Question ID 89dc2564

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear equations in two variables	Easy

ID: 89dc2564

Line k is defined by $y = 3x + 15$. Line j is perpendicular to line k in the *xy*-plane. What is the slope of line j?

A. $-\frac{1}{3}$

B. $-\frac{1}{12}$

C. $-\frac{1}{18}$

D. $-\frac{1}{45}$

ID: 89dc2564 Answer

Correct Answer: A

Rationale

Choice A is correct. It's given that line j is perpendicular to line k in the *xy*-plane. It follows that the slope of line j is the opposite reciprocal of the slope of line k. The equation for line k 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 3. The opposite reciprocal of a number is -1 divided by the number. Thus, the opposite reciprocal of 3 is $-\frac{1}{3}$. Therefore, the slope of line j is $-\frac{1}{3}$.

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: Easy

Question ID 4abb3e2e

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear equations in two variables	Easy

ID: 4abb3e2e

The equation $46 = 2x + 2y$ gives the perimeter of a rectangular rug that has length x, in feet, and width y, in feet. The width of the rug is 8 feet. What is the length, in feet, of the rug?

ID: 4abb3e2e Answer

Correct Answer: 15

Rationale

The correct answer is 15. It's given that the equation $46 = 2x + 2y$ gives the perimeter of a rectangular rug that has length x, in feet, and width y, in feet. It's also given that the width of the rug is 8 feet. Substituting 8 for y in the equation $46 = 2x + 2y$ yields $46 = 2x + 2(8)$, or $46 = 2x + 16$. Subtracting 16 from both sides of this equation yields $30 = 2x$. Dividing both sides of this equation by 2 yields $15 = x$. Since x represents the length, in feet, of the rug, it follows that the length of the rug is 15 feet.

Question Difficulty: Easy

Question ID 950af39d

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear equations in two variables	Easy

ID: 950af39d

A mixture consisting of only vitamin D and calcium has a total mass of 150 grams. The mass of vitamin D in the mixture is 50 grams. What is the mass, in grams, of calcium in the mixture?

A. 200

B. 150

C. 100

D. 50

ID: 950af39d Answer

Correct Answer: C

Rationale

Choice C is correct. Let d represent the mass, in grams, of vitamin D in the mixture, and let c represent the mass, in grams, of calcium in the mixture. It's given that the mixture consists of only vitamin D and calcium and that the total mass of the mixture is 150 grams. Therefore, the equation $d + c = 150$ represents this situation. It's also given that the mass of vitamin D in the mixture is 50 grams. Substituting 50 for d in the equation $d + c = 150$ yields $50 + c = 150$. Subtracting 50 from both sides of this equation yields $c = 100$. Therefore, the mass of calcium in the mixture is 100 grams.

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

Choice B is incorrect. This is the total mass, in grams, of the mixture, not the mass, in grams, of calcium in the mixture.

Choice D is incorrect. This is the mass, in grams, of vitamin D in the mixture, not the mass, in grams, of calcium in the mixture.

Question Difficulty: Easy

Question ID dbe098e2

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear equations in two variables	Easy

ID: dbe098e2

Jay walks at a speed of 3 miles per hour and runs at a speed of 5 miles per hour. He walks for w hours and runs for r hours for a combined total of 14 miles. Which equation represents this situation?

A. $3w + 5r = 14$

B. $\frac{1}{3}w + \frac{1}{5}r = 14$

C. $\frac{1}{3}w + \frac{1}{5}r = 112$

D. $3w + 5r = 112$

ID: dbe098e2 Answer

Correct Answer: A

Rationale

Choice A is correct. Since Jay walks at a speed of 3 miles per hour for w hours, Jay walks a total of $3w$ miles. Since Jay runs at a speed of 5 miles per hour for r hours, Jay runs a total of $5r$ miles. Therefore, the total number of miles Jay travels can be represented by $3w + 5r$. Since the combined total number of miles is 14, the equation $3w + 5r = 14$ represents this situation.

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: Easy

Question ID d5e9c402

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear equations in two variables	Easy

ID: d5e9c402

A line in the *xy*-plane has a slope of $-\frac{1}{2}$ and passes through the point $(0, 3)$. Which equation represents this line?

A. $y = -\frac{1}{2}x - 3$

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

C. $y = \frac{1}{2}x - 3$

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

ID: d5e9c402 Answer

Correct Answer: B

Rationale

Choice B is correct. A line in the *xy*-plane with a slope of m and a *y*-intercept of $(0, b)$ can be represented by the equation $y = mx + b$. It's given that the line has a slope of $-\frac{1}{2}$. Therefore, $m = -\frac{1}{2}$. It's also given that the line passes through the point $(0, 3)$. Therefore, $b = 3$. Substituting $-\frac{1}{2}$ for m and 3 for b in the equation $y = mx + b$ yields $y = -\frac{1}{2}x + 3$. Therefore, the equation $y = -\frac{1}{2}x + 3$ represents this line.

Choice A is incorrect. This equation represents a line in the *xy*-plane that passes through the point $(0, -3)$, not $(0, 3)$.

Choice C is incorrect. This equation represents a line in the *xy*-plane that has a slope of $\frac{1}{2}$, not $-\frac{1}{2}$, and passes through the point $(0, -3)$, not $(0, 3)$.

Choice D is incorrect. This equation represents a line in the *xy*-plane that has a slope of $\frac{1}{2}$, not $-\frac{1}{2}$.

Question Difficulty: Easy

Question ID ace7d6eb

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear equations in two variables	Easy

ID: ace7d6eb

A food truck buys forks for $\$0.04$ each and plates for $\$0.48$ each. The total cost of x forks and y plates is $\$661.76$. Which equation represents this situation?

A. $0.48x - 0.04y = 661.76$

B. $0.04x - 0.48y = 661.76$

C. $0.48x + 0.04y = 661.76$

D. $0.04x + 0.48y = 661.76$

ID: ace7d6eb Answer

Correct Answer: D

Rationale

Choice D is correct. It's given that the food truck buys forks for $\$0.04$ each. Therefore, the cost, in dollars, of x forks can be represented by the expression $0.04x$. It's also given that the food truck buys plates for $\$0.48$ each. Therefore, the cost, in dollars, of y plates can be represented by the expression $0.48y$. Since the total cost of x forks and y plates is $\$661.76$, the equation $0.04x + 0.48y = 661.76$ 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 C is incorrect. This equation represents a situation in which the food truck buys forks for $\$0.48$ each and plates for $\$0.04$ each.

