating the slope of the given data points but incorrectly setting the y -intercept as equal to the technician's charge for 3 hours. Therefore, the slope-intercept form of the linear equation, $y = mx + b$, is defined as $y = 45x + 190$.
- D. This is the result of incorrectly first identifying the y -intercept of the linear function as the slope of the given data points. Then, the y -intercept is determined to be equal to the technician's charge for 3 hours. Therefore, the slope-intercept form of the linear equation, $y = mx + b$, is defined as $y = 55x + 190$.

Rubric: 1 Point(s)

Standards:

MGSE9-12.A.CED.2

Directions: Answer the following question(s).

5 A trucking company charges a factory to deliver packages of its products. The total charges include the following.

- \$2 per package;
- \$3 per pound;
- The total of the charges must be at least \$500.

Which inequality models the situation, where x is the number of packages and y is the total weight in pounds?

- A. $2x + 3y \geq 500$
B. $3x + 2y \geq 500$
C. $3x + 2y \leq 500$
D. $2x + 3y \leq 500$

Master ID: 2235180 Revision: 3

Correct: A

Rationale:

- A. $2x$ represents the charge in dollars for delivering x packages and $3y$ represents the charge in dollars for delivering y pounds of packages. The total must be greater than or equal to \$500.
- B. This answer switches the cost per package and the cost per pound.
- C. This answer switches the cost per package and the cost per pound and uses the less than symbol instead of the greater than symbol.
- D. This answer uses the less than symbol instead of the greater than symbol.

Rubric: 1 Point(s)

Standards:

MGSE9-12.A.CED.3

Directions: Answer the following question(s).

6 The length (l) of a rectangle equals twice the width (w). The perimeter of the rectangle is 30 meters. Which system of equations represents this situation?

A.
$$\begin{cases} l = 2w \\ 2l + 2w = 30 \end{cases}$$

B.
$$\begin{cases} l = 2w \\ lw = 30 \end{cases}$$

C.
$$\begin{cases} w = 2l \\ 2l + 2w = 30 \end{cases}$$

D.
$$\begin{cases} w = 2l \\ lw = 30 \end{cases}$$

Master ID: 2274489 Revision: 3

Correct: **A**

Rationale:

- A. The equation $l = 2w$ shows that the length is twice the width. The equation $2l + 2w = 30$ shows that the perimeter is 30.
- B. This results from using area instead of perimeter.
- C. This results from switching the variables in the first equation.
- D. This results from switching the variables in the first equation and using area instead of perimeter.

Rubric: 1 Point(s)

Standards:

MGSE9-12.A.CED.3

Directions: Answer the following question(s).

7 What value of x makes this equation true?

$$2(3x - 8) = 2(7x + 2)$$

- A. $x = -\frac{5}{2}$
- B. $x = \frac{5}{2}$
- C. $x = \frac{5}{4}$
- D. $x = -\frac{5}{4}$

Master ID: 308373 Revision: 3

Correct: A

Rationale:

A. This is the result of correctly solving the equation for x :

$$2(3x - 8) = 2(7x + 2) \rightarrow 3x - 8 = 7x + 2 \rightarrow -10 = 4x \rightarrow x = -\frac{5}{2}.$$

B. This is the result of making a sign error.

C. This is the result of distributing the 2 to only the first term on each side of the equation.

D. This is the result of distributing the 2 to only the first term on each side of the equation and making a sign error.

Rubric: 1 Point(s)

Standards:

MGSE9-12.A.REI.3

Directions: Answer the following question(s).

8 Which system of equations has an infinite number of solutions, where a and b are variables, and c is a constant?

A.
$$\begin{cases} 3a + b = c \\ 3a + b = c \end{cases}$$

B.
$$\begin{cases} 3a + b = c \\ 3a + b = -c \end{cases}$$

C.
$$\begin{cases} 3a + b = c \\ a + 3b = -c \end{cases}$$

D.
$$\begin{cases} 3a + b = -c \\ a + 3b = -c \end{cases}$$

Master ID: 2230484 Revision: 3

Correct: A

Rationale:

- A. The linear equations in the system describe the same line, so they have an infinite number of points in common, thus infinite solutions.
- B. This system describes two lines having the same rate of change, so they are parallel and do not intersect, thus having no solution.
- C. This answer has a single solution. Using the elimination method, multiply the second equation by -3 and add it to the first equation. The result is: $b = -c/2$. Using that value for b in the second equation gives: $a = c/2$. So, the solution for a and b is $(c/2, -c/2)$.
- D. This answer has a single solution. Using the elimination method, multiply the second equation by -3 and add it to the first equation. The result is: $b = -c/4$. Using that value for b in the second equation gives: $a = -c/4$. So, the solution for a and b is $(-c/4, -c/4)$.

