

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

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

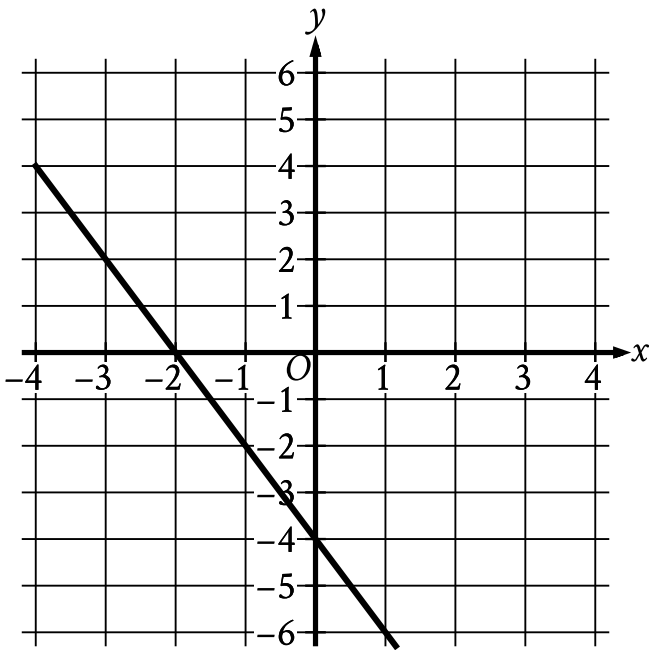
The function f gives the monthly fee $f(x)$, in dollars, a facility charges to keep x crates in storage. What is the monthly fee, in dollars, the facility charges to keep **50** crates in storage?

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

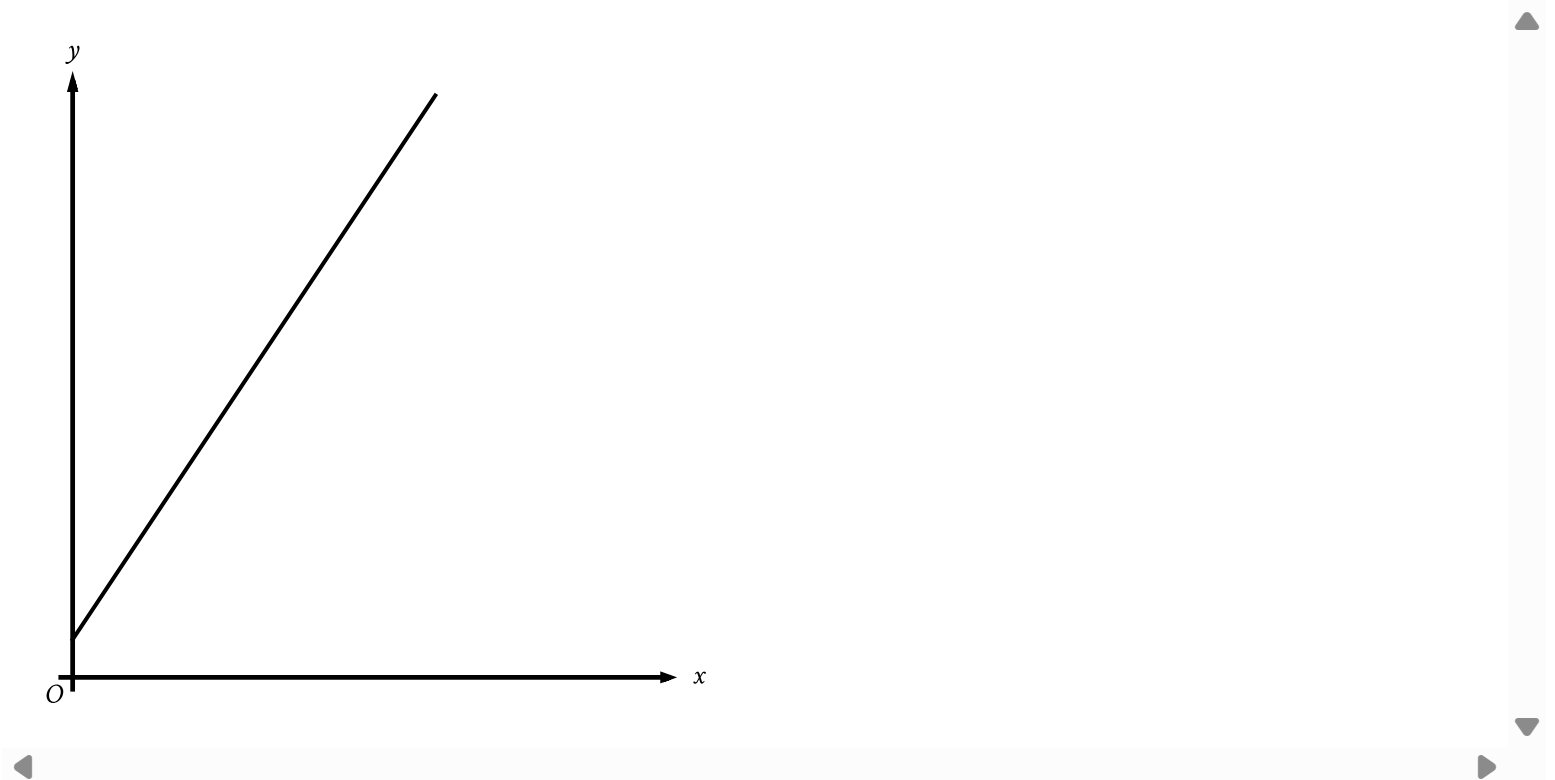
If $f(x) = x + 7$ and $g(x) = 7x$, what is the value of $4f(2) - g(2)$?

- 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 190aec4

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear functions	Medium

ID: 190aec4

$f(x) = 39$

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 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 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 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

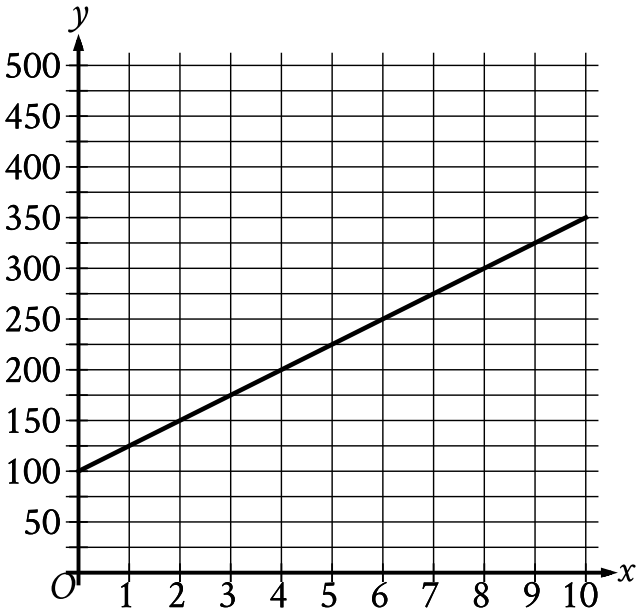
There is a linear relationship between h and $f(h)$. Which equation represents this relationship?

- 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 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**