SAT Math

Linear Equations in Two Variables 2

Question #	ID

2.1 002dba45

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?

2.2 9c7741c6

On a 210-mile trip, Cameron drove at an average speed of 60 miles per hour for the first x hours. He then completed the trip, driving at an average speed of 50 miles per hour for the remaining y hours. If $x = 1$, what is the value of y ?

2.3 d62ad380

An artist paints and sells square tiles. The selling price P, in dollars, of a painted tile is a linear function of the side length of the tile s, in inches, as shown in the table below.

Side length, s (inches)	Price, P (dollars)
3	8.00
6	18.00
9	28.00

Which of the following could define the relationship between s and P ?

A. $P = 3s + 10$

B. $P = \frac{10}{3}s + 8$

C. $P = \frac{10}{3}s - 2$

D. $P = \frac{3}{10}s - \frac{1}{10}$

2.4 431c3038

In an article about exercise, it is estimated that a 160-pound adult uses 200 calories for every 30 minutes of hiking and 150 calories for every 30 minutes of bicycling. An adult who weighs 160 pounds has completed 1 hour of bicycling. Based on the article, how many hours should the adult hike to use a total of 1,900 calories from bicycling and hiking?

A. 9.5

B. 8.75

C. 6

D. 4

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2.5 265f2a53

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

A. $\frac{3}{344}$

B. $\frac{6}{43}$

C. $\frac{43}{6}$

D. $\frac{344}{3}$

2.6 f81a0503

In the *xy*-plane, line k passes through the points $(0, -5)$ and $(1, -1)$. Which equation defines line k?

A. $y = -x + \frac{1}{4}$

B. $y = \frac{1}{4}x - 5$

C. $y = -x + 4$

D. $y = 4x - 5$

2.7 28c2253f

Characteristics for Rock Types

Rock type	Weight per volume (lb/ft^3)	Cost per pound
Basalt	180	$0.18
Granite	165	$0.09
Limestone	120	$0.03
Sandstone	135	$0.22

A city is planning to build a rock retaining wall, a monument, and a garden in a park. The table above shows four rock types that will be considered for use in the project. Also shown for each rock type is its weight per volume, in pounds per cubic foot (lb/ft^3), and the cost per pound, in dollars. Only basalt, granite, and limestone will be used in the garden. The rocks in the garden will have a total weight of 1,000 pounds. If 330 pounds of granite is used, which of the following equations could show the relationship between the amounts, *x* and *y*, in ft^3, for each of the other rock types used?

A. $165x + 180y = 670$

B. $165x + 120y = 1{,}000$

C. $120x + 180y = 670$

D. $120x + 180y = 1{,}000$

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2.8 2e1a7f66

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.

2.9 6f6dfe3e

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. $\frac{2n-92}{3}$

2.10 9ed4c1a2

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

2.11 fb43b85f

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

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2.12 400798d6

$2x + y = 37$

In triangle QRS, sides QR and RS each have a length of x centimeters and side SQ has a length of y centimeters. The given equation represents this situation. Which of the following is the best interpretation of 37 in this context?

A. The difference, in centimeters, between the lengths of sides QR and SQ

B. The difference, in centimeters, between the lengths of sides QR and RS

C. The sum of the lengths, in centimeters, of the three sides of the triangle

D. The length, in centimeters, of one of the two sides of equal length

2.13 ca452900

What is the slope of the graph of $y = \frac{5x}{13} - 23$ in the *xy*-plane?

2.14 62ef6f73

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. $6r + 2t = 210$

2.15 637022d2

$2.5b + 5r = 80$

The given equation describes the relationship between the number of birds, b, and the number of reptiles, r, that can be cared for at a pet care business on a given day. If the business cares for 16 reptiles on a given day, how many birds can it care for on this day?

A. 0

B. 5

C. 40

D. 80

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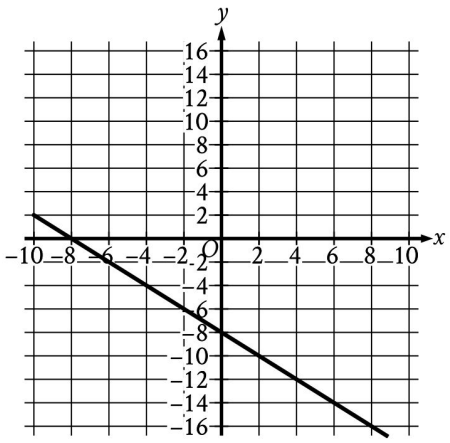
2.16 c307283c



What is an equation of the graph shown?

