

Question ID dcce85c2

Assessment	Test	Domain	Skill	Difficulty
PSAT/NMSQT & PSAT 10	Math	Algebra	Linear equations in two variables	<div><div></div><div></div><div></div></div>

ID: dcce85c2

What is the y-coordinate of the y-intercept of the graph of $\frac{3x}{7} = -\frac{5y}{9} + 21$ in the xy-plane?

ID: dcce85c2 Answer

Correct Answer: 189/5, 37.8

Rationale

The correct answer is $\frac{189}{5}$. A y-intercept of a graph in the xy-plane is a point where the graph intersects the y-axis, which is a point with an x-coordinate of 0. Substituting 0 for x in the given equation yields $\frac{30}{7} = -\frac{5y}{9} + 21$, or $0 = -\frac{5y}{9} + 21$. Subtracting 21 from both sides of this equation yields $-21 = -\frac{5y}{9}$. Multiplying both sides of this equation by -9 yields $189 = 5y$. Dividing both sides of this equation by 5 yields $\frac{189}{5} = y$. Therefore, the y-coordinate of the y-intercept of the graph of the given equation in the xy-plane is $\frac{189}{5}$. Note that 189/5 and 37.8 are examples of ways to enter a correct answer.

Question Difficulty: Hard

Question ID 2226c9a5

Assessment	Test	Domain	Skill	Difficulty
PSAT/NMSQT & PSAT 10	Math	Algebra	Linear equations in two variables	<div><div></div><div></div><div></div></div>

ID: 2226c9a5

Line p is defined by $2y + 18x = 9$. Line r is perpendicular to line p in the xy -plane. What is the slope of line r ?

- A. -9
- B. $-\frac{1}{9}$
- C. $\frac{1}{9}$
- D. 9

ID: 2226c9a5 Answer

Correct Answer: C

Rationale

Choice C is correct. It's given that line r is perpendicular to line p in the xy -plane. This means that the slope of line r is the negative reciprocal of the slope of line p . If the equation for line p is rewritten in slope-intercept form $y = mx + b$, where m and b are constants, then m is the slope of the line and b is its y -intercept. Subtracting $18x$ from both sides of the equation $2y + 18x = 9$ yields $2y = -18x + 9$. Dividing both sides of this equation by 2 yields $y = -9x + \frac{9}{2}$. It follows that the slope of line p is -9 . The negative reciprocal of a number is -1 divided by the number. Therefore, the negative reciprocal of -9 is $\frac{-1}{-9}$, or $\frac{1}{9}$. Thus, the slope of line r is $\frac{1}{9}$.

Choice A is incorrect. This is the slope of line p , not line r .

Choice B is incorrect. This is the reciprocal, not the negative reciprocal, of the slope of line p .

Choice D is incorrect. This is the negative, not the negative reciprocal, of the slope of line p .

Question Difficulty: Hard

Question ID 772b3070

Assessment	Test	Domain	Skill	Difficulty
PSAT/NMSQT & PSAT 10	Math	Algebra	Linear equations in two variables	<div><div></div><div></div><div></div></div>

ID: 772b3070

Line k is defined by $y = 7x + \frac{1}{8}$. Line j is perpendicular to line k in the xy -plane. What is the slope of line j ?

- A. -8
- B. $-\frac{1}{7}$
- C. $\frac{1}{8}$
- D. 7

ID: 772b3070 Answer

Correct Answer: B

Rationale

Choice B is correct. It's given that line k is defined by $y = 7x + \frac{1}{8}$. For an equation in slope-intercept form $y = mx + b$, m represents the slope of the line defined by this equation in the xy -plane and b represents the y -coordinate of the y -intercept of this line. Therefore, the slope of line k is 7. It's also given that line j is perpendicular to line k in the xy -plane. Therefore, the slope of line j is the opposite reciprocal of the slope of line k . The opposite reciprocal of 7 is $-\frac{1}{7}$. Therefore, the slope of line j is $-\frac{1}{7}$.

Choice A is incorrect. This is the opposite reciprocal of the y -coordinate of the y -intercept, not the slope, of line k .

Choice C is incorrect. This is the y -coordinate of the y -intercept of line k , not the slope of line j .

Choice D is incorrect. This is the slope of a line that is parallel, not perpendicular, to line k .

Question Difficulty: Hard

Question ID 6d1cc26a

Assessment	Test	Domain	Skill	Difficulty
PSAT/NMSQT & PSAT 10	Math	Algebra	Linear equations in two variables	<div><div></div><div></div><div></div></div>

ID: 6d1cc26a

Line h is defined by $\frac{1}{5}x + \frac{1}{7}y - 70 = 0$. Line j is perpendicular to line h in the xy -plane. What is the slope of line j ?

- A. $-\frac{7}{5}$
- B. $-\frac{5}{7}$
- C. $\frac{7}{5}$
- D. $\frac{5}{7}$

ID: 6d1cc26a Answer

Correct Answer: D

Rationale

Choice D is correct. It's given that line h is defined by $\frac{1}{5}x + \frac{1}{7}y - 70 = 0$. This equation can be written in slope-intercept form $y = mx + b$, where m is the slope of line h and b is the y -coordinate of the y -intercept of line h . Adding 70 to both sides of $\frac{1}{5}x + \frac{1}{7}y - 70 = 0$ yields $\frac{1}{5}x + \frac{1}{7}y = 70$. Subtracting $\frac{1}{5}x$ from both sides of this equation yields $\frac{1}{7}y = -\frac{1}{5}x + 70$. Multiplying both sides of this equation by 7 yields $y = -\frac{7}{5}x + 490$. Therefore, the slope of line h is $-\frac{7}{5}$. It's given that line j is perpendicular to line h in the xy -plane. Two lines are perpendicular if their slopes are negative reciprocals, meaning that the slope of the first line is equal to -1 divided by the slope of the second line. Therefore, the slope of line j is the negative reciprocal of the slope of line h . The negative reciprocal of $-\frac{7}{5}$ is $\frac{-1}{-\frac{7}{5}}$, or $\frac{5}{7}$. Therefore, the slope of line j is $\frac{5}{7}$.

Choice A is incorrect. This is the slope of a line in the xy -plane that is parallel, not perpendicular, to line h .

Choice B is incorrect. This is the reciprocal, not the negative reciprocal, of $-\frac{7}{5}$.