Rubric: 1 Point(s)

Standards:

MGSE9-12.A.REI.6

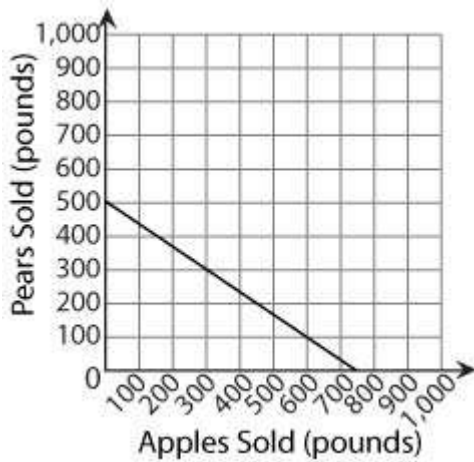
Directions: Answer the following question(s).

- 9 At a fruit stand, apples sell for \$0.80 per pound and pears sell for \$1.20 per pound. One week, the stand sold \$600 worth of apples and pears. The equation below describes the situation, where a is the number of pounds of apples and p is the number of pounds of pears.

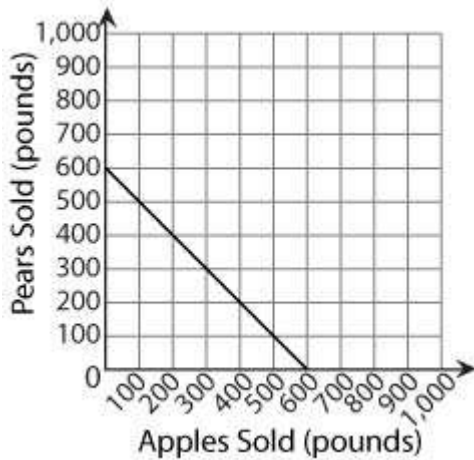
$$0.8a + 1.2p = 600$$

Which graph represents the equation?

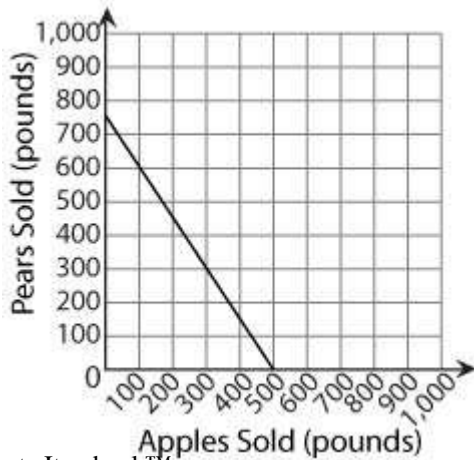
A.



B.



C.



Directions: Answer the following question(s).

Master ID: 1969251 Revision: 4

Correct: A

Rationale:

- A. This answer is correct, since $0.8a + 1.2p = 600$ is equivalent to $1.2p = -0.8a + 600$, and, dividing all terms by 1.2, is equivalent to $p = -(2/3)a + 500$.
- B. This answer is the result of ignoring the equation, and thinking that the graph represents dollars worth of fruit sold, not pounds of fruit sold.
- C. This answer is the result of ignoring the labels on the axes, and reversing the meaning of the two axes.
- D. This answer is the result of making an error when converting to slope intercept form: correctly finding that $0.8a + 1.2p = 600$ is equivalent to $1.2p = -0.8a + 600$, but then dividing only the first and last terms by 1.2, getting $p = -0.8a + 500$.

Rubric: 1 Point(s)

Standards:

MGSE9-12.A.REI.10

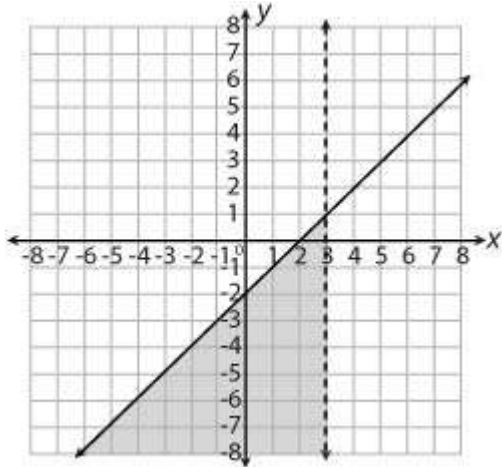
Directions: Answer the following question(s).