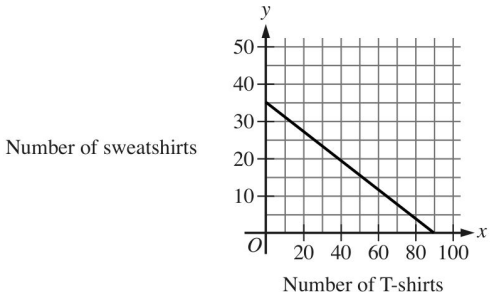
A. $y = -2x - 8$

B. $y = x - 8$

C. $y = -x - 8$

D. $y = 2x - 8$

2.17 00b9bd37



The graph models the relationship between the number of T-shirts, x, and the number of sweatshirts, y, that Kira can purchase for a school fundraiser. Which equation could represent this relationship?

A. $y = 7x + 18$

B. $7x + 18y = 630$

C. $y = 18x + 7$

D. $18x + 7y = 630$

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Question #	ID

2.18 c39dbbdf

Line r is defined by the equation $4x - 9y = 3$. Line s is parallel to line r in the xy-plane. What is the slope of line s?

A. $\frac{9}{4}$

B. $\frac{4}{9}$

C. -4

D. -9

2.19 0d1b1e35

A batch of banana milkshakes consists of 4 cups of ice cream and 2 bananas and has $1{,}114$ milligrams (mg) of calcium. There is 276 mg of calcium in 1 cup of the ice cream used to make this batch of milkshakes. How much calcium, in mg, is in 1 banana?

A. 5

B. 10

C. 419

D. $1{,}104$

2.20 df78b361

Lily made 36 cups of jam. Lily then filled x small containers and y large containers with all the jam she made. The equation $4x + 6y = 36$ represents this situation. Which is the best interpretation of $6y$ in this context?

A. The number of large containers Lily filled

B. The number of small containers Lily filled

C. The total number of cups of jam in the large containers

D. The total number of cups of jam in the small containers

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Question # **ID**

2.21 606cdce7

x	y
-6	65
-3	56
3	38
6	29

The table shows four 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. $9x + 3y = 141$

B. $9x + 3y = 3$

C. $3x + 9y = 141$

D. $3x + 9y = 3$

2.22 7625073d

The equation $7g + 7b = 840$ represents the number of blue tiles, b, and the number of green tiles, g, an artist needs for an 840-square-inch tile project. The artist needs 71 blue tiles for the project. How many green tiles does he need?

2.23 3c03cbd8

A certain township consists of a 5-hectare industrial park and a 24-hectare neighborhood. The total number of trees in the township is $4{,}529$. The equation $5x + 24y = 4{,}529$ 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 industrial park

B. The average number of trees per hectare in the neighborhood

C. The total number of trees in the industrial park

D. The total number of trees in the neighborhood

2.24 1087f6c4

$$24.5x + 24.75y = 641$$

Isabel ordered topsoil and crushed stone, which cost a total of $\$641$, for her garden. The given equation represents the relationship between the number of cubic yards of topsoil, x, and the number of tons of crushed stone, y, Isabel ordered. How much more, in dollars, did a ton of crushed stone cost Isabel than a cubic yard of topsoil?

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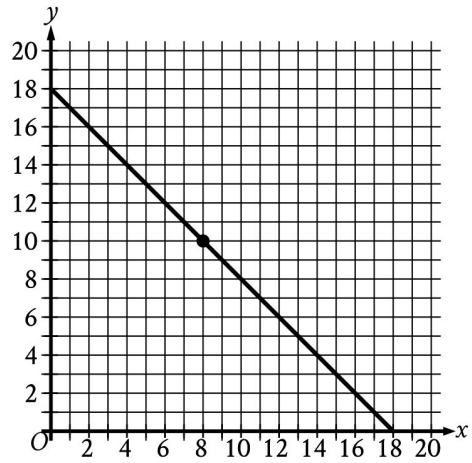
2.25 9b0a4eae



The graph in the *xy*-plane models the possible combinations of length x, $\text{in meters } (\text{m})$, and width y, in meters, for a rectangle with a perimeter of $36\ \text{m}$. Which statement is the best interpretation of the point $(8, 10)$ in this context?

A. The length is $10\ \text{m}$ less than the perimeter, and the width is $8\ \text{m}$ less than the perimeter.

B. The length is $10\ \text{m}$, and the width is $8\ \text{m}$.

C. The length is $8\ \text{m}$, and the width is $10\ \text{m}$.

D. The length is $8\ \text{m}$ less than the perimeter, and the width is $10\ \text{m}$ less than the perimeter.