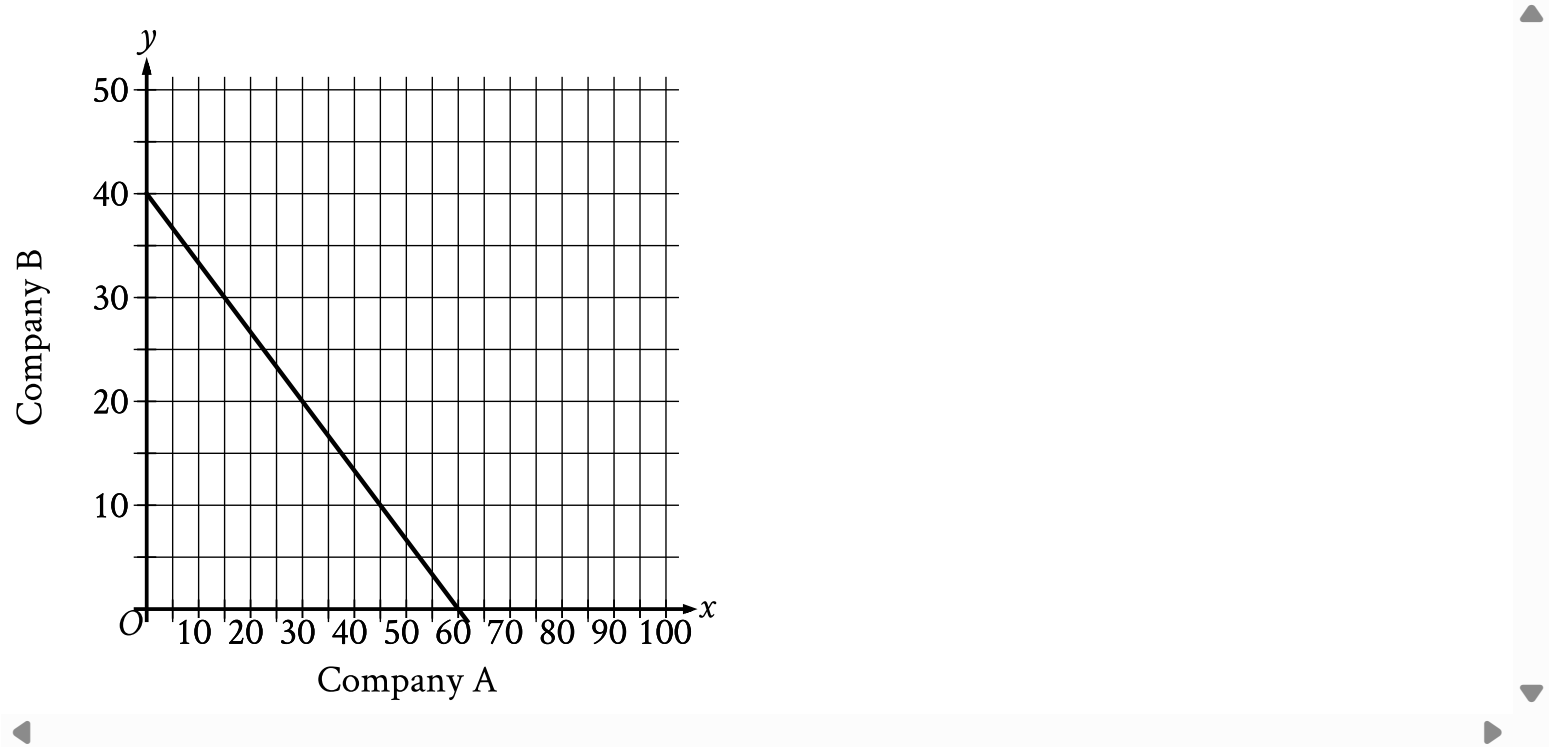
Choice C is incorrect. This is the negative, not the negative reciprocal, of $-\frac{7}{5}$.

Question Difficulty: Hard

Question ID 75dc50c6

Assessment	Test	Domain	Skill	Difficulty
PSAT/NMSQT & PSAT 10	Math	Algebra	Linear equations in two variables	<div><div></div><div></div><div></div></div>

ID: 75dc50c6



The graph shows the relationship between the number of shares of stock from Company A, x , and the number of shares of stock from Company B, y , that Simone can purchase. Which equation could represent this relationship?

- A. $y = 8x + 12$
- B. $8x + 12y = 480$
- C. $y = 12x + 8$
- D. $12x + 8y = 480$

ID: 75dc50c6 Answer

Correct Answer: B

Rationale

Choice B is correct. The graph shown is a line passing through the points 0, 40 and 60, 0. Since the relationship between x and y is linear, if two points on the graph make a linear equation true, then the equation represents the relationship. Substituting 0 for x and 40 for y in the equation in choice B, $8x + 12y = 480$, yields $80 + 1240 = 480$, or $480 = 480$, which is true. Substituting 60 for x and 0 for y in the equation $8x + 12y = 480$ yields $860 + 120 = 480$, or $480 = 480$, which is true. Therefore, the equation $8x + 12y = 480$ represents the relationship between x and y .

Choice A is incorrect. The point 0, 40 is not on the graph of this equation, since $40 = 80 + 12$, or $40 = 12$, is not true.

Choice C is incorrect. The point $(0, 40)$ is not on the graph of this equation, since $40 = 120 + 8$, or $40 = 8$, is not true.

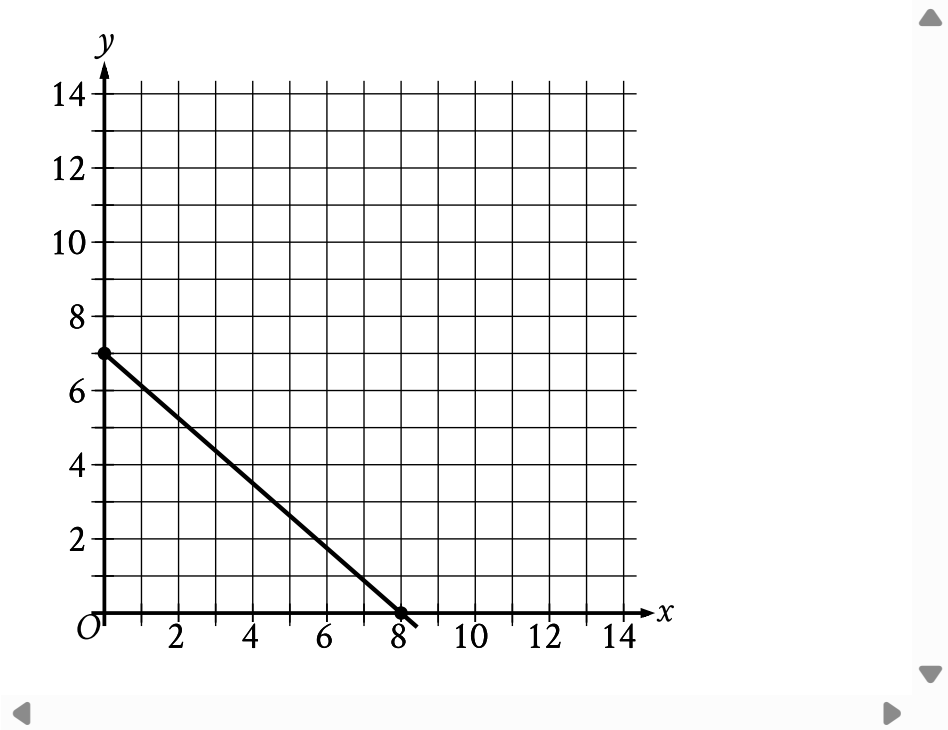
Choice D is incorrect. The point $(0, 40)$ is not on the graph of this equation, since $120 + 8(40) = 480$, or $320 = 480$, is not true.

Question Difficulty: Hard

Question ID 0989eea4

Assessment	Test	Domain	Skill	Difficulty
PSAT/NMSQT & PSAT 10	Math	Algebra	Linear equations in two variables	<div><div></div><div></div><div></div></div>

ID: 0989eea4



The point with coordinates $(d, 4)$ lies on the line shown. What is the value of d ?

