Question ID 5c1751d6

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear functions	Medium

ID: 5c1751d6

x	10	15	20	25
$f(x)$	82	137	192	247

The table shows four values of x and their corresponding values of $f(x)$. There is a linear relationship between x and $f(x)$ that is defined by the equation $f(x) = mx - 28$, where m is a constant. What is the value of m?

Question ID 4452450d

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear functions	Medium

ID: 4452450d

$$f(x) = 45x + 600$$

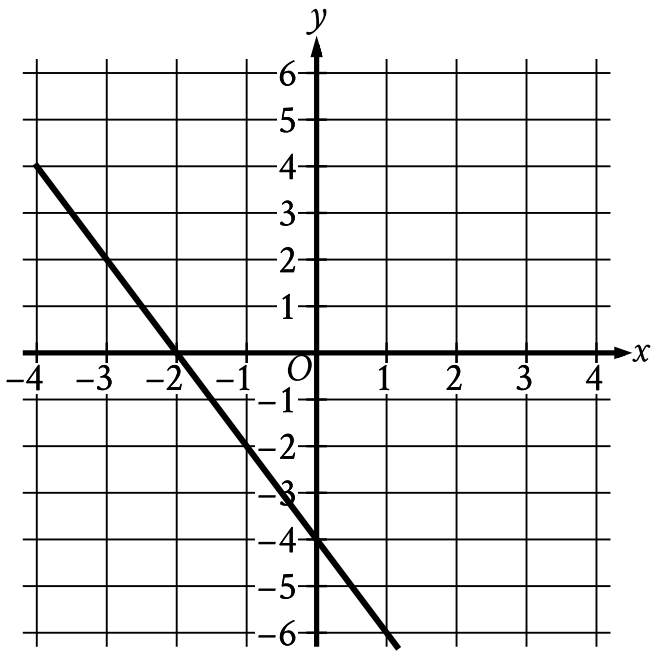
The function f gives the monthly fee $f(x)$, in dollars, a facility charges to keep x crates in storage. What is the monthly fee, in dollars, the facility charges to keep 50 crates in storage?

Question ID e35e5a7e

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear functions	Medium

ID: e35e5a7e

The graph of $y = f(x) - 11$ is shown.



Which equation defines the linear function f?

A. $f(x) = -13x - 11$

B. $f(x) = -2x + 7$

C. $f(x) = -13x + 7$

D. $f(x) = -2x - 11$

Question ID 8c6982c3

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear functions	Medium

ID: 8c6982c3

If $f(x) = x + 7$ and $g(x) = 7x$, what is the value of $4f(2) - g(2)$?

A. -5

B. 1

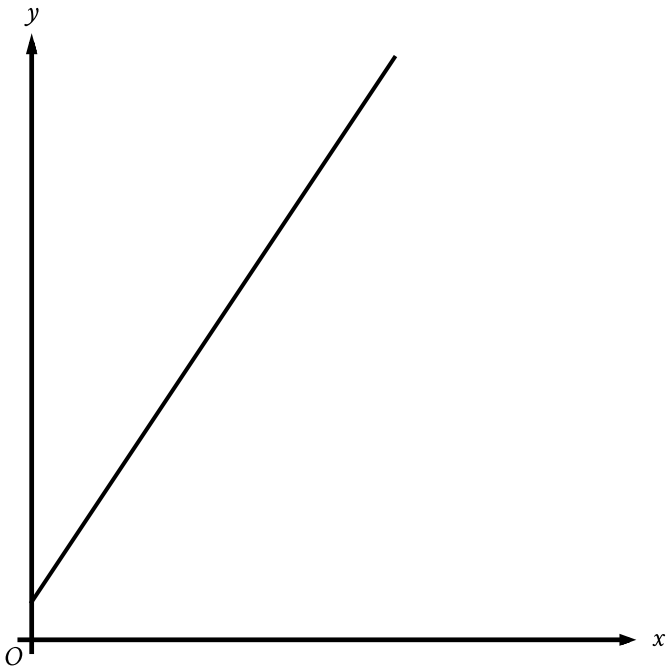
C. 22

D. 28

Question ID c3c9b8bc

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear functions	Medium

ID: c3c9b8bc



The graph represents the total charge, in dollars, by an electrician for x hours of work. The electrician charges a onetime fee plus an hourly rate. What is the best interpretation of the slope of the graph?