Question Difficulty: Easy

Question ID e914e737

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear equations in two variables	Easy

ID: e914e737

$$y = 70x + 8$$

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

A.

x	y
0	8
2	148
4	288

B.

x	y
0	70
2	78
4	86

C.

x	y
0	70
2	140
4	280

D.

x	y
0	8
2	132
4	272

ID: e914e737 Answer

Correct Answer: A

Rationale

Choice A is correct. Each of the given choices gives three values of x: 0, 2, and 4. Substituting 0 for x in the given equation yields $y = 70(0) + 8$, or $y = 8$. Therefore, when $x = 0$, the corresponding value of y for the given equation is 8. Substituting 2 for x in the given equation yields $y = 70(2) + 8$, or $y = 148$. Therefore, when $x = 2$, the corresponding

value of y for the given equation is 148. Substituting 4 for x in the given equation yields $y = 70(4) + 8$, or $y = 288$. Therefore, when $x = 4$, the corresponding value of y for the given equation is 288. Thus, if the three values of x are 0, 2, and 4, then their corresponding values of y are 8, 148, and 288, respectively, for the given equation.

Choice B is incorrect. This table gives three values of x and their corresponding values of y for the equation $y = 4x + 70$.

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

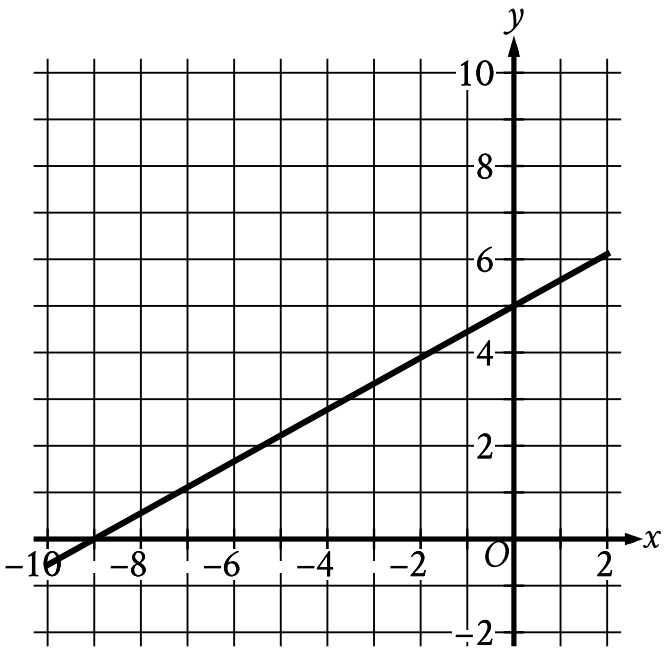
Choice D is incorrect and may result from conceptual or calculation errors.

Question Difficulty: Easy

Question ID 8b52b69a

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear equations in two variables	Easy

ID: 8b52b69a



What is the *y*-intercept of the line graphed?

A. $(-5, 0)$

B. $(0, 0)$

C. $(0, 5)$

D. $(0, 9)$

ID: 8b52b69a Answer

Correct Answer: C

Rationale

Choice C is correct. The *y*-intercept of a graph is the point where the graph intersects the *y*-axis. The line graphed intersects the *y*-axis at the point $(0, 5)$. Therefore, the *y*-intercept of the line graphed is $(0, 5)$.

Choice A is incorrect and may result from conceptual errors.

Choice B is incorrect and may result from conceptual errors.

Choice D is incorrect and may result from conceptual errors.

Question Difficulty: Easy

Question ID 912eb2f0

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear equations in two variables	Easy

ID: 912eb2f0

What is the *y*-intercept of the graph of $y = 34x + 81$ in the *xy*-plane?

A. $(0, 81)$

B. $(0, 34)$

C. $(0, -34)$

D. $(0, -81)$

ID: 912eb2f0 Answer

Correct Answer: A

Rationale

Choice A is correct. 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 $(0, b)$. Therefore, the *y*-intercept of the graph of $y = 34x + 81$ is $(0, 81)$.

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: Easy

Question ID e1dceebe

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear equations in two variables	Easy

ID: e1dceebe

A teacher is creating an assignment worth 70 points. The assignment will consist of questions worth 1 point and questions worth 3 points. Which equation represents this situation, where x represents the number of 1-point questions and y represents the number of 3-point questions?

A. $4xy = 70$

B. $4(x + y) = 70$

C. $3x + y = 70$

D. $x + 3y = 70$

ID: e1dceebe Answer

Correct Answer: D

Rationale

Choice D is correct. Since x represents the number of 1-point questions and y represents the number of 3-point questions, the assignment is worth a total of $1 \cdot x + 3 \cdot y$, or $x + 3y$, points. Since the assignment is worth 70 points, the equation $x + 3y = 70$ represents this situation.

Choice A is incorrect and may result from conceptual errors.

Choice B is incorrect and may result from conceptual errors.

Choice C is incorrect and may result from conceptual errors.

Question Difficulty: Easy

Question ID 95d2d776

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear equations in two variables	Easy

ID: 95d2d776

A producer is creating a video with a length of 70 minutes. The video will consist of segments that are 1 minute long and segments that are 3 minutes long. Which equation represents this situation, where x represents the number of 1-minute segments and y represents the number of 3-minute segments?

A. $4xy = 70$

B. $4(x + y) = 70$

C. $3x + y = 70$

D. $x + 3y = 70$

ID: 95d2d776 Answer

Correct Answer: D

Rationale

Choice D is correct. Since x represents the number of 1-minute segments and y represents the number of 3-minute segments, the total length of the video is $1 \cdot x + 3 \cdot y$, or $x + 3y$, minutes. Since the video is 70 minutes long, the equation $x + 3y = 70$ represents this situation.

Choice A is incorrect and may result from conceptual errors.

Choice B is incorrect and may result from conceptual errors.

Choice C is incorrect and may result from conceptual errors.

Question Difficulty: Easy

Question ID 85ee1336

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear equations in two variables	Easy

ID: 85ee1336

The equation $46 = 2a + 2b$ gives the relationship between the side lengths a and b of a certain parallelogram. If $a = 9$, what is the value of b?