- A. $\frac{7}{2}$
- B. $\frac{26}{7}$
- C. $\frac{24}{7}$
- D. $\frac{27}{8}$

ID: 0989eea4 Answer

Correct Answer: C

Rationale

Choice C is correct. It's given from the graph that the points $0, 7$ and $8, 0$ lie on the line. For two points on a line, x_1, y_1 and x_2, y_2 , the slope of the line can be calculated using the slope formula $m = \frac{y_2 - y_1}{x_2 - x_1}$. Substituting $0, 7$ for x_1, y_1 and $8, 0$ for x_2, y_2 in this formula, the slope of the line can be calculated as $m = \frac{0 - 7}{8 - 0}$, or $m = -\frac{7}{8}$. It's also given that the point $d, 4$ lies on the line. Substituting $d, 4$ for x_1, y_1 , $8, 0$ for x_2, y_2 , and $-\frac{7}{8}$ for m in the slope formula yields $-\frac{7}{8} = \frac{0 - 4}{8 - d}$, or $-\frac{7}{8} = \frac{-4}{8 - d}$. Multiplying both sides of this equation by $8 - d$ yields $-\frac{7}{8}(8 - d) = -4$. Expanding the left-hand side of this equation yields $-7 + \frac{7}{8}d = -4$. Adding 7 to both sides of this equation yields $\frac{7}{8}d = 3$. Multiplying both sides of this equation by $\frac{8}{7}$ yields $d = \frac{24}{7}$. Thus, the value of d is $\frac{24}{7}$.

Choice A is incorrect. This is the value of y when $x = 4$.

Choice B is incorrect and may result from conceptual or calculation errors.

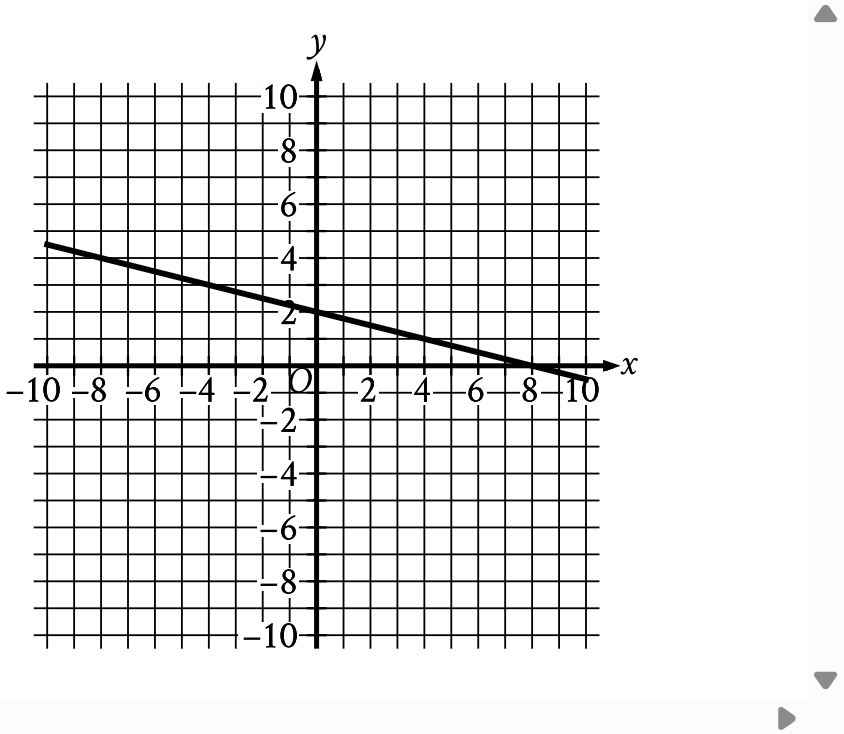
Choice D is incorrect and may result from conceptual or calculation errors.

Question Difficulty: Hard

Question ID 4522c150

Assessment	Test	Domain	Skill	Difficulty
PSAT/NMSQT & PSAT 10	Math	Algebra	Linear equations in two variables	<div></div> <div></div> <div></div>

ID: 4522c150



The graph of $y = f(x) + 14$ is shown. Which equation defines function f ?

- A. $f(x) = -\frac{1}{4}x - 12$
- B. $f(x) = -\frac{1}{4}x + 16$
- C. $f(x) = -\frac{1}{4}x + 2$
- D. $f(x) = -\frac{1}{4}x - 14$

ID: 4522c150 Answer

Correct Answer: A

Rationale

Choice A is correct. An equation for the graph shown can be written in slope-intercept form $y = mx + b$, where m is the slope of the graph and its y -intercept is $0, b$. Since the y -intercept of the graph shown is $0, 2$, the value of b is 2 . Since the graph also passes through the point $4, 1$, the slope can be calculated as $\frac{1-2}{4-0}$, or $-\frac{1}{4}$. Therefore, the value of m is $-\frac{1}{4}$. Substituting $-\frac{1}{4}$ for m and 2 for b in the equation $y = mx + b$ yields $y = -\frac{1}{4}x + 2$. It's given that an equation for the graph shown is $y = f(x) + 14$. Substituting $f(x) + 14$ for y in the equation $y = -\frac{1}{4}x + 2$ yields $f(x) + 14 = -\frac{1}{4}x + 2$. Subtracting 14 from both sides of this equation yields $f(x) = -\frac{1}{4}x - 12$.

Choice B is incorrect and may result from conceptual or calculation errors.

Choice C is incorrect and may result from conceptual or calculation errors.

Choice D is incorrect and may result from conceptual or calculation errors.

Question Difficulty: Hard

Question ID 1ac409af

Assessment	Test	Domain	Skill	Difficulty
PSAT/NMSQT & PSAT 10	Math	Algebra	Linear equations in two variables	<div><div></div><div></div><div></div></div>

ID: 1ac409af

A neighborhood consists of a **2**-hectare park and a **35**-hectare residential area. The total number of trees in the neighborhood is **3,934**. The equation $2x + 35y = 3,934$ represents this situation. Which of the following is the best interpretation of x in this context?

- A. The average number of trees per hectare in the park
- B. The average number of trees per hectare in the residential area
- C. The total number of trees in the park
- D. The total number of trees in the residential area

ID: 1ac409af Answer

Correct Answer: A

Rationale

Choice A is correct. It's given that a neighborhood consists of a 2-hectare park and a 35-hectare residential area and that the total number of trees in the neighborhood is 3,934. It's also given that the equation $2x + 35y = 3,934$ represents this situation. Since the total number of trees for a given area can be determined by taking the number of hectares times the average number of trees per hectare, this must mean that the terms $2x$ and $35y$ correspond to the number of trees in the park and in the residential area, respectively. Since $2x$ corresponds to the number of trees in the park, and 2 is the size of the park, in hectares, x must represent the average number of trees per hectare in the park.

Choice B is incorrect and may result from conceptual errors.

Choice C is incorrect and may result from conceptual errors.

Choice D is incorrect and may result from conceptual errors.

Question Difficulty: Hard

Question ID eae227e1

Assessment	Test	Domain	Skill	Difficulty
PSAT/NMSQT & PSAT 10	Math	Algebra	Linear equations in two variables	<div><div></div><div></div><div></div></div>

ID: eae227e1

In the xy -plane, line ℓ passes through the point $(0, 0)$ and is parallel to the line represented by the equation $y = 8x + 2$. If line ℓ also passes through the point $(3, d)$, what is the value of d ?

ID: eae227e1 Answer

Correct Answer: 24

Rationale

The correct answer is 24. A line in the xy -plane can be defined by the equation $y = mx + b$, where m is the slope of the line and b is the y -coordinate of the y -intercept of the line. It's given that line l passes through the point $0, 0$. Therefore, the y -coordinate of the y -intercept of line l is 0. It's given that line l is parallel to the line represented by the equation $y = 8x + 2$. Since parallel lines have the same slope, it follows that the slope of line l is 8. Therefore, line l can be defined by an equation in the form $y = mx + b$, where $m = 8$ and $b = 0$. Substituting 8 for m and 0 for b in $y = mx + b$ yields the equation $y = 8x + 0$, or $y = 8x$. If line l passes through the point $3, d$, then when $x = 3$, $y = d$ for the equation $y = 8x$. Substituting 3 for x and d for y in the equation $y = 8x$ yields $d = 8(3)$, or $d = 24$.