10 Which graph shows the solutions of this system of inequalities?

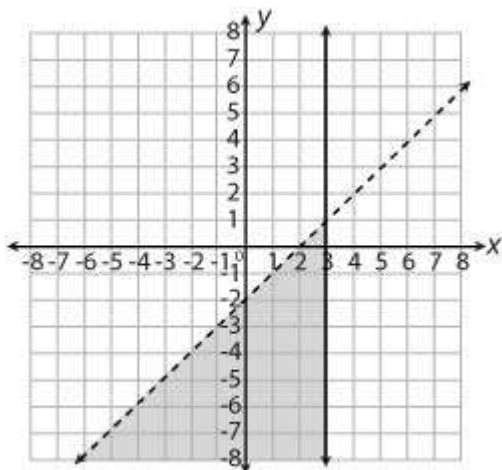
$$x < 3$$

$$y \leq x - 2$$

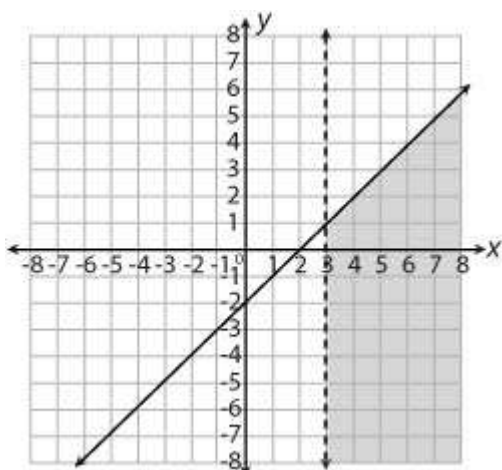
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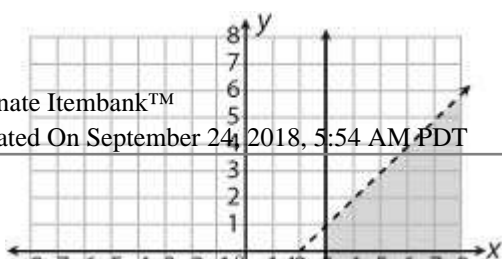
B.



C.



D.



Directions: Answer the following question(s).

Master ID: 2300512 Revision: 3

Correct: A

Rationale:

- A. The line $x = 3$ is graphed using a dashed line. The line for $y = x - 2$ is graphed using a solid line. The area between the lines, where the point $(0, -4)$ is found, is shaded because these x - and y -values make both inequalities true.
- B. This is the result of interchanging the dashed and solid lines.
- C. This is the result of shading the wrong area.
- D. This is the result of interchanging the dashed and solid lines and of shading the wrong area.

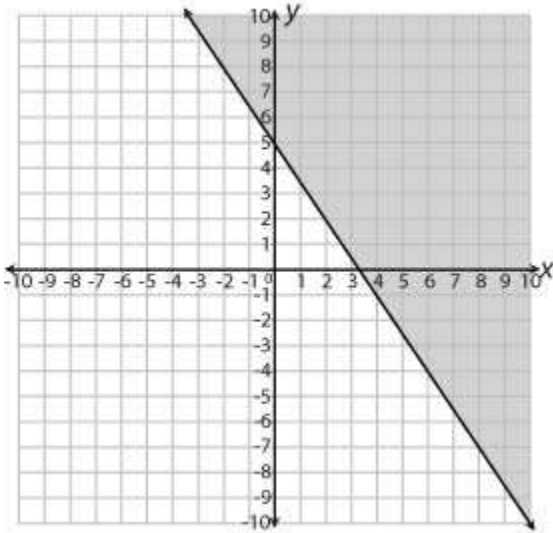
Rubric: 1 Point(s)

Standards:

MGSE9-12.A.REI.12

Directions: Answer the following question(s).

11 Look at the graph below.



Which of these describes the graph?

- A. $y > -\frac{3}{2}x + 5$
- B. $y < -\frac{3}{2}x + 5$
- C. $y \geq -\frac{3}{2}x + 5$
- D. $y \leq -\frac{3}{2}x + 5$

Master ID: 308515 Revision: 4

Correct: C

Rationale:

- A. This answer results from using the greater than sign instead of the greater than or equal to sign, which is required since the line in the graph is solid, not dashed.
- B. This answer results from reversing the direction of the inequality sign and by not understanding that the solid line on the graph indicates an "or equal" inequality sign.
- C. This inequality passes through the same points at the inequality on the graph, including (0, 5), (-2, 8), and (4, -1). It is satisfied by points in the shaded area, indicating that the inequality sign is the right direction, and it correctly uses a greater than or equal to sign, which is indicated by the fact that the graph includes a solid line, not a dashed line.
- D. This answer results from reversing the direction of the inequality sign.

Rubric: 1 Point(s)

Standards:

MGSE9-12.A.REI.12

Directions: Answer the following question(s).

12 Consider this sequence generated by $f(x)$.

x	1	2	3	4
$f(x)$	8	-4	-16	-28

What is the equation for $f(x)$?