A. The electrician's hourly rate

B. The electrician's onetime fee

C. The maximum amount that the electrician charges

D. The total amount that the electrician charges

Question ID e34403e6

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear functions	Medium

ID: e34403e6

In the linear function f, $f(0) = 8$ and $f(1) = 12$. Which equation defines f?

A. $f(x) = 12x + 8$

B. $f(x) = 4x$

C. $f(x) = 4x + 12$

D. $f(x) = 4x + 8$

Question ID 1cdd69a4

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear functions	Medium

ID: 1cdd69a4

The function f is defined by $f(x) = -9x + 9$. What is the y-coordinate of the y-intercept of the graph of $y = f(x)$ in the xy-plane?

Question ID 5363dc9a

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear functions	Medium

ID: 5363dc9a

Brian saves $\frac{2}{5}$ of the $\$215$ he earns each week from his job. If Brian continues to save at this rate, how much money, in dollars, will Brian save in 9 weeks?

Question ID 51459b74

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear functions	Medium

ID: 51459b74

Number of cars	Maximum number of passengers and crew
3	174
5	284
10	559

The table shows the linear relationship between the number of cars, c, on a commuter train and the maximum number of passengers and crew, p, that the train can carry. Which equation represents the linear relationship between c and p?

A. $55c - p = -9$

B. $55c - p = 9$

C. $55p - c = -9$

D. $55p - c = 9$

Question ID dfb6b432

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear functions	Medium

ID: dfb6b432

Scientists collected fallen acorns that each housed a colony of the ant species *P. ohioensis* and analyzed each colony's structure. For any of these colonies, if the colony has x worker ants, the equation $y = 0.67x + 2.6$, where $20 \leq x \leq 110$, gives the predicted number of larvae, y, in the colony. If one of these colonies has 58 worker ants, which of the following is closest to the predicted number of larvae in the colony?

A. 41

B. 61

C. 83

D. 190

Question ID 8e53811f

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear functions	Medium

ID: 8e53811f

$$w(t) = 300 - 4t$$

The function w models the volume of liquid, in milliliters, in a container t seconds after it begins draining from a hole at the bottom. According to the model, what is the predicted volume, in milliliters, draining from the container each second?

A. 300

B. 296

C. 75

D. 4

Question ID 9b6c20fe

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear functions	Medium

ID: 9b6c20fe

The function f is defined by $f(x) = 7x - 84$. What is the *x*-intercept of the graph of $y = f(x)$ in the *xy*-plane?

A. $(-12, 0)$

B. $(-7, 0)$

C. $(7, 0)$

D. $(12, 0)$

Question ID c319a5eb

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear functions	Medium

ID: c319a5eb

In the *xy*-plane, the graph of the linear function f contains the points $(0, 2)$ and $(8, 34)$. Which equation defines f, where $y = f(x)$?

A. $f(x) = 2x + 42$

B. $f(x) = 32x + 36$

C. $f(x) = 4x + 2$

D. $f(x) = 8x + 2$

Question ID 387e1ecb

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear functions	Medium

ID: 387e1ecb

For the linear function h, the graph of $y = h(x)$ in the *xy*-plane passes through the points $(7, 21)$ and $(9, 25)$. Which equation defines h?

A. $h(x) = \frac{1}{2}x - \frac{7}{2}$

B. $h(x) = 2x + 7$

C. $h(x) = 7x + 21$

D. $h(x) = 9x + 25$

Question ID 4abc1fa3

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear functions	Medium

ID: 4abc1fa3

$$h(x) = x + b$$

For the linear function h, b is a constant and $h(0) = 45$. What is the value of b?

Question ID ab87d548

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear functions	Medium

ID: ab87d548

The function f is defined by $f(x) = 4x + k(x - 1)$, where k is a constant, and $f(5) = 32$. What is the value of $f(10)$?

Question ID 200192c0

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear functions	Medium

ID: 200192c0

For the linear function g, the graph of $y = g(x)$ in the *xy*-plane has a slope of 2 and passes through the point $(1, 14)$. Which equation defines g?

A. $g(x) = 2x$

B. $g(x) = 2x + 2$

C. $g(x) = 2x + 12$

D. $g(x) = 2x + 14$

Question ID c8de424b

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear functions	Medium

ID: c8de424b

A model predicts that a certain animal weighed 241 pounds when it was born and that the animal gained 3 pounds per day in its first year of life. This model is defined by an equation in the form $f(x) = a + bx$, where $f(x)$ is the predicted weight, in pounds, of the animal x days after it was born, and a and b are constants. What is the value of a?