Question Difficulty: Hard

Question ID 9e86a911

Assessment	Test	Domain	Skill	Difficulty
PSAT/NMSQT & PSAT 10	Math	Algebra	Linear equations in two variables	<div><div></div><div></div><div></div></div>

ID: 9e86a911

In the xy -plane, line p has a slope of $-\frac{5}{3}$ and an x -intercept of $(-6, 0)$. What is the y -coordinate of the y -intercept of line p ?

ID: 9e86a911 Answer

Correct Answer: -10

Rationale

The correct answer is -10. A line in the xy -plane can be represented by the equation $y = mx + b$, where m is the slope of the line and b is the y -coordinate of the y -intercept. It's given that line p has a slope of $-\frac{5}{3}$. Therefore, $m = -\frac{5}{3}$. It's also given that line p has an x -intercept of $-6, 0$. Therefore, when $x = -6, y = 0$. Substituting $-\frac{5}{3}$ for m , -6 for x , and 0 for y in the equation $y = mx + b$ yields $0 = -\frac{5}{3}(-6) + b$, which is equivalent to $0 = 10 + b$. Subtracting 10 from both sides of this equation yields $-10 = b$. Therefore, the y -coordinate of the y -intercept of line p is -10 .

Question Difficulty: Hard

Question ID 114dc543

Assessment	Test	Domain	Skill	Difficulty
PSAT/NMSQT & PSAT 10	Math	Algebra	Linear equations in two variables	<div><div></div><div></div><div></div></div>

ID: 114dc543

Line p is defined by $4y + 8x = 6$. Line r is perpendicular to line p in the xy -plane. What is the slope of line r ?

ID: 114dc543 Answer

Correct Answer: .5, 1/2

Rationale

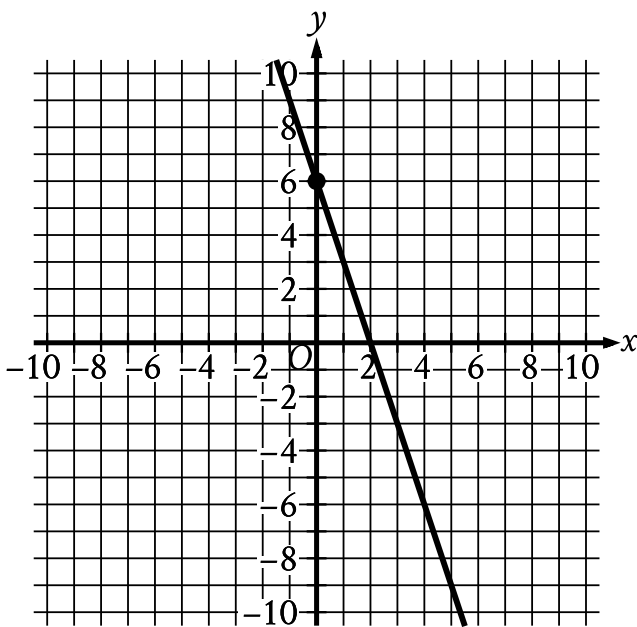
The correct answer is $\frac{1}{2}$. For an equation in slope-intercept form $y = mx + b$, m represents the slope of the line in the xy -plane defined by this equation. It's given that line p is defined by $4y + 8x = 6$. Subtracting $8x$ from both sides of this equation yields $4y = -8x + 6$. Dividing both sides of this equation by 4 yields $y = -\frac{8}{4}x + \frac{6}{4}$, or $y = -2x + \frac{3}{2}$. Thus, the slope of line p is -2. If line r is perpendicular to line p , then the slope of line r is the negative reciprocal of the slope of line p . The negative reciprocal of -2 is $-\frac{1}{-2} = \frac{1}{2}$. Note that 1/2 and .5 are examples of ways to enter a correct answer.

Question Difficulty: Hard

Question ID 173484b2

Assessment	Test	Domain	Skill	Difficulty
PSAT/NMSQT & PSAT 10	Math	Algebra	Linear equations in two variables	<div><div></div><div></div><div></div></div>

ID: 173484b2



The graph shows a linear relationship between x and y . Which equation represents this relationship, where R is a positive constant?

- A. $Rx + 18y = 36$
- B. $Rx - 18y = -36$
- C. $18x + Ry = 36$
- D. $18x - Ry = -36$

ID: 173484b2 Answer

Correct Answer: C

Rationale

Choice C is correct. The equation representing the linear relationship shown can be written in slope-intercept form $y = mx + b$, where m is the slope and b is the y -intercept of the line. The line shown passes through the points $(0, 6)$ and $(2, 0)$. Given two points on a line, x_1, y_1 and x_2, y_2 , the slope of the line can be calculated using the equation $m = \frac{y_2 - y_1}{x_2 - x_1}$. Substituting $(0, 6)$ and $(2, 0)$ for x_1, y_1 and x_2, y_2 , respectively, in this equation yields $m = \frac{0 - 6}{2 - 0}$, which is equivalent to $m = -\frac{6}{2}$, or $m = -3$. Since $(0, 6)$ is the y -intercept, it follows that $b = 6$. Substituting -3 for m and 6 for b in the equation $y = mx + b$ yields $y = -3x + 6$. Adding $3x$ to both sides of this equation yields $3x + y = 6$. Multiplying this equation by 6 yields $18x + 6y = 36$. It follows that the equation $18x + Ry = 36$, where R is a positive constant, represents this relationship.

Choice A is incorrect. The graph of this relationship passes through the point 0, 2, not 0, 6.

Choice B is incorrect. The graph of this relationship passes through the point 0, 2, not 0, 6.

Choice D is incorrect. The graph of this relationship passes through the point -2, 0, not 2, 0.

Question Difficulty: Hard

Question ID 7c69b87f

Assessment	Test	Domain	Skill	Difficulty
PSAT/NMSQT & PSAT 10	Math	Algebra	Linear equations in two variables	<div><div></div><div></div><div></div></div>

ID: 7c69b87f

What is the slope of the graph of $y = \frac{1}{4}(27x + 15) + 7x$ in the xy -plane?

ID: 7c69b87f Answer

Correct Answer: 13.75, 55/4

Rationale

The correct answer is $\frac{55}{4}$. In the xy -plane, the graph of an equation in the form $y = mx + b$, where m and b are constants, has a slope of m and a y -intercept of $0, b$. Applying the distributive property to the right-hand side of the given equation yields $y = \frac{27}{4}x + \frac{15}{4} + 7x$. Combining like terms yields $y = \frac{55}{4}x + \frac{15}{4}$. This equation is in the form $y = mx + b$, where $m = \frac{55}{4}$ and $b = \frac{15}{4}$. It follows that the slope of the graph of $y = \frac{1}{4}27x + 15 + 7x$ in the xy -plane is $\frac{55}{4}$. Note that 55/4 and 13.75 are examples of ways to enter a correct answer.

Question Difficulty: Hard

Question ID be1cb6f1

Assessment	Test	Domain	Skill	Difficulty
PSAT/NMSQT & PSAT 10	Math	Algebra	Linear equations in two variables	<div><div></div><div></div><div></div></div>

ID: be1cb6f1

x	y
-6	$n + 184$
-3	$n + 92$
0	n

The table shows three values of x and their corresponding values of y , where n is a constant, for the linear relationship between x and y . What is the slope of the line that represents this relationship in the xy -plane?