ID: 85ee1336 Answer

Correct Answer: 14

Rationale

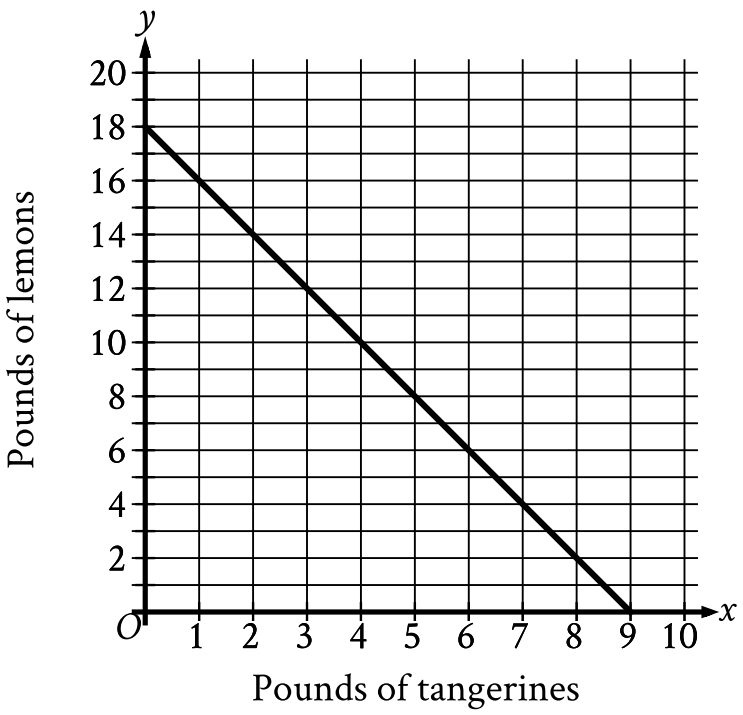
The correct answer is 14. It's given that the equation $46 = 2a + 2b$ gives the relationship between the side lengths a and b of a certain parallelogram. Substituting 9 for a in the given equation yields $46 = 2(9) + 2b$, or $46 = 18 + 2b$. Subtracting 18 from both sides of this equation yields $28 = 2b$. Dividing both sides of this equation by 2 yields $14 = b$. Therefore, if $a = 9$, the value of b is 14.

Question Difficulty: Easy

Question ID 60488560

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear equations in two variables	Easy

ID: 60488560



The graph shows the possible combinations of the number of pounds of tangerines and lemons that could be purchased for $\$18$ at a certain store. If Melvin purchased lemons and 4 pounds of tangerines for a total of $\$18$, how many pounds of lemons did he purchase?

A. 7

B. 10

C. 14

D. 16

ID: 60488560 Answer

Correct Answer: B

Rationale

Choice B is correct. It's given that the graph shows the possible combinations of the number of pounds of tangerines, x, and the number of pounds of lemons, y, that could be purchased for $\$18$ at a certain store. If Melvin purchased lemons and 4 pounds of tangerines for a total of $\$18$, the number of pounds of lemons he purchased is represented by the y-coordinate of

the point on the graph where $x = 4$. For the graph shown, when $x = 4$, $y = 10$. Therefore, if Melvin purchased lemons and 4 pounds of tangerines for a total of $\$18$, then he purchased 10 pounds of lemons.

Choice A is incorrect. This is the number of pounds of tangerines Melvin purchased if he purchased tangerines and 4 pounds of lemons for a total of $\$18$.

Choice C is incorrect. This is the number of pounds of lemons Melvin purchased if he purchased lemons and 2 pounds of tangerines for a total of $\$18$.

Choice D is incorrect. This is the number of pounds of lemons Melvin purchased if he purchased lemons and 1 pound of tangerines for a total of $\$18$.

Question Difficulty: Easy

Question ID 26c19603

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear equations in two variables	Easy

ID: 26c19603

The *y*-intercept of the graph of $12x + 2y = 18$ in the *xy*-plane is $(0, y)$. What is the value of y?

ID: 26c19603 Answer

Correct Answer: 9

Rationale

The correct answer is 9. It's given that the *y*-intercept of the graph of $12x + 2y = 18$ in the *xy*-plane is $(0, y)$. Substituting 0 for x in the equation $12x + 2y = 18$ yields $12(0) + 2y = 18$, or $2y = 18$. Dividing both sides of this equation by 2 yields $y = 9$. Therefore, the value of y is 9.

Question Difficulty: Easy

Question ID 7ae15e38

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear equations in two variables	Easy

ID: 7ae15e38

x	y
0	18
1	13
2	8

The table shows three values of x and their corresponding values of y. There is a linear relationship between x and y. Which of the following equations represents this relationship?

A. $y = 18x + 13$

B. $y = 18x + 18$

C. $y = -5x + 13$

D. $y = -5x + 18$

ID: 7ae15e38 Answer

Correct Answer: D

Rationale

Choice D is correct. A linear relationship can be represented by an equation of the form $y = mx + b$, where m and b are constants. It's given in the table that when $x = 0$, $y = 18$. Substituting 0 for x and 18 for y in $y = mx + b$ yields $18 = m(0) + b$, or $18 = b$. Substituting 18 for b in the equation $y = mx + b$ yields $y = mx + 18$. It's also given in the table that when $x = 1$, $y = 13$. Substituting 1 for x and 13 for y in the equation $y = mx + 18$ yields $13 = m(1) + 18$, or $13 = m + 18$. Subtracting 18 from both sides of this equation yields $-5 = m$. Therefore, the equation $y = -5x + 18$ represents the relationship between x and y.

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: Easy

Question ID b799405e

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear equations in two variables	Easy

ID: b799405e

Vivian bought party hats and cupcakes for $\$71$. Each package of party hats cost $\$3$, and each cupcake cost $\$1$. If Vivian bought 10 packages of party hats, how many cupcakes did she buy?