Question ID da1ebb54

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear functions	Medium

ID: da1ebb54

The function f is defined by $f(x) = \frac{x+15}{5}$, and $f(a) = 10$, where a is a constant. What is the value of a?

A. 5

B. 10

C. 35

D. 65

Question ID 04857055

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear functions	Medium

ID: 04857055

A linear model estimates the population of a city from 1991 to 2015. The model estimates the population was 57 thousand in 1991, 224 thousand in 2011, and x thousand in 2015. To the nearest whole number, what is the value of x?

Question ID 9760e424

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear functions	Medium

ID: 9760e424

The relationship between two variables, x and y, is linear. For every increase in the value of x by 1, the value of y increases by 8. When the value of x is 2, the value of y is 18. Which equation represents this relationship?

A. $y = 2x + 18$

B. $y = 2x + 8$

C. $y = 8x + 2$

D. $y = 3x + 26$

Question ID 190aecd4

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear functions	Medium

ID: 190aecd4

$$f(x) = 39$$

For the given linear function f, which table gives three values of x and their corresponding values of $f(x)$?

A.

x	$f(x)$
0	0
1	0
2	0

B.

x	$f(x)$
0	39
1	39
2	39

C.

x	$f(x)$
0	0
1	39
2	78

D.

x	$f(x)$
0	39
1	0
2	-39

Question ID 8d9266b6

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear functions	Medium

ID: 8d9266b6

Distance (kilometers)	Average time (minutes)
0.32	8
0.56	14
0.68	17

The table gives the average time t, in minutes, it takes Carly to travel a certain distance d, in kilometers. Which equation could represent this linear relationship?

A. $t = 4d$

B. $t = \frac{1}{25}d$

C. $t = 25d$

D. $t = \frac{1}{4}d$

Question ID f4b59648

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear functions	Medium

ID: f4b59648

The function h is defined by $h(x) = 4x + 28$. The graph of $y = h(x)$ 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 $a + b$?

A. 21

B. 28

C. 32

D. 35

Question ID 59f935b5

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear functions	Medium

ID: 59f935b5

The function f is defined by $f(x) = \frac{9}{7}x + \frac{8}{7}$. For what value of x does $f(x) = 5$?

Question ID 76846354

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear functions	Medium

ID: 76846354

$$g(m) = -0.05m + 12.1$$

The given function g models the number of gallons of gasoline that remains from a full gas tank in a car after driving m miles. According to the model, about how many gallons of gasoline are used to drive each mile?

A. 0.05

B. 12.1

C. 20

D. 242.0

Question ID 91fa7328

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear functions	Medium

ID: 91fa7328

A linear function f gives a company's profit, in dollars, for selling x items. The company's profit is $\$220$ when it sells 8 items, and its profit is $\$320$ when it sells 10 items. Which equation defines f?

A. $f(x) = 150x - 320$

B. $f(x) = 32x$

C. $f(x) = 50x - 10x$

D. $f(x) = 50x - 180$

Question ID 0334ee02

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear functions	Medium

ID: 0334ee02

The table gives the number of hours, h, of labor and a plumber's total charge $f(h)$, in dollars, for two different jobs.

h	$f(h)$
1	155
3	285

There is a linear relationship between h and $f(h)$. Which equation represents this relationship?

A. $f(h) = 25h + 130$

B. $f(h) = 130h + 25$

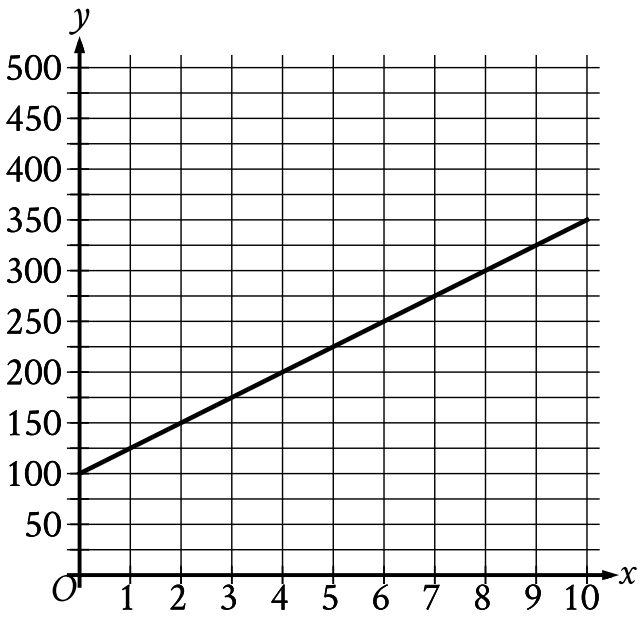
C. $f(h) = 65h + 90$

D. $f(h) = 90h + 65$

Question ID c05a6f72

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear functions	Medium

ID: c05a6f72



The graph of the function f, where $y = f(x)$, gives the total cost y, in dollars, for a certain video game system and x games. What is the best interpretation of the slope of the graph in this context?