- A. $-\frac{92}{3}$
- B. $-\frac{3}{92}$
- C. $\frac{n+92}{-3}$
- D. $\frac{2n-92}{3}$

ID: be1cb6f1 Answer

Correct Answer: A

Rationale

Choice A is correct. The slope, m , of a line in the xy -plane can be found using two points on the line, x_1, y_1 and x_2, y_2 , and the slope formula $m = \frac{y_2 - y_1}{x_2 - x_1}$. Based on the given table, the line representing the relationship between x and y in the xy -plane passes through the points $-6, n + 184$, $-3, n + 92$, and $0, n$, where n is a constant. Substituting two of these points, $-3, n + 92$ and $0, n$, for x_1, y_1 and x_2, y_2 , respectively, in the slope formula yields $m = \frac{n - n + 92}{0 - -3}$, which is equivalent to $m = \frac{n - n - 92}{0 + 3}$, or $m = -\frac{92}{3}$. Therefore, the slope of the line that represents this relationship in the xy -plane is $-\frac{92}{3}$.

Choice B is incorrect and may result from conceptual or calculation errors.

Choice C is incorrect and may result from conceptual or calculation errors.

Choice D is incorrect and may result from conceptual or calculation errors.

Question Difficulty: Hard

Question ID e0bf6e4e

Assessment	Test	Domain	Skill	Difficulty
PSAT/NMSQT & PSAT 10	Math	Algebra	Linear equations in two variables	<div><div></div><div></div><div></div></div>

ID: e0bf6e4e

What is the slope of the graph of $y = \frac{1}{3}(29x + 10) + 5x$ in the xy -plane?

ID: e0bf6e4e Answer

Correct Answer: 14.66, 14.67, 44/3

Rationale

The correct answer is $\frac{44}{3}$. A linear equation can be written in the form $y = mx + b$, where m is the slope of the graph of the equation in the xy -plane and b is the y -intercept. Distributing the $\frac{1}{3}$ in the equation $y = \frac{1}{3}29x + 10 + 5x$ yields $y = \frac{29}{3}x + \frac{10}{3} + 5x$. Combining like terms on the right-hand side of this equation yields $y = \frac{44}{3}x + \frac{10}{3}$. This equation is in the form $y = mx + b$, where $m = \frac{44}{3}$ and $b = \frac{10}{3}$. Therefore, the slope of the graph of the given equation in the xy -plane is $\frac{44}{3}$. Note that 44/3, 14.66, and 14.67 are examples of ways to enter a correct answer.

Question Difficulty: Hard

Question ID 31499031

Assessment	Test	Domain	Skill	Difficulty
PSAT/NMSQT & PSAT 10	Math	Algebra	Linear equations in two variables	<div><div></div><div></div><div></div></div>

ID: 31499031

$$5G + 45R = 380$$

At a school fair, students can win colored tokens that are worth a different number of points depending on the color. One student won G green tokens and R red tokens worth a total of 380 points. The given equation represents this situation. How many more points is a red token worth than a green token?

ID: 31499031 Answer

Correct Answer: 40

Rationale

The correct answer is 40. It's given that $5G + 45R = 380$, where G is the number of green tokens and R is the number of red tokens won by one student and these tokens are worth a total of 380 points. Since the equation represents the situation where the student won points with green tokens and red tokens for a total of 380 points, each term on the left-hand side of the equation represents the number of points won for one of the colors. Since the coefficient of G in the given equation is 5, a green token must be worth 5 points. Similarly, since the coefficient of R in the given equation is 45, a red token must be worth 45 points. Therefore, a red token is worth $45 - 5$ points, or 40 points, more than a green token.

Question Difficulty: Hard

Question ID 68b9bd32

Assessment	Test	Domain	Skill	Difficulty
PSAT/NMSQT & PSAT 10	Math	Algebra	Linear equations in two variables	<div><div></div><div></div><div></div></div>

ID: 68b9bd32

Line k is defined by $y = -\frac{17}{3}x + 5$. Line j is perpendicular to line k in the xy -plane. What is the slope of line j ?

ID: 68b9bd32 Answer

Correct Answer: .1764, .1765, 3/17

Rationale

The correct answer is $\frac{3}{17}$. It's given that line j is perpendicular to line k in the xy -plane. This means that the slope of line j is the negative reciprocal of the slope of line k . The equation of line k , $y = -\frac{17}{3}x + 5$, is written in slope-intercept form $y = mx + b$, where m is the slope of the line and b is the y -coordinate of the y -intercept of the line. It follows that the slope of line k is $-\frac{17}{3}$. The negative reciprocal of a number is -1 divided by the number. Therefore, the negative reciprocal of $-\frac{17}{3}$ is $\frac{-1}{-\frac{17}{3}}$, or $\frac{3}{17}$. Thus, the slope of line j is $\frac{3}{17}$. Note that 3/17, .1764, .1765, and 0.176 are examples of ways to enter a correct answer.

Question Difficulty: Hard

Question ID 3617a434

Assessment	Test	Domain	Skill	Difficulty
PSAT/NMSQT & PSAT 10	Math	Algebra	Linear equations in two variables	<div><div></div><div></div><div></div></div>

ID: 3617a434

$5x + 7y = 1$

$ax + by = 1$

In the given pair of equations, a and b are constants. The graph of this pair of equations in the xy -plane is a pair of perpendicular lines. Which of the following pairs of equations also represents a pair of perpendicular lines?

- A. $10x + 7y = 1$
 $ax - 2by = 1$
- B. $10x + 7y = 1$
 $ax + 2by = 1$
- C. $10x + 7y = 1$
 $2ax + by = 1$
- D. $5x - 7y = 1$
 $ax + by = 1$

ID: 3617a434 Answer

Correct Answer: B

Rationale

Choice B is correct. Two lines are perpendicular if their slopes are negative reciprocals, meaning that the slope of the first line is equal to -1 divided by the slope of the second line. Each equation in the given pair of equations can be written in slope-intercept form, $y = mx + b$, where m is the slope of the graph of the equation in the xy -plane and $0, b$ is the y -intercept. For the first equation, $5x + 7y = 1$, subtracting $5x$ from both sides gives $7y = -5x + 1$, and dividing both sides of this equation by 7 gives $y = -\frac{5}{7}x + \frac{1}{7}$. Therefore, the slope of the graph of this equation is $-\frac{5}{7}$. For the second equation, $ax + by = 1$, subtracting ax from both sides gives $by = -ax + 1$, and dividing both sides of this equation by b gives $y = -\frac{a}{b}x + \frac{1}{b}$. Therefore, the slope of the graph of this equation is $-\frac{a}{b}$. Since the graph of the given pair of equations is a pair of perpendicular lines, the slope of the graph of the second equation, $-\frac{a}{b}$, must be the negative reciprocal of the slope of the graph of the first equation, $-\frac{5}{7}$. The negative reciprocal of $-\frac{5}{7}$ is $\frac{7}{5}$, or $\frac{7}{5}$. Therefore, $-\frac{a}{b} = \frac{7}{5}$, or $\frac{a}{b} = -\frac{7}{5}$. Similarly, rewriting the equations in choice B in slope-intercept form yields $y = -\frac{10}{7}x + \frac{1}{7}$ and $y = -\frac{a}{2b}x + \frac{1}{2b}$. It follows that the slope of the graph of the first equation in choice B is $-\frac{10}{7}$ and the slope of the graph of the second equation in choice B is $-\frac{a}{2b}$. Since $\frac{a}{b} = -\frac{7}{5}$, $-\frac{a}{2b}$ is equal to $\frac{7}{10}$, or $\frac{7}{10}$. Since $\frac{7}{10}$ is the negative reciprocal of $-\frac{10}{7}$, the pair of equations in choice B represents a pair of perpendicular lines.

Choice A is incorrect and may result from conceptual or calculation errors.