- A. $f(x) = -12x + 20$
- B. $f(x) = 8x - 4$
- C. $f(x) = 20x - 12$
- D. $f(x) = -4x + 8$

Master ID: 308582 Revision: 7

Correct: A

Rationale:

- A. This function generates the first term of the sequence and then produces terms that decrease by 12, given the -12 in the coefficient of the variable term.
- B. It is assumed that the parts of the function are determined by the first and second terms of the sequence (8 and -4), but this function does not generate the sequence.
- C. The -12 appears to be correct, given that it is the amount of change from term to term, but the -12 and 20 should be switched in the function (-12 should be the coefficient of the variable term).
- D. It is assumed that the function is determined by the first and second terms of the sequence (8 and -4), but this function does not generate the sequence.

Rubric: 1 Point(s)

Standards:

MGSE9-12.F.IF.3

Directions: Answer the following question(s).

13 How can the equation below be rewritten to solve for c ?

$$a = b + cx$$

- A. $c = \frac{a - b}{x}$
- B. $c = \frac{a}{x} - b$
- C. $c = a - b - x$
- D. $c = (a - b)x$

Master ID: 308290 Revision: 4

Correct: A

Rationale:

- A. This answer is correct: subtract b from both sides, then divide by x to solve for c .
- B. This is the result of dividing the left side and the c by x , then subtracting b from both sides.
- C. This is a result of subtracting x from both sides instead of dividing both sides by x .
- D. This is the result of multiplying both sides by x instead of dividing them by x .

Rubric: 1 Point(s)

Standards:

MGSE9-12.A.CED.4

Directions: Answer the following question(s).

14 The perimeter of a rectangle is given by the formula $P = 2(l + w)$. Which formula gives w in terms of P and l ?

- A. $w = \frac{P}{2} - l$
- B. $w = P - 2l$
- C. $w = \frac{P}{2} + l$
- D. $w = P + 2l$

Master ID: 2292919 Revision: 3

Correct: A

Rationale:

- A. Divide both sides of the formula by 2 to get $P/2 = l + w$. Then subtract l from both sides to get $w = P/2 - l$.
- B. This results from removing the parentheses incorrectly to get $P = 2l + w$, then solving for w .
- C. This results from adding l to the right side of the equation instead of subtracting it.
- D. This results from removing the parentheses incorrectly to get $P = 2l + w$, then solving incorrectly for w .

Rubric: 1 Point(s)

Standards:

MGSE9-12.A.CED.4

Directions: Answer the following question(s).

15 Jane needs to solve this equation for x .

$$2x - 8 = 20$$

Which would be the best first step Jane could make to solve the equation?

- A. add 8 to both sides of the equation
- B. subtract 8 from the left side of the equation
- C. divide $2x$ by 2
- D. divide both sides of the equation by 20

Master ID: 1819416 Revision: 4

Correct: A

Rationale:

- A. This answer is correct, since adding 8 to both sides of the equation would get all the constants on one side and all the x -terms on the other side, so Jane could divide by 2 and have the answer.
- B. This answer is the result of knowing that something needs to be done to get rid of the 8 on the left side of the equation, but not using the correct operation and changing only one side of the equation.
- C. This answer is the result of a partial understanding of the steps to solve, but getting the steps out of order and not understanding that everything needs to be done to both sides of the equation.
- D. This answer is the result of understanding that operations need to be applied to both sides of the equation, but failing to understand which operations would be most helpful to solve this equation.

Rubric: 1 Point(s)

Standards:

MGSE9-12.A.REI.1

Directions: Answer the following question(s).

16 Yasmine buys 6 bananas and a loaf of bread.

- The bread cost \$4.00.
- The total cost was \$5.50.

She writes this equation, where b represents the cost of one banana.

$$6b + 4 = 5.5$$

What is the first step Yasmine should make in order to solve the equation for b ?

- A. subtract 4 from both sides of the equation
- B. subtract $6b$ from both sides of the equation
- C. divide $6b$ by 6
- D. add 4 to the right side of the equation

Master ID: 941736 Revision: 3

Correct: A

Rationale:

- A. This answer is correct since it will lead to getting the constants on one side of the equation and the variable term on the other side of the equation, so the answer can be found by dividing by 6.
- B. This answer is the result of understanding that the same things need to be done on both sides of the equation, but not understanding which steps will most help find the solution.
- C. This answer is the result of not understanding that the same steps must be applied on both sides of the equation.
- D. This answer is the result of not understanding that the same steps must be applied on both sides of the equation.

Rubric: 1 Point(s)

Standards:

MGSE9-12.A.REI.1

Directions: Answer the following question(s).