A. Each game costs $\$25$.

B. The video game system costs $\$100$.

C. The video game system costs $\$25$.

D. Each game costs $\$100$.

Question ID b3597518

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear functions	Medium

ID: b3597518

The function $f(x) = 55.20 - 0.16x$ gives the estimated surface water temperature $f(x)$, in degrees Celsius, of a body of water on the $x\text{th}$ day of the year, where $220 \leq x \leq 360$. Based on the model, what is the estimated surface water temperature, in degrees Celsius, of this body of water on the 326th day of the year?

A. 55.20

B. 3.04

C. -0.16

D. -52.16

Question ID 96e950f2

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear functions	Medium

ID: 96e950f2

In the *xy*-plane, line k has a slope of 5 and a *y*-intercept of $(0, -35)$. What is the *x*-coordinate of the *x*-intercept of line k?

Question ID ad15efee

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear functions	Medium

ID: ad15efee

$$f(x) = 2x + 244$$

The given function f represents the perimeter, in centimeters (cm), of a rectangle with a length of x cm and a fixed width. What is the width, in cm, of the rectangle?

A. 2

B. 122

C. 244

D. 488

Question ID efdc64ee

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear functions	Medium

ID: efdc64ee

Caleb used juice to make popsicles. The function $f(x) = -5x + 30$ approximates the volume, in fluid ounces, of juice Caleb had remaining after making x popsicles. Which statement is the best interpretation of the *y*-intercept of the graph of $y = f(x)$ in the *xy*-plane in this context?

A. Caleb used approximately 5 fluid ounces of juice for each popsicle.

B. Caleb had approximately 5 fluid ounces of juice when he began to make the popsicles.

C. Caleb had approximately 30 fluid ounces of juice when he began to make the popsicles.

D. Caleb used approximately 30 fluid ounces of juice for each popsicle.

Question ID 4023b0c8

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear functions	Medium

ID: 4023b0c8

$$f(x) = 2x + 3$$

For the given function f, the graph of $y = f(x)$ in the *xy*-plane is parallel to line j. What is the slope of line j?

Question ID a8b51d6b

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear functions	Medium

ID: a8b51d6b

In the *xy*-plane, the graph of the linear function f contains the points $(0, 3)$ and $(7, 31)$. Which equation defines f, where $y = f(x)$?

A. $f(x) = 28x + 34$

B. $f(x) = 3x + 38$

C. $f(x) = 4x + 3$

D. $f(x) = 7x + 3$

Question ID 71d6c6f2

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear functions	Medium

ID: 71d6c6f2

$$j(x) = mx + 144$$

For the linear function j, m is a constant and $j(12) = 18$. What is the value of $j(10)$?

Question ID 25a1d328

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear functions	Medium

ID: 25a1d328

In the linear function h, $h(28) = 15$ and $h(26) = 22$. Which equation defines h?

A. $h(x) = -\frac{2}{7}x + 23$

B. $h(x) = -\frac{2}{7}x + 113$

C. $h(x) = -\frac{7}{2}x + 23$

D. $h(x) = -\frac{7}{2}x + 113$

Question ID 1e7acd85

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear functions	Medium

ID: 1e7acd85

x	$g(x)$
1	54
2	51
3	48
4	45

For the linear function g, the table shows four values of x and their corresponding values of $g(x)$. The function can be written as $g(x) = mx + b$, where m and b are constants. What is the value of b?

A. 3

B. 27

C. 54

D. 57

Question ID 2321f18a

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear functions	Medium

ID: 2321f18a

The pressure exerted on a scuba diver at sea level is 14.70 pounds per square inch (psi). For each foot the scuba diver descends below sea level, the pressure exerted on the scuba diver increases by 0.44 psi. What is the total pressure, in psi, exerted on the scuba diver at 105 feet below sea level?

A. 60.90

B. 31.50

C. 14.70

D. 0.44