Choice C is incorrect and may result from conceptual or calculation errors.

Choice D is incorrect and may result from conceptual or calculation errors.

Question Difficulty: Hard

Question ID 73807c8b

Assessment	Test	Domain	Skill	Difficulty
PSAT/NMSQT & PSAT 10	Math	Algebra	Linear equations in two variables	<div><div></div><div></div><div></div></div>

ID: 73807c8b

Keenan made **32** cups of vegetable broth. Keenan then filled x small jars and y large jars with all the vegetable broth he made. The equation $3x + 5y = 32$ represents this situation. Which is the best interpretation of $5y$ in this context?

- A. The number of large jars Keenan filled
- B. The number of small jars Keenan filled
- C. The total number of cups of vegetable broth in the large jars
- D. The total number of cups of vegetable broth in the small jars

ID: 73807c8b Answer

Correct Answer: C

Rationale

Choice C is correct. It’s given that the equation $3x + 5y = 32$ represents the situation where Keenan filled x small jars and y large jars with all the vegetable broth he made, which was 32 cups. Therefore, $3x$ represents the total number of cups of vegetable broth in the small jars and $5y$ represents the total number of cups of vegetable broth in the large jars.

Choice A is incorrect. The number of large jars Keenan filled is represented by y , not $5y$.

Choice B is incorrect. The number of small jars Keenan filled is represented by x , not $5y$.

Choice D is incorrect. The total number of cups of vegetable broth in the small jars is represented by $3x$, not $5y$.

Question Difficulty: Hard

Question ID abb3d9cc

Assessment	Test	Domain	Skill	Difficulty
PSAT/NMSQT & PSAT 10	Math	Algebra	Linear equations in two variables	<div><div></div><div></div><div></div></div>

ID: abb3d9cc

When line n is graphed in the xy -plane, it has an x -intercept of $(-4, 0)$ and a y -intercept of $(0, \frac{86}{3})$. What is the slope of line n ?

- A. $\frac{3}{344}$
- B. $\frac{6}{43}$
- C. $\frac{43}{6}$
- D. $\frac{344}{3}$

ID: abb3d9cc Answer

Correct Answer: C

Rationale

Choice C is correct. It's given that when line n is graphed in the xy -plane, it has an x -intercept of $-4, 0$ and a y -intercept of $0, \frac{86}{3}$. The slope, m , of a line can be found using any two points on the line, x_1, y_1 and x_2, y_2 , and the slope formula $m = \frac{y_2 - y_1}{x_2 - x_1}$. Substituting the points $-4, 0$ and $0, \frac{86}{3}$ for x_1, y_1 and x_2, y_2 , respectively, in the slope formula yields $m = \frac{\frac{86}{3} - 0}{0 - -4}$, or $m = \frac{43}{6}$. Therefore, the slope of line n is $\frac{43}{6}$.

Choice A is incorrect and may result from conceptual or calculation errors.

Choice B is incorrect. This is the slope of a line that has an x -intercept of $\frac{86}{3}, 0$ and a y -intercept of $0, -4$.

Choice D is incorrect and may result from conceptual or calculation errors.

Question Difficulty: Hard

Question ID 311bf2f1

Assessment	Test	Domain	Skill	Difficulty
PSAT/NMSQT & PSAT 10	Math	Algebra	Linear equations in two variables	<div><div></div><div></div><div></div></div>

ID: 311bf2f1

A certain apprentice has enrolled in **85** hours of training courses. The equation **$10x + 15y = 85$** represents this situation, where **x** is the number of on-site training courses and **y** is the number of online training courses this apprentice has enrolled in. How many more hours does each online training course take than each on-site training course?

ID: 311bf2f1 Answer

Correct Answer: 5

Rationale

The correct answer is 5. It's given that the equation $10x + 15y = 85$ represents the situation, where x is the number of on-site training courses, y is the number of online training courses, and 85 is the total number of hours of training courses the apprentice has enrolled in. Therefore, $10x$ represents the number of hours the apprentice has enrolled in on-site training courses, and $15y$ represents the number of hours the apprentice has enrolled in online training courses. Since x is the number of on-site training courses and y is the number of online training courses the apprentice has enrolled in, 10 is the number of hours each on-site course takes and 15 is the number of hours each online course takes. Subtracting these numbers gives $15 - 10$, or 5 more hours each online training course takes than each on-site training course.

Question Difficulty: Hard

Question ID 26fdb3e

Assessment	Test	Domain	Skill	Difficulty
PSAT/NMSQT & PSAT 10	Math	Algebra	Linear equations in two variables	<div><div></div><div></div><div></div></div>

ID: 26fdb3e

The graph of $7x + 2y = -31$ in the xy -plane has an x -intercept at $(a, 0)$ and a y -intercept at $(0, b)$, where a and b are constants. What is the value of $\frac{b}{a}$?

- A. $-\frac{7}{2}$
- B. $-\frac{2}{7}$
- C. $\frac{2}{7}$
- D. $\frac{7}{2}$

ID: 26fdb3e Answer

Correct Answer: D

Rationale

Choice D is correct. The x -coordinate a of the x -intercept $a, 0$ can be found by substituting 0 for y in the given equation, which gives $7x + 2(0) = -31$, or $7x = -31$. Dividing both sides of this equation by 7 yields $x = -\frac{31}{7}$. Therefore, the value of a is $-\frac{31}{7}$. The y -coordinate b of the y -intercept $0, b$ can be found by substituting 0 for x in the given equation, which gives $7(0) + 2y = -31$, or $2y = -31$. Dividing both sides of this equation by 2 yields $y = -\frac{31}{2}$. Therefore, the value of b is $-\frac{31}{2}$. It follows that the value of $\frac{b}{a}$ is $\frac{-\frac{31}{2}}{-\frac{31}{7}}$, which is equivalent to $\frac{31}{2} \cdot \frac{7}{31}$, or $\frac{7}{2}$.

Choice A is incorrect and may result from conceptual or calculation errors.

Choice B is incorrect and may result from conceptual or calculation errors.

Choice C is incorrect and may result from conceptual or calculation errors.

Question Difficulty: Hard

Question ID 609fc9a7

Assessment	Test	Domain	Skill	Difficulty
PSAT/NMSQT & PSAT 10	Math	Algebra	Linear equations in two variables	<div><div></div><div></div><div></div></div>

ID: 609fc9a7

x	y
-18	-48
7	52

The table shows two values of x and their corresponding values of y . In the xy -plane, the graph of the linear equation representing this relationship passes through the point $(\frac{1}{7}, a)$. What is the value of a ?

- A. $-\frac{4}{11}$
- B. $-\frac{4}{77}$
- C. $\frac{4}{7}$
- D. $\frac{172}{7}$

ID: 609fc9a7 Answer

Correct Answer: D

Rationale

Choice D is correct. The linear relationship between x and y can be represented by the equation $y = mx + b$, where m is the slope of the graph of this equation in the xy -plane and b is the y -coordinate of the y -intercept. The slope of a line between any two points x_1, y_1 and x_2, y_2 on the line can be calculated using the slope formula $m = \frac{y_2 - y_1}{x_2 - x_1}$. Based on the table, the graph contains the points -18, - 48 and 7, 52. Substituting -18, - 48 and 7, 52 for x_1, y_1 and x_2, y_2 , respectively, in the slope formula yields $m = \frac{52 - -48}{7 - -18}$, which is equivalent to $m = \frac{100}{25}$, or $m = 4$. Substituting 4 for m , -18 for x , and -48 for y in the equation $y = mx + b$ yields $-48 = 4(-18) + b$, or $-48 = -72 + b$. Adding 72 to both sides of this equation yields $24 = b$. Therefore, $m = 4$ and $b = 24$. Substituting 4 for m and 24 for b in the equation $y = mx + b$ yields $y = 4x + 24$. Thus, the equation $y = 4x + 24$ represents the linear relationship between x and y . It's also given that the graph of the linear equation representing this relationship in the xy -plane passes through the point $\frac{1}{7}, a$. Substituting $\frac{1}{7}$ for x and a for y in the equation $y = 4x + 24$ yields $a = 4(\frac{1}{7}) + 24$, which is equivalent to $a = \frac{4}{7} + \frac{168}{7}$, or $a = \frac{172}{7}$.