ID: b799405e Answer

Correct Answer: 41

Rationale

The correct answer is 41. The number of cupcakes Vivian bought can be found by first finding the amount Vivian spent on cupcakes. The amount Vivian spent on cupcakes can be found by subtracting the amount Vivian spent on party hats from the total amount Vivian spent. The amount Vivian spent on party hats can be found by multiplying the cost per package of party hats by the number of packages of party hats, which yields $\$3 \cdot 10$, or $\$30$. Subtracting the amount Vivian spent on party hats, $\$30$, from the total amount Vivian spent, $\$71$, yields $\$71 - \$30$, or $\$41$. Since the amount Vivian spent on cupcakes was $\$41$ and each cupcake cost $\$1$, it follows that Vivian bought 41 cupcakes.

Question Difficulty: Easy

Question ID 977935fa

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear equations in two variables	Easy

ID: 977935fa

The *y*-intercept of the graph of $y = -6x - 32$ in the *xy*-plane is $(0, y)$. What is the value of y?

ID: 977935fa Answer

Correct Answer: -32

Rationale

The correct answer is -32. It's given that the *y*-intercept of the graph of $y = -6x - 32$ is $(0, y)$. Substituting 0 for x in this equation yields $y = -6(0) - 32$, or $y = -32$. Therefore, the value of y that corresponds to the *y*-intercept of the graph of $y = -6x - 32$ in the *xy*-plane is -32.

Question Difficulty: Easy

Question ID e497b622

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear equations in two variables	Easy

ID: e497b622

A shipment consists of 5-pound boxes and 10-pound boxes with a total weight of 220 pounds. There are 13 10-pound boxes in the shipment. How many 5-pound boxes are in the shipment?

A. 5

B. 10

C. 13

D. 18

ID: e497b622 Answer

Correct Answer: D

Rationale

Choice D is correct. It's given that the shipment consists of 5-pound boxes and 10-pound boxes with a total weight of 220 pounds. Let x represent the number of 5-pound boxes and y represent the number of 10-pound boxes in the shipment. Therefore, the equation $5x + 10y = 220$ represents this situation. It's given that there are 13 10-pound boxes in the shipment. Substituting 13 for y in the equation $5x + 10y = 220$ yields $5x + 10(13) = 220$, or $5x + 130 = 220$. Subtracting 130 from both sides of this equation yields $5x = 90$. Dividing both sides of this equation by 5 yields 18. Thus, there are 18 5-pound boxes in the shipment.

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

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

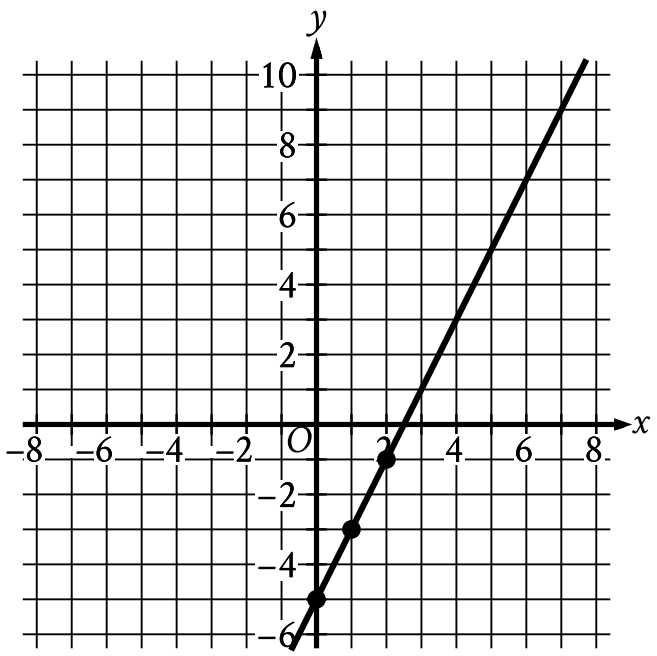
Choice C is incorrect. This is the number of 10-pound boxes in the shipment.

Question Difficulty: Easy

Question ID ccb84027

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear equations in two variables	Easy

ID: ccb84027



The graph shows the linear relationship between x and y. Which table gives three values of x and their corresponding values of y for this relationship?

A.

x	y
0	0
1	−7
2	−9

B.

x	y
0	0
1	−3
2	−1

C.

x	y
0	−5
1	−7

2	-9

D.

x	y
0	-5
1	-3
2	-1

ID: ccb84027 Answer

Correct Answer: D

Rationale

Choice D is correct. It's given that the graph shows the linear relationship between x and y. The given graph passes through the points $(0, -5)$, $(1, -3)$, and $(2, -1)$. It follows that when $x = 0$, the corresponding value of y is -5, when $x = 1$, the corresponding value of y is -3, and when $x = 2$, the corresponding value of y is -1. Of the given choices, only the table in choice D gives these three values of x and their corresponding values of y for the relationship shown in the graph.

Choice A is incorrect. This table represents a relationship between x and y such that the graph passes through the points $(0, 0)$, $(1, -7)$, and $(2, -9)$.

Choice B is incorrect. This table represents a relationship between x and y such that the graph passes through the points $(0, 0)$, $(1, -3)$, and $(2, -1)$.

Choice C is incorrect. This table represents a linear relationship between x and y such that the graph passes through the points $(0, -5)$, $(1, -7)$, and $(2, -9)$.

Question Difficulty: Easy

Question ID 77b21e2b

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear equations in two variables	Easy

ID: 77b21e2b

Line r in the *xy*-plane has a slope of 4 and passes through the point $(0, 6)$. Which equation defines line r?

A. $y = -6x + 4$

B. $y = 6x + 4$

C. $y = 4x - 6$

D. $y = 4x + 6$

ID: 77b21e2b Answer

Correct Answer: D

Rationale

Choice D is correct. A line in the *xy*-plane with a slope of m and a *y*-intercept of $(0, b)$ can be defined by an equation in the form $y = mx + b$. It's given that line r has a slope of 4 and passes through the point $(0, 6)$. It follows that $m = 4$ and $b = 6$. Substituting 4 for m and 6 for b in the equation $y = mx + b$ yields $y = 4x + 6$. Therefore, the equation $y = 4x + 6$ defines line r.

Choice A is incorrect. This equation defines a line that has a slope of -6, not 4, and passes through the point $(0, 4)$, not $(0, 6)$.

Choice B is incorrect. This equation defines a line that has a slope of 6, not 4, and passes through the point $(0, 4)$, not $(0, 6)$.

Choice C is incorrect. This equation defines a line that passes through the point $(0, -6)$, not $(0, 6)$.