17 The solution set of which inequality contains the number -4 ?

A. $5x + 8 \geq -17$

B. $\frac{1}{5}x + 3 \leq 2$

C. $3x + 7 < -5$

D. $\frac{1}{2}x - 1 > -3$

Master ID: 502028 Revision: 3

Correct: A

Rationale:

- A. Substituting -4 into the left side of the inequality gives -12 , which is greater than -17 .
- B. Substituting -4 into the left side of the inequality gives $11/5$, which is greater than 2 .
- C. Substituting -4 into the left side of the inequality gives -5 , which is not less than -5 .
- D. Substituting -4 into the left side of the inequality gives -3 , which is not greater than -3 .

Rubric: 1 Point(s)

Standards:

MGSE9-12.A.REI.3

Directions: Answer the following question(s).

18 A system of equations is shown below.

$$\begin{cases} x - 3y = 1 \\ 5x + 2y = 4 \end{cases}$$

Which of the following describes two possible first steps in correctly solving the system using the elimination method?

- A. Multiply the first equation by -5 and then add the two equations.
- B. Multiply the first equation by -4 and then add the two equations.
- C. Add -5 to the first equation and then add the two equations.
- D. Add 1 to the second equation and then add the two equations.

Master ID: 308444 Revision: 4

Correct: A

Rationale:

- A. This procedure results in the elimination of the x terms, leaving one equation that can be solved for y .
- B. This procedure will produce a zero sum on the right side of the equations, but will not eliminate either variable.
- C. This adds -5 to the first equation instead of multiplying by -5 .
- D. This answer mixes up adding and multiplying when attempting to eliminate the y .

Rubric: 1 Point(s)

Standards:

MGSE9-12.A.REI.5

Directions: Answer the following question(s).

- 19 A children's playground will be shaped like a rectangle with a perimeter of 86 meters. The length of the rectangle must be 1.6 times the width. The system of equations below can be solved for x , the width in meters, and y , the length in meters.

$$\begin{cases} y = 1.6x \\ 2x + 2y = 86 \end{cases}$$

Which equation can best be used to determine the width of the playground?

- A. $2x + 3.2x = 86$
B. $2x + 3.6x = 86$
C. $2x = 86 - 2y$
D. $x = \frac{y}{1.6}$

Master ID: 540066 Revision: 4

Correct: A

Rationale:

- A. Substituting the first equation into the second equation gives $2x + 2(1.6x) = 86$, or $2x + 3.2x = 86$. This equation can then be solved to find the value of x .
B. This is the result of adding $1.6 + 2$ instead of multiplying 1.6×2 when simplifying the equation.
C. This is the result of simply subtracting $2y$ from both sides in the second equation.
D. This is the result of simply solving the first equation for x .

Rubric: 1 Point(s)

Standards:

MGSE9-12.A.REI.5

Directions: Answer the following question(s).

20

TEACHER READS:

Directions: Answer the following question(s).

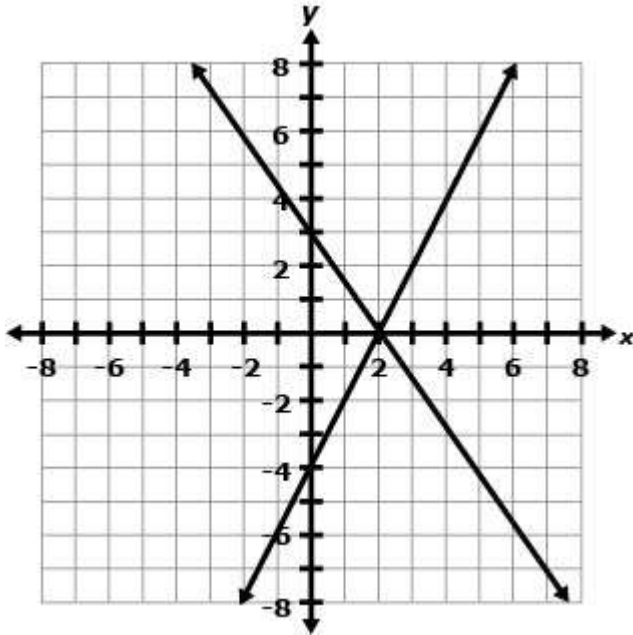
Read the question to yourself and select the best answer.

Which of the following graphs BEST represents the system of equations?