Choice A is incorrect and may result from conceptual or calculation errors.

Choice B is incorrect and may result from conceptual or calculation errors.

Choice C is incorrect and may result from conceptual or calculation errors.

Question Difficulty: Hard

Question ID 9767a58f

Assessment	Test	Domain	Skill	Difficulty
PSAT/NMSQT & PSAT 10	Math	Algebra	Linear equations in two variables	<div><div></div><div></div><div></div></div>

ID: 9767a58f

A total of **2** squares each have side length r . A total of **6** equilateral triangles each have side length t . None of these squares and triangles shares a side. The sum of the perimeters of all these squares and triangles is **210**. Which equation represents this situation?

- A. $6r + 24t = 210$
- B. $2r + 6t = 210$
- C. $8r + 18t = 210$
- D. $6r + 2t = 210$

ID: 9767a58f Answer

Correct Answer: C

Rationale

Choice C is correct. It's given that a total of 2 squares each have side length r . Therefore, each of the squares has perimeter $4r$. Since there are a total of 2 squares, the sum of the perimeters of these squares is $4r + 4r$, which is equivalent to $24r$, or $8r$. It's also given that a total of 6 equilateral triangles each have side length t . Therefore, each of the equilateral triangles has perimeter $3t$. Since there are a total of 6 equilateral triangles, the sum of the perimeters of these triangles is $3t + 3t + 3t + 3t + 3t + 3t$, which is equivalent to $63t$, or $18t$. Since the sum of the perimeters of the squares is $8r$ and the sum of the perimeters of the triangles is $18t$, the sum of the perimeters of all these squares and triangles is $8r + 18t$. It's given that the sum of the perimeters of all these squares and triangles is 210. Therefore, the equation $8r + 18t = 210$ represents this situation.

Choice A is incorrect and may result from conceptual or calculation errors.

Choice B is incorrect and may result from conceptual or calculation errors.

Choice D is incorrect and may result from conceptual or calculation errors.

Question Difficulty: Hard

Question ID 347a3050

Assessment	Test	Domain	Skill	Difficulty
PSAT/NMSQT & PSAT 10	Math	Algebra	Linear equations in two variables	<div><div></div><div></div><div></div></div>

ID: 347a3050

A line passes through the points (4, 6) and (15, 24) in the xy-plane. What is the slope of the line?

ID: 347a3050 Answer

Correct Answer: 1.636, 18/11

Rationale

The correct answer is $\frac{18}{11}$. For a line that passes through the points x_1, y_1 and x_2, y_2 in the xy-plane, the slope of the line can be calculated using the slope formula, $m = \frac{y_2 - y_1}{x_2 - x_1}$. It's given that a line passes through the points 4, 6 and 15, 24 in the xy-plane. Substituting 4, 6 for x_1, y_1 and 15, 24 for x_2, y_2 in the slope formula, $m = \frac{y_2 - y_1}{x_2 - x_1}$, yields $m = \frac{24 - 6}{15 - 4}$, or $m = \frac{18}{11}$. Therefore, the slope of the line is $\frac{18}{11}$. Note that 18/11 and 1.636 are examples of ways to enter a correct answer.

Question Difficulty: Hard

Question ID 259829c6

Assessment	Test	Domain	Skill	Difficulty
PSAT/NMSQT & PSAT 10	Math	Algebra	Linear equations in two variables	<div><div></div><div></div><div></div></div>

ID: 259829c6

$\frac{3}{5}x + \frac{3}{4}y = 7$

Which table gives three values of *x* and their corresponding values of *y* for the given equation?

A.

<i>x</i>	<i>y</i>
1	$\frac{113}{20}$
2	$\frac{101}{20}$
4	$\frac{77}{20}$

B.

<i>x</i>	<i>y</i>
1	$\frac{47}{5}$
2	$\frac{44}{5}$
4	$\frac{38}{5}$

C.

<i>x</i>	<i>y</i>
1	$\frac{148}{15}$
2	$\frac{136}{15}$
4	$\frac{112}{15}$

D.

<i>x</i>	<i>y</i>
1	$\frac{128}{15}$
2	$\frac{116}{15}$
4	$\frac{92}{15}$

ID: 259829c6 Answer

Correct Answer: D

Rationale

Choice D is correct. Each of the tables gives the same three values of x : 1, 2, and 4. Substituting 1 for x in the given equation yields $\frac{3}{5}1 + \frac{3}{4}y = 7$, or $\frac{3}{5} + \frac{3}{4}y = \frac{35}{5}$. Subtracting $\frac{3}{5}$ from both sides of this equation yields $\frac{3}{4}y = \frac{32}{5}$. Multiplying both sides of this equation by $\frac{4}{3}$ yields $y = \frac{128}{15}$. Therefore, when $x = 1$, the corresponding value of y for the given equation is $\frac{128}{15}$. Substituting 2 for x in the given equation yields $\frac{3}{5}2 + \frac{3}{4}y = 7$, or $\frac{6}{5} + \frac{3}{4}y = \frac{35}{5}$. Subtracting $\frac{6}{5}$ from both sides of this equation yields $\frac{3}{4}y = \frac{29}{5}$. Multiplying both sides of this equation by $\frac{4}{3}$ yields $y = \frac{116}{15}$. Therefore, when $x = 2$, the corresponding value of y for the given equation is $\frac{116}{15}$. Substituting 4 for x in the given equation yields $\frac{3}{5}4 + \frac{3}{4}y = 7$, or $\frac{12}{5} + \frac{3}{4}y = \frac{35}{5}$. Subtracting $\frac{12}{5}$ from both sides of this equation yields $\frac{3}{4}y = \frac{23}{5}$. Multiplying both sides of this equation by $\frac{4}{3}$ yields $y = \frac{92}{15}$. Therefore, when $x = 4$, the corresponding value of y for the given equation is $\frac{92}{15}$. The table in choice D gives x -values of 1, 2, and 4 and corresponding y -values of $\frac{128}{15}$, $\frac{116}{15}$, and $\frac{92}{15}$, respectively. Therefore, the table in choice D gives three values of x and their corresponding values of y for the given equation.

Choice A is incorrect. This table gives three values of x and their corresponding values of y for the equation $\frac{3}{5}x + \frac{3}{4} + y = 7$.

Choice B is incorrect. This table gives three values of x and their corresponding values of y for the equation $\frac{3}{5}x + y = 10$.

Choice C is incorrect. This table gives three values of x and their corresponding values of y for the equation $\frac{3}{5}x + \frac{3}{4}y = 8$.

Question Difficulty: Hard

Question ID afea4206

Assessment	Test	Domain	Skill	Difficulty
PSAT/NMSQT & PSAT 10	Math	Algebra	Linear equations in two variables	<div><div></div><div></div><div></div></div>

ID: afea4206

A store sells two different-sized containers of blueberries. The store’s sales of these blueberries totaled **896.86** dollars last month. The equation **$4.51x + 6.07y = 896.86$** represents this situation, where **x** is the number of smaller containers sold and **y** is the number of larger containers sold. According to the equation, what is the price, in dollars, of each smaller container?