Question Difficulty: Easy

Question ID a4a5e4ad

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear equations in two variables	Easy

ID: a4a5e4ad

Last week, an interior designer earned a total of $\$1,258$ from consulting for x hours and drawing up plans for y hours. The equation $68x + 85y = 1,258$ represents this situation. Which of the following is the best interpretation of 68 in this context?

A. The interior designer earned $\$68$ per hour consulting last week.

B. The interior designer worked 68 hours drawing up plans last week.

C. The interior designer earned $\$68$ per hour drawing up plans last week.

D. The interior designer worked 68 hours consulting last week.

ID: a4a5e4ad Answer

Correct Answer: A

Rationale

Choice A is correct. It's given that $68x + 85y = 1,258$ represents the situation where an interior designer earned a total of $\$1,258$ last week from consulting for x hours and drawing up plans for y hours. Thus, $68x$ represents the amount earned, in dollars, from consulting for x hours, and $85y$ represents the amount earned, in dollars, from drawing up plans for y hours. Since $68x$ represents the amount earned, in dollars, from consulting for x hours, it follows that the interior designer earned $\$68$ per hour consulting last week.

Choice B is incorrect. The interior designer worked y hours, not 68 hours, drawing up plans last week.

Choice C is incorrect. The interior designer earned $\$85$ per hour, not $\$68$ per hour, drawing up plans last week.

Choice D is incorrect. The interior designer worked x hours, not 68 hours, consulting last week.

Question Difficulty: Easy

Question ID 56b227af

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear equations in two variables	Easy

ID: 56b227af

$$y = x + 4$$

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

A.

x	y
0	4
1	5
2	6

B.

x	y
0	6
1	5
2	4

C.

x	y
0	2
1	1
2	0

D.

x	y
0	0
1	1
2	2

ID: 56b227af Answer

Correct Answer: A

Rationale

Choice A is correct. Substituting 0 for x into the given equation yields $y = 0 + 4$, or $y = 4$. Therefore, when $x = 0$, the corresponding value of y for the given equation is 4. Substituting 1 for x into the given equation yields $y = 1 + 4$, or $y = 5$. Therefore, when $x = 1$, the corresponding value of y for the given equation is 5. Substituting 2 for x into the given equation

yields $y = 2 + 4$, or $y = 6$. Therefore, when $x = 2$, the corresponding value of y for the given equation is 6. Of the choices given, only the table in choice A gives these three values of x and their corresponding values of y for the given equation.

Choice B is incorrect. This table gives three values of x and their corresponding values of y for the equation $y = -x + 6$.

Choice C is incorrect. This table gives three values of x and their corresponding values of y for the equation $y = -x + 2$.

Choice D is incorrect. This table gives three values of x and their corresponding values of y for the equation $y = x$.

Question Difficulty: Easy

Question ID 74510a38

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear equations in two variables	Easy

ID: 74510a38

A total of 364 paper straws of equal length were used to construct two types of polygons: triangles and rectangles. The triangles and rectangles were constructed so that no two polygons had a common side. The equation $3x + 4y = 364$ represents this situation, where x is the number of triangles constructed and y is the number of rectangles constructed. What is the best interpretation of $(x, y) = (24, 73)$ in this context?

A. If 24 triangles were constructed, then 73 rectangles were constructed.

B. If 24 triangles were constructed, then 73 paper straws were used.

C. If 73 triangles were constructed, then 24 rectangles were constructed.

D. If 73 triangles were constructed, then 24 paper straws were used.

ID: 74510a38 Answer

Correct Answer: A

Rationale

Choice A is correct. It's given that 364 paper straws of equal length were used to construct triangles and rectangles, where no two polygons had a common side. It's also given that the equation $3x + 4y = 364$ represents this situation, where x is the number of triangles constructed and y is the number of rectangles constructed. The equation $(x, y) = (24, 73)$ means that if $x = 24$, then $y = 73$. Substituting 24 for x and 73 for y in $3x + 4y = 364$ yields $3(24) + 4(73) = 364$, or $364 = 364$, which is true. Therefore, in this context, the equation $(x, y) = (24, 73)$ means that if 24 triangles were constructed, then 73 rectangles were constructed.

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: Easy

Question ID 3236ca30

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear equations in two variables	Easy

ID: 3236ca30

A line in the *xy*-plane has a slope of $\frac{1}{9}$ and passes through the point $(0, 14)$. Which equation represents this line?

A. $y = -\frac{1}{9}x - 14$

B. $y = -\frac{1}{9}x + 14$

C. $y = \frac{1}{9}x - 14$

D. $y = \frac{1}{9}x + 14$

ID: 3236ca30 Answer

Correct Answer: D

Rationale

Choice D is correct. The equation of a line in the *xy*-plane can be written as $y = mx + b$, where m represents the slope of the line and $(0, b)$ represents the *y*-intercept of the line. It's given that the slope of the line is $\frac{1}{9}$. It follows that $m = \frac{1}{9}$. It's also given that the line passes through the point $(0, 14)$. It follows that $b = 14$. Substituting $\frac{1}{9}$ for m and 14 for b in $y = mx + b$ yields $y = \frac{1}{9}x + 14$. Thus, the equation $y = \frac{1}{9}x + 14$ represents this line.

Choice A is incorrect. This equation represents a line with a slope of $-\frac{1}{9}$ and a *y*-intercept of $(0, -14)$.

Choice B is incorrect. This equation represents a line with a slope of $-\frac{1}{9}$ and a *y*-intercept of $(0, 14)$.

Choice C is incorrect. This equation represents a line with a slope of $\frac{1}{9}$ and a *y*-intercept of $(0, -14)$.

Question Difficulty: Easy

Question ID 52d63c4b

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear equations in two variables	Easy

ID: 52d63c4b

Line k is defined by $y = \frac{1}{4}x + 1$. Line j is parallel to line k in the *xy*-plane. What is the slope of j?

ID: 52d63c4b Answer

Correct Answer: .25, 1/4

Rationale

The correct answer is $\frac{1}{4}$. It's given that line k is defined by $y = \frac{1}{4}x + 1$. It's also given that line j is parallel to line k in the *xy*-plane. A line in the *xy*-plane represented by an equation in slope-intercept form $y = mx + b$ has a slope of m and a *y*-intercept of $(0, b)$. Therefore, the slope of line k is $\frac{1}{4}$. Since parallel lines have equal slopes, the slope of line j is $\frac{1}{4}$. Note that 1/4 and .25 are examples of ways to enter a correct answer.