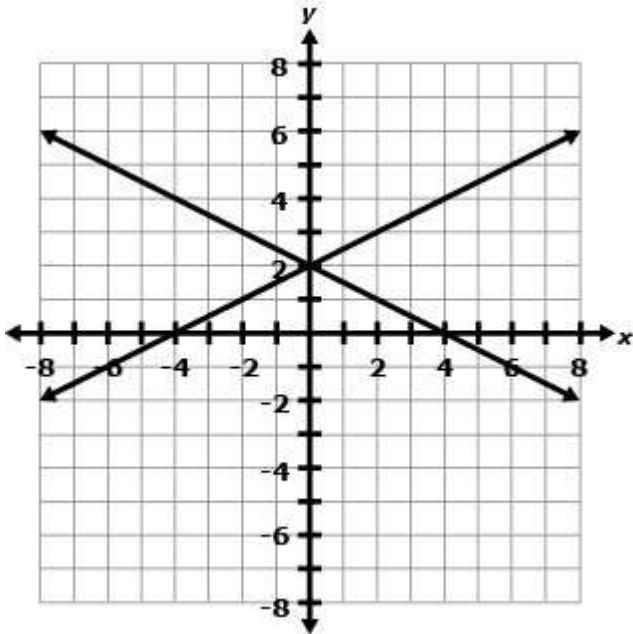
$$2y = 4x - 8$$

$$3x + 2y = 6$$

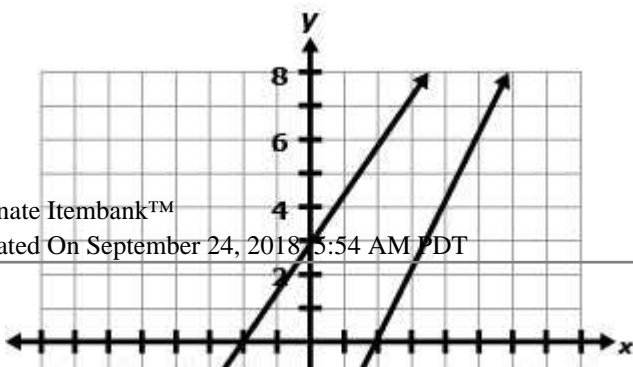
A.



B.



C.



Directions: Answer the following question(s).

Master ID: 3291931 Revision: 1

Correct: A

Rationale:

- A. Correct answer
- B. Student(s) may have solved incorrectly and picked the graph of the intersection of $y = -2/3x + 2$ and $y = 2x + 2$.
- C. Student(s) likely missed the slope of the second equation and thought it was $3/2$ instead of $-3/2$.
- D. Student(s) likely reversed the rise and the run in the two slopes.

Rubric: 1 Point(s)

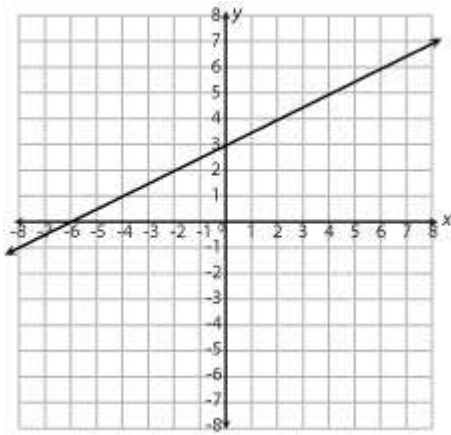
Standards:

MGSE9-12.A.REI.6

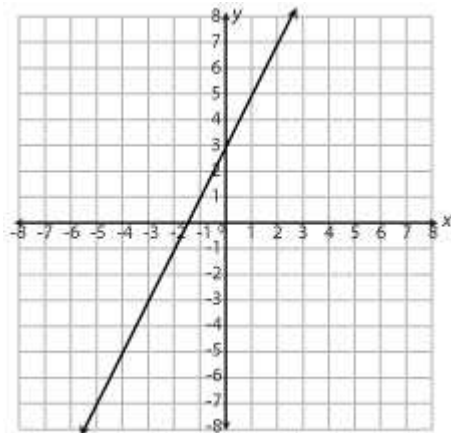
Directions: Answer the following question(s).

21 Which of the following shows the graph of $y = \frac{1}{2}x + 3$?

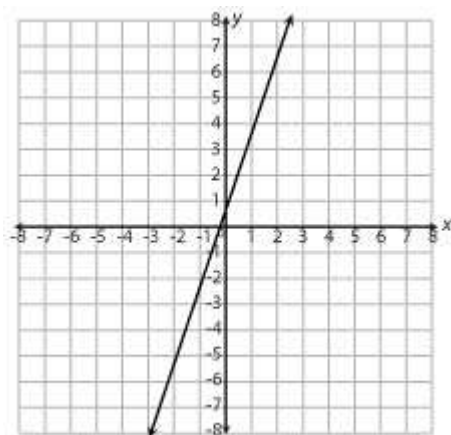
A.



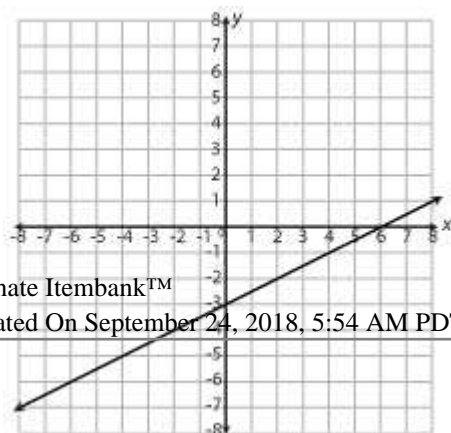
B.