ID: afea4206 Answer

Correct Answer: 4.51, 451/100

Rationale

The correct answer is 4.51. It’s given that the equation $4.51x + 6.07y = 896.86$ represents this situation, where x is the number of smaller containers sold, y is the number of larger containers sold, and 896.86 is the store’s total sales, in dollars, of blueberries last month. Therefore, $4.51x$ represents the store's sales, in dollars, of smaller containers, and $6.07y$ represents the store's sales, in dollars, of larger containers. Since x is the number of smaller containers sold, the price, in dollars, of each smaller container is 4.51.

Question Difficulty: Hard

Question ID 7b1c35e3

Assessment	Test	Domain	Skill	Difficulty
PSAT/NMSQT & PSAT 10	Math	Algebra	Linear equations in two variables	<div><div></div><div></div><div></div></div>

ID: 7b1c35e3

Figure A and figure B are both regular polygons. The sum of the perimeter of figure A and the perimeter of figure B is **63** inches. The equation **$3x + 6y = 63$** represents this situation, where **x** is the number of sides of figure A and **y** is the number of sides of figure B. Which statement is the best interpretation of **6** in this context?

- A. Each side of figure B has a length of **6** inches.
- B. The number of sides of figure B is **6**.
- C. Each side of figure A has a length of **6** inches.
- D. The number of sides of figure A is **6**.

ID: 7b1c35e3 Answer

Correct Answer: A

Rationale

Choice A is correct. It’s given that figure A and figure B (not shown) are both regular polygons and the sum of the perimeters of the two figures is 63 inches. It’s also given that x is the number of sides of figure A and y is the number of sides of figure B, and that the equation $3x + 6y = 63$ represents this situation. Thus, $3x$ and $6y$ represent the perimeters, in inches, of figure A and figure B, respectively. Since $6y$ represents the perimeter, in inches, of figure B and y is the number of sides of figure B, it follows that each side of figure B has a length of 6 inches.

Choice B is incorrect. The number of sides of figure B is y , not 6.

Choice C is incorrect. Since the perimeter, in inches, of figure A is represented by $3x$, each side of figure A has a length of 3 inches, not 6 inches.

Choice D is incorrect. The number of sides of figure A is x , not 6.

Question Difficulty: Hard

Question ID c717a869

Assessment	Test	Domain	Skill	Difficulty
PSAT/NMSQT & PSAT 10	Math	Algebra	Linear equations in two variables	<div><div></div><div></div><div></div></div>

ID: c717a869

x	y
18	130
23	160
26	178



For line h , the table shows three values of x and their corresponding values of y . Line k is the result of translating line h down 5 units in the xy -plane. What is the x -intercept of line k ?

- A. $(-\frac{26}{3}, 0)$
- B. $(-\frac{9}{2}, 0)$
- C. $(-\frac{11}{3}, 0)$
- D. $(-\frac{17}{6}, 0)$

ID: c717a869 Answer

Correct Answer: D

Rationale

Choice D is correct. The equation of line h can be written in slope-intercept form $y = mx + b$, where m is the slope of the line and b is the y -intercept of the line. It's given that line h contains the points 18, 130, 23, 160, and 26, 178. Therefore, its slope m can be found as $\frac{160 - 130}{23 - 18}$, or 6. Substituting 6 for m in the equation $y = mx + b$ yields $y = 6x + b$. Substituting 130 for y and 18 for x in this equation yields $130 = 6(18) + b$, or $130 = 108 + b$. Subtracting 108 from both sides of this equation yields $22 = b$. Substituting 22 for b in $y = 6x + b$ yields $y = 6x + 22$. Since line k is the result of translating line h down 5 units, an equation of line k is $y = 6x + 22 - 5$, or $y = 6x + 17$. Substituting 0 for y in this equation yields $0 = 6x + 17$. Solving this equation for x yields $x = -\frac{17}{6}$. Therefore, the x -intercept of line k is $(-\frac{17}{6}, 0)$.

Choice A is incorrect and may result from conceptual or calculation errors.

Choice B is incorrect and may result from conceptual or calculation errors.

Choice C is incorrect and may result from conceptual or calculation errors.

Question Difficulty: Hard

Question ID 6b5c6ffa

Assessment	Test	Domain	Skill	Difficulty
PSAT/NMSQT & PSAT 10	Math	Algebra	Linear equations in two variables	<div><div></div><div></div><div></div></div>

ID: 6b5c6ffa

x	y
k	13
$k + 7$	-15



The table gives the coordinates of two points on a line in the xy -plane. The y -intercept of the line is $(k - 5, b)$, where k and b are constants. What is the value of b ?

ID: 6b5c6ffa Answer

Correct Answer: 33

Rationale

The correct answer is 33. It's given in the table that the coordinates of two points on a line in the xy -plane are $(k, 13)$ and $(k + 7, -15)$. The y -intercept is another point on the line. The slope computed using any pair of points from the line will be the same. The slope of a line, m , between any two points, x_1, y_1 and x_2, y_2 , on the line can be calculated using the slope formula, $m = \frac{y_2 - y_1}{x_2 - x_1}$. It follows that the slope of the line with the given points from the table, $(k, 13)$ and $(k + 7, -15)$, is $m = \frac{-15 - 13}{k + 7 - k}$, which is equivalent to $m = \frac{-28}{7}$, or $m = -4$. It's given that the y -intercept of the line is $(k - 5, b)$. Substituting -4 for m and the coordinates of the points $(k - 5, b)$ and $(k, 13)$ into the slope formula yields $-4 = \frac{13 - b}{k - k + 5}$, which is equivalent to $-4 = \frac{13 - b}{k - k + 5}$, or $-4 = \frac{13 - b}{5}$. Multiplying both sides of this equation by 5 yields $-20 = 13 - b$. Subtracting 13 from both sides of this equation yields $-33 = -b$. Dividing both sides of this equation by -1 yields $b = 33$. Therefore, the value of b is 33.

Question Difficulty: Hard

Question ID b1182278

Assessment	Test	Domain	Skill	Difficulty
PSAT/NMSQT & PSAT 10	Math	Algebra	Linear equations in two variables	<div><div></div><div></div><div></div></div>

ID: b1182278

The graph of $9x - 10y = 19$ is translated down 4 units in the xy -plane. What is the x -coordinate of the x -intercept of the resulting graph?

ID: b1182278 Answer

Correct Answer: 59/9, 6.555, 6.556

Rationale

The correct answer is $\frac{59}{9}$. When the graph of an equation in the form $Ax + By = C$, where A , B , and C are constants, is translated down k units in the xy -plane, the resulting graph can be represented by the equation $Ax + By + k = C$. It's given that the graph of $9x - 10y = 19$ is translated down 4 units in the xy -plane. Therefore, the resulting graph can be represented by the equation $9x - 10y + 4 = 19$, or $9x - 10y - 40 = 19$. Adding 40 to both sides of this equation yields $9x - 10y = 59$. The x -coordinate of the x -intercept of the graph of an equation in the xy -plane is the value of x in the equation when $y = 0$. Substituting 0 for y in the equation $9x - 10y = 59$ yields $9x - 10(0) = 59$, or $9x = 59$. Dividing both sides of this equation by 9 yields $x = \frac{59}{9}$. Therefore, the x -coordinate of the x -intercept of the resulting graph is $\frac{59}{9}$. Note that 59/9, 6.555, and 6.556 are examples of ways to enter a correct answer.

Question Difficulty: Hard