Question Difficulty: Easy

Question ID 9c899c55

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear equations in two variables	Easy

ID: 9c899c55

A machine makes large boxes or small boxes, one at a time, for a total of 700 minutes each day. It takes the machine 10 minutes to make a large box or 5 minutes to make a small box. Which equation represents the possible number of large boxes, x, and small boxes, y, the machine can make each day?

A. $5x + 10y = 700$

B. $10x + 5y = 700$

C. $(x + y)(10 + 5) = 700$

D. $(10 + x)(5 + y) = 700$

ID: 9c899c55 Answer

Correct Answer: B

Rationale

Choice B is correct. It's given that it takes the machine 10 minutes to make a large box. It's also given that x represents the possible number of large boxes the machine can make each day. Multiplying 10 by x gives $10x$, which represents the amount of time spent making large boxes. It's given that it takes the machine 5 minutes to make a small box. It's also given that y represents the possible number of small boxes the machine can make each day. Multiplying 5 by y gives $5y$, which represents the amount of time spent making small boxes. Combining the amount of time spent making x large boxes and y small boxes yields $10x + 5y$. It's given that the machine makes boxes for a total of 700 minutes each day. Therefore $10x + 5y = 700$ represents the possible number of large boxes, x, and small boxes, y, the machine can make each day.

Choice A is incorrect and may result from associating the time of 10 minutes with small, rather than large, boxes and the time of 5 minutes with large, rather than small, boxes.

Choice C is incorrect and may result from conceptual errors.

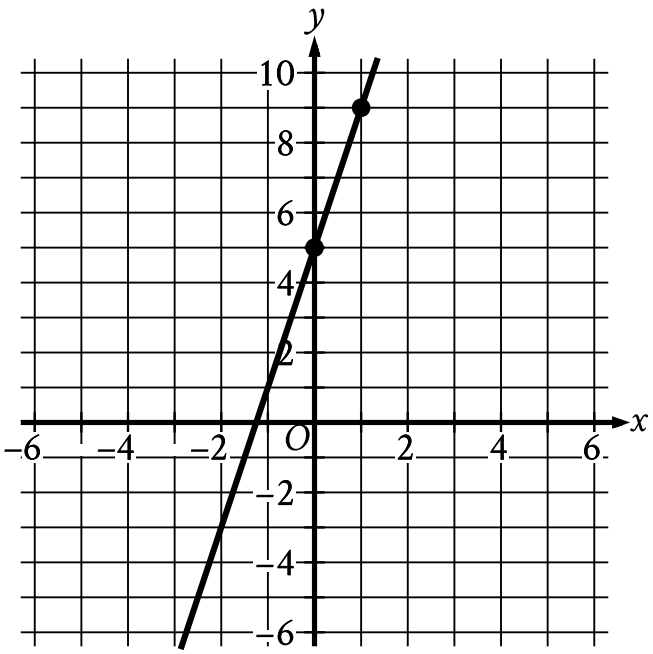
Choice D is incorrect and may result from conceptual errors.

Question Difficulty: Easy

Question ID f2c128d8

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear equations in two variables	Easy

ID: f2c128d8



Line j is shown in the *xy*-plane. Line k (not shown) is parallel to line j. What is the slope of line k?

ID: f2c128d8 Answer

Correct Answer: 4

Rationale

The correct answer is 4. It's given that line k is parallel to line j. It follows that the slope of line k is equal to the slope of line j. Given two points on a line in the *xy*-plane, (x_1, y_1) and (x_2, y_2), the slope of the line can be calculated as $\frac{y_2-y_1}{x_2-x_1}$. In the *xy*-plane shown, the points $(0, 5)$ and $(1, 9)$ are on line j. It follows that the slope of line j is $\frac{9-5}{1-0}$, or 4. Since the slope of line j is equal to the slope of line k, the slope of line k is also 4.

Question Difficulty: Easy

Question ID b3f00f4b

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear equations in two variables	Easy

ID: b3f00f4b

Davio bought some potatoes and celery. The potatoes cost $\$0.69$ per pound, and the celery cost $\$0.99$ per pound. If Davio spent $\$5.34$ in total and bought twice as many pounds of celery as pounds of potatoes, how many pounds of celery did Davio buy?

A. 2

B. 2.5

C. 2.67

D. 4

ID: b3f00f4b Answer

Correct Answer: D

Rationale

Choice D is correct. Let p represent the number of pounds of potatoes and let c represent the number of pounds of celery that Davio bought. It's given that potatoes cost $\$0.69$ per pound and celery costs $\$0.99$ per pound. If Davio spent $\$5.34$ in total, then the equation $0.69p + 0.99c = 5.34$ represents this situation. It's also given that Davio bought twice as many pounds of celery as pounds of potatoes; therefore, $c = 2p$. Substituting $2p$ for c in the equation $0.69p + 0.99c = 5.34$ yields $0.69p + 0.99(2p) = 5.34$, which is equivalent to $0.69p + 1.98p = 5.34$, or $2.67p = 5.34$. Dividing both sides of this equation by 2.67 yields $p = 2$. Substituting 2 for p in the equation $c = 2p$ yields $c = 2(2)$, or $c = 4$. Therefore, Davio bought 4 pounds of celery.

Choice A is incorrect. This is the number of pounds of potatoes, not the number of pounds of celery, Davio bought.

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: Easy

Question ID 7bb1beef

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear equations in two variables	Easy

ID: 7bb1beef

The equation $40x + 20y = 160$ represents the number of sweaters, x, and number of shirts, y, that Yesenia purchased for $\$160$. If Yesenia purchased 2 sweaters, how many shirts did she purchase?

A. 3

B. 4

C. 8

D. 40

ID: 7bb1beef Answer

Correct Answer: B

Rationale

Choice B is correct. It's given that the equation $40x + 20y = 160$ represents the number of sweaters, x, and the number of shirts, y, that Yesenia purchased for $\$160$. If Yesenia purchased 2 sweaters, the number of shirts she purchased can be calculated by substituting 2 for x in the given equation, which yields $40(2) + 20y = 160$, or $80 + 20y = 160$. Subtracting 80 from both sides of this equation yields $20y = 80$. Dividing both sides of this equation by 20 yields $y = 4$. Therefore, if Yesenia purchased 2 sweaters, she purchased 4 shirts.