C.



D.



Directions: Answer the following question(s).

Master ID: 332656 Revision: 4

Correct: A

Rationale:

- A. This correctly shows the equation with the y -intercept at $(0, 3)$ and the slope at $1/2$.
- B. This graph represents $y = 2x + 3$.
- C. This is the result of switching the values for the slope and y -intercept.
- D. This is the result of switching the sign from addition to subtraction.

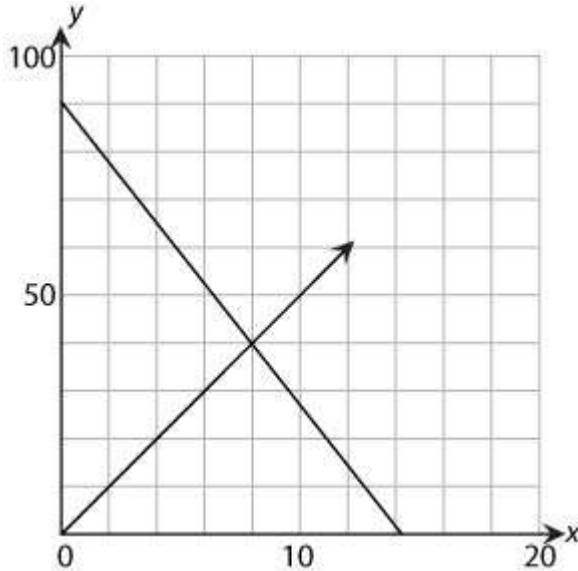
Rubric: 1 Point(s)

Standards:

MGSE9-12.A.REI.10

Directions: Answer the following question(s).

- 22 The coordinate grid below shows the graph of supply and demand functions for the sales of a certain video game. For the functions, x represents the number of video games sold, in thousands of units, and y represents the price, in dollars, of each game.



The equilibrium point for the supply and demand functions can be found by locating the point where the two functions are equal. Which of these appears to be the number of video games, in thousands, that must be sold to achieve equilibrium?

- A. 6
- B. 8
- C. 14
- D. 90

Master ID: 941759 Revision: 3

Correct: **B**

Rationale:

- A. This is a result of using the -6 slope for one of the functions.
- B. This is a result of understanding that the x -value of the point of intersection represents the solution, which appears to be closest to 8.
- C. This is a result of using the x -intercept of the line segment with negative slope.
- D. This is a result of using the approximate y -value of the point of intersection.

Rubric: 1 Point(s)

Standards:

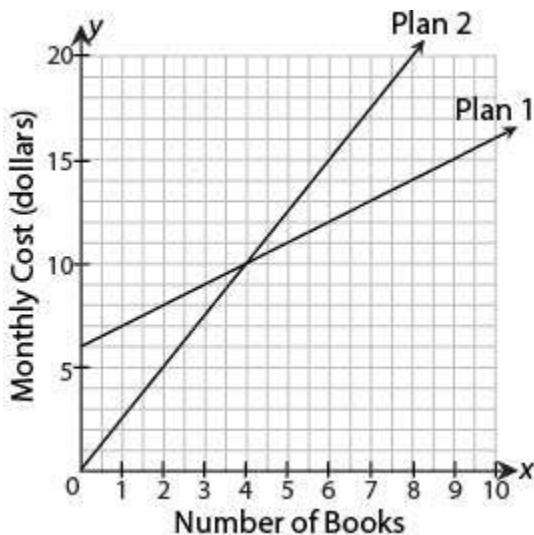
MGSE9-12.A.REI.11

Directions: Answer the following question(s).

23 Pat is choosing between two different plans to buy electronic books for her tablet.

- Plan 1 costs \$6 per month plus an additional \$1 per book.
- Plan 2 has no monthly fee but each book costs \$2.50.

The system of equations graphed on the coordinate plane below shows the total monthly cost, y , for each plan, based on the number of books, x , Pat buys in one month.



Which of these statements are true? Choose all that are correct.

- The costs of both plans are the same if Pat purchases 10 books a month.
- The costs of both plans are the same if Pat purchases 4 books a month.
- Solving the equation $6 + y = 2.5y$ will give the total cost when the two plans cost the same.
- The intersection of the lines $f(y) = 6 + y$ and $g(y) = 2.5y$ represents the number of books when the costs for the two plans are equal.
- The intersection of the lines $f(x) = 6 + x$ and $g(x) = 2.5x$ represents the number of books when the costs for the two plans are equal.
- Solving the equation $6 + x = 2.5x$ will give the x -coordinate for the point of intersection of the two lines on the graph.