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

Choice C is incorrect. This is the number of shirts Yesenia purchased if she purchased 0 sweaters.

Choice D is incorrect. This is the price, in dollars, for each sweater, not the number of shirts Yesenia purchased.

Question Difficulty: Easy

Question ID e7fef945

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear equations in two variables	Easy

ID: e7fef945

What is the equation of the line that passes through the point $(0, 5)$ and is parallel to the graph of $y = 7x + 4$ in the *xy*-plane?

A. $y = 5x$

B. $y = 7x + 5$

C. $y = 7x$

D. $y = 5x + 7$

ID: e7fef945 Answer

Correct Answer: B

Rationale

Choice B is correct. The equation of a line in the *xy*-plane can be written in slope-intercept form $y = mx + b$, where m is the slope of the line and $(0, b)$ is its *y*-intercept. It's given that the line passes through the point $(0, 5)$. Therefore, $b = 5$. It's also given that the line is parallel to the graph of $y = 7x + 4$, which means the line has the same slope as the graph of $y = 7x + 4$. The slope of the graph of $y = 7x + 4$ is 7. Therefore, $m = 7$. Substituting 7 for m and 5 for b in the equation $y = mx + b$ yields $y = 7x + 5$.

Choice A is incorrect. The graph of this equation passes through the point $(0, 0)$, not $(0, 5)$, and has a slope of 5, not 7.

Choice C is incorrect. The graph of this equation passes through the point $(0, 0)$, not $(0, 5)$.

Choice D is incorrect. The graph of this equation passes through the point $(0, 7)$, not $(0, 5)$, and has a slope of 5, not 7.

Question Difficulty: Easy

Question ID 241ef96a

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear equations in two variables	Easy

ID: 241ef96a

The equation $x + y = 1{,}440$ represents the number of minutes of daylight (between sunrise and sunset), x, and the number of minutes of non-daylight, y, on a particular day in Oak Park, Illinois. If this day has 670 minutes of daylight, how many minutes of non-daylight does it have?

A. 670

B. 770

C. $1{,}373$

D. $1{,}440$

ID: 241ef96a Answer

Correct Answer: B

Rationale

Choice B is correct. It's given that the equation $x + y = 1{,}440$ represents the number of minutes of daylight, x, and the number of minutes of non-daylight, y, on a particular day in Oak Park, Illinois. It's also given that this day has 670 minutes of daylight. Substituting 670 for x in the equation $x + y = 1{,}440$ yields $670 + y = 1{,}440$. Subtracting 670 from both sides of this equation yields $y = 770$. Therefore, this day has 770 minutes of non-daylight.

Choice A is incorrect. This is the number of minutes of daylight, not non-daylight, on this day.

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

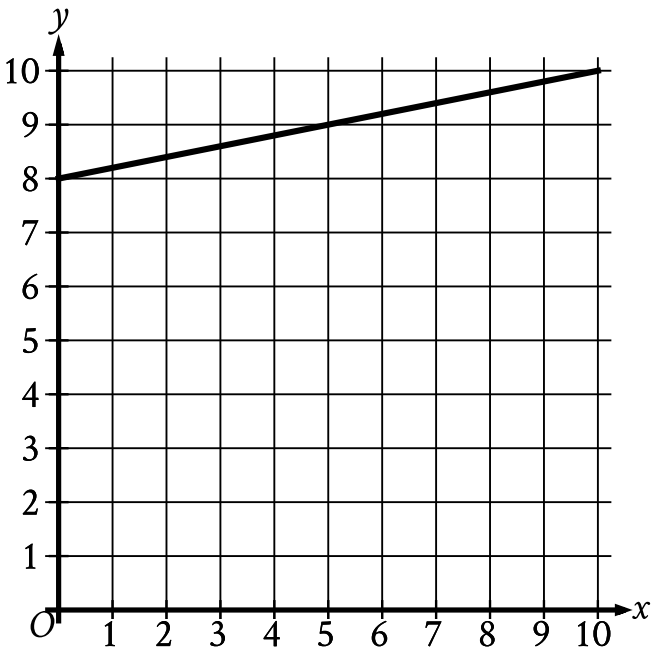
Choice D is incorrect. This is the total number of minutes of daylight and non-daylight.

Question Difficulty: Easy

Question ID a7db23d5

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear equations in two variables	Easy

ID: a7db23d5



What is the *y*-intercept of the line graphed?

A. $(0, -8)$

B. $(0, -\frac{1}{8})$

C. $(0, 0)$

D. $(0, 8)$

ID: a7db23d5 Answer

Correct Answer: D

Rationale

Choice D is correct. The *y*-intercept of a line graphed in the *xy*-plane is the point where the line intersects the *y*-axis. The line graphed intersects the *y*-axis at the point $(0, 8)$. Therefore, the *y*-intercept of the line graphed is $(0, 8)$.

Choice A is incorrect and may result from conceptual errors.

Choice B is incorrect and may result from conceptual errors.

Choice C is incorrect and may result from conceptual errors.

Question Difficulty: Easy

Question ID 7999e5da

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear equations in two variables	Easy

ID: 7999e5da

Naomi bought both rabbit snails and nerite snails for a total of $\$52$. Each rabbit snail costs $\$8$ and each nerite snail costs $\$6$. If Naomi bought 2 nerite snails, how many rabbit snails did she buy?

A. 5

B. 12

C. 14

D. 50

ID: 7999e5da Answer

Correct Answer: A

Rationale

Choice A is correct. Let x represent the number of rabbit snails that Naomi bought. It's given that each rabbit snail costs $\$8$. Therefore, the total cost, in dollars, of the rabbit snails that Naomi bought can be represented by the expression $8x$. It's also given that each nerite snail costs $\$6$, and that Naomi bought 2 nerite snails. Therefore, the total cost, in dollars, of the nerite snails that Naomi bought is $6(2)$, or 12. Since Naomi bought both the rabbit snails and the nerite snails for a total of $\$52$, the equation $8x + 12 = 52$ can be used to represent the situation. Subtracting 12 from both sides of this equation yields $8x = 40$. Dividing both sides of this equation by 8 yields $x = 5$. Therefore, Naomi bought 5 rabbit snails.

Choice B is incorrect. This is the total cost, in dollars, of the nerite snails that Naomi bought, not the number of rabbit snails.

Choice C is incorrect. This is the cost, in dollars, of one rabbit snail and one nerite snail, not the number of rabbit snails that Naomi bought.

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

Question Difficulty: Easy

Question ID 32b7c646

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear equations in two variables	Easy

ID: 32b7c646

An employee at a restaurant prepares sandwiches and salads. It takes the employee 1.5 minutes to prepare a sandwich and 1.9 minutes to prepare a salad. The employee spends a total of 46.1 minutes preparing x sandwiches and y salads. Which equation represents this situation?

A. $1.9x + 1.5y = 46.1$

B. $1.5x + 1.9y = 46.1$

C. $x + y = 46.1$

D. $30.7x + 24.3y = 46.1$

ID: 32b7c646 Answer

Correct Answer: B

Rationale

Choice B is correct. It's given that the employee takes 1.5 minutes to prepare a sandwich. Multiplying 1.5 by the number of sandwiches, x, yields $1.5x$, the amount of time the employee spends preparing x sandwiches. It's also given that the employee takes 1.9 minutes to prepare a salad. Multiplying 1.9 by the number of salads, y, yields $1.9y$, the amount of time the employee spends preparing y salads. It follows that the total amount of time, in minutes, the employee spends preparing x sandwiches and y salads is $1.5x + 1.9y$. It's given that the employee spends a total of 46.1 minutes preparing x sandwiches and y salads. Thus, the equation $1.5x + 1.9y = 46.1$ represents this situation.

Choice A is incorrect. This equation represents a situation where it takes the employee 1.9 minutes, rather than 1.5 minutes, to prepare a sandwich and 1.5 minutes, rather than 1.9 minutes, to prepare a salad.

Choice C is incorrect. This equation represents a situation where it takes the employee 1 minute, rather than 1.5 minutes, to prepare a sandwich and 1 minute, rather than 1.9 minutes, to prepare a salad.

Choice D is incorrect. This equation represents a situation where it takes the employee 30.7 minutes, rather than 1.5 minutes, to prepare a sandwich and 24.3 minutes, rather than 1.9 minutes, to prepare a salad.

Question Difficulty: Easy

Question ID 6492b769

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear equations in two variables	Easy

ID: 6492b769

$$y = -4x + 40$$

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

A.

x	y
0	0
1	-4
2	-8

B.

x	y
0	40
1	44
2	48

C.

x	y
0	40
1	36
2	32

D.

x	y
0	0
1	4
2	8

ID: 6492b769 Answer

Correct Answer: C

Rationale

Choice C is correct. Each of the given choices gives three values of x: 0, 1, and 2. Substituting 0 for x in the given equation yields $y = -4(0) + 40$, or $y = 40$. Therefore, when $x = 0$, the corresponding value of y for the given equation is 40. Substituting 1 for x in the given equation yields $y = -4(1) + 40$, or $y = 36$. Therefore, when $x = 1$, the corresponding

value of y for the given equation is 36. Substituting 2 for x in the given equation yields $y = -4(2) + 40$, or $y = 32$. Therefore, when $x = 2$, the corresponding value of y for the given equation is 32. Choice C gives three values of x, 0, 1, and 2, and their corresponding values of y, 40, 36, and 32, respectively, for the given equation.

Choice A is incorrect. This table gives three values of x and their corresponding values of y for the equation $y = -4x$.

Choice B is incorrect. This table gives three values of x and their corresponding values of y for the equation $y = 4x + 40$.

Choice D is incorrect. This table gives three values of x and their corresponding values of y for the equation $y = 4x$.

Question Difficulty: Easy

Question ID ba2f524f

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear equations in two variables	Easy

ID: ba2f524f

For a camping trip a group bought x one-liter bottles of water and y three-liter bottles of water, for a total of 240 liters of water. Which equation represents this situation?

A. $x + 3y = 240$

B. $x + y = 240$

C. $3x + 3y = 240$

D. $3x + y = 240$

ID: ba2f524f Answer

Correct Answer: A

Rationale

Choice A is correct. It's given that for a camping trip a group bought x one-liter bottles of water and y three-liter bottles of water. Since the group bought x one-liter bottles of water, the total number of liters bought from x one-liter bottles of water is represented as $1x$, or x. Since the group bought y three-liter bottles of water, the total number of liters bought from y three-liter bottles of water is represented as $3y$. It's given that the group bought a total of 240 liters; thus, the equation $x + 3y = 240$ represents this situation.

Choice B is incorrect and may result from conceptual errors.

Choice C is incorrect and may result from conceptual errors.

Choice D is incorrect. This equation represents a situation where the group bought x three-liter bottles of water and y one-liter bottles of water, for a total of 240 liters of water.

Question Difficulty: Easy

Question ID 3218eacf

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear equations in two variables	Easy

ID: 3218eacf

A store sells two different-sized containers of a certain Greek yogurt. The store's sales of this Greek yogurt totaled $1{,}277.94$ dollars last month. The equation $5.48x + 7.30y = 1{,}277.94$ 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, which of the following represents the price, in dollars, of each smaller container?

A. 5.48

B. $7.30y$

C. 7.30

D. $5.48x$

ID: 3218eacf Answer

Correct Answer: A

Rationale

Choice A is correct. It's given that the store's sales of a certain Greek yogurt totaled $1{,}277.94$ dollars last month. It's also given that the equation $5.48x + 7.30y = 1{,}277.94$ represents this situation, where x is the number of smaller containers sold and y is the number of larger containers sold. Since x represents the number of smaller containers of yogurt sold, the expression $5.48x$ represents the total sales, in dollars, from smaller containers of yogurt. This means that x smaller containers of yogurt were sold at a price of 5.48 dollars each. Therefore, according to the equation, 5.48 represents the price, in dollars, of each smaller container.

Choice B is incorrect. This expression represents the total sales, in dollars, from selling y larger containers of yogurt.

Choice C is incorrect. This value represents the price, in dollars, of each larger container of yogurt.

Choice D is incorrect. This expression represents the total sales, in dollars, from selling x smaller containers of yogurt.

Question Difficulty: Easy