Directions: Answer the following question(s).

Master ID: 2115291 Revision: 2

Correct: BEF

Rationale:

- A. This is the incorrect result of using the y -coordinate of the point of intersection as the number of books, when it is actually the cost of the plan.
- B. This is correct because the two lines intersect when the number of books is 4. It is also the solution to the equation $6 + x = 2.5x$.
- C. This answer is incorrect, since it uses y instead of x for the equations.
- D. This answer is incorrect, since it uses y instead of x for the equations.
- E. The intersection of the two lines is the point where the two equations are equal.
- F. The equation on the left hand side is the cost of Plan 1; the equation on the right hand side is the cost of Plan 2. Setting the two equal will give the number of books purchased for which the cost of the two plans is equal. This is the same as the x -coordinate of the point of intersection of the two lines on the graph.

Rubric: 1 Point(s)

Standards:

MGSE9-12.A.REI.11

24 The relationship between x - and y -values can be defined, in some cases, by a function. Which set of x - and y -coordinate pairs is NOT a function?

- A. $(0, 0), (1, 1), (1, -1), (2, 4), (2, -4)$
- B. $(0, 0), (5, 15), (6, 18), (7, 21), (10, 30)$
- C. $(-2, 4), (2, 4), (-1, 1), (1, 1), (0, 0)$
- D. $(-2, -2), (-1, -2), (0, -2), (1, -2), (2, -2)$

Master ID: 1819374 Revision: 4

Correct: A

Rationale:

- A. There must be only one output value for each input value for the relationship to be a function. Since $(1, 1)$ and $(1, -1)$ represent two outputs for the same input, this set is not a function.
- B. This shows missing coordinate pairs (e.g., no coordinate pair for $x = 1$) that may be assumed to make the relationship one that can't be represented by a function.
- C. This shows coordinate pairs with some common output values. But, there is still only one output value for each input value which meets the requirement for the points to be represented by a function.
- D. This includes coordinate pairs with the same output value, which is assumed to show a relationship that can't be represented by a function. But, there is still only one output value for each input value.

Rubric: 1 Point(s)

Standards:

MGSE9-12.F.IF.1

Directions: Answer the following question(s).

25 **TEACHER READS:**

Read the question to yourself and select the best answer.

If $f(x) = 4x - 11$, what is the value of $f(5)$?

- A. $20x - 55$
- B. 34
- C. 9
- D. 4

Master ID: 3270255 Revision: 1

Correct: C

Rationale:

- A. Student(s) may have mistakenly thought they should multiply the expression by 5.
- B. Student(s) may have interpreted $f(5)$ to mean change $4x$ to 45 (instead of the product of 4 and 5).
- C. Correct answer
- D. Student(s) may have misinterpreted the problem to be asking what value of x would solve $5 = 4x - 11$

Rubric: 1 Point(s)

Standards:

MGSE9-12.F.IF.2

Directions: Answer the following question(s).

26 Which function models the sequence $-5, -7, -9, -11, \dots$?

- A. $g(x) = -2x - 3$
- B. $g(x) = -3x - 2$
- C. $g(x) = -4x - 1$
- D. $g(x) = -5x - 2$

Master ID: 308898 Revision: 4

Correct: A

Rationale:

- A. The difference between the terms of the sequence is -2 . The function is linear, and the coefficient of x is -2 . The function generates the terms of the sequence when $x = 1, 2, 3, 4$, and so on.
- B. This function resembles the correct function, which has the numbers -2 and -3 , and it generates the first term of the sequence. The difference between the terms is -2 , however, which means -2 should be the coefficient in the function, not the constant.
- C. This function generates the first term, and the numbers add to -5 , but this function does not generate the sequence.
- D. The coefficient of this function (-5) matches the first term, and the sum of numbers in the function is -7 , but this function does not generate the sequence.

Rubric: 1 Point(s)

Standards:

MGSE9-12.F.BF.2

Directions: Answer the following question(s).

27 A Law Firm charges \$1,200 for an initial consultation and then \$180 per hour of work. Which expression can be used to determine the cost of hiring the firm for h hours of work?

- A. $1200 + 180h$
- B. $1200h + 180$
- C. $1380h$
- D. $180h - 1200$

Master ID: 308850 Revision: 4

Correct: A

Rationale:

- A. This expression gives the initial consultation fee (\$1200) plus the hourly rate (\$180) times the number of hours worked.
- B. This expression is based on the assumption that the hourly rate is \$1200 instead of \$180.
- C. This expression adds the two values (\$1200 and \$180) and uses this sum as the hourly rate.
- D. This expression includes the correct term for the cost for hours of work but assumes that the total cost for hiring the firm does not include the cost for the initial consultation.

Rubric: 1 Point(s)