Question ID e62cfe5f

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear functions	■■□

ID: e62cfe5f

According to a model, the head width, in millimeters, of a worker bumblebee can be estimated by adding 0.6 to four times the body weight of the bee, in grams. According to the model, what would be the head width, in millimeters, of a worker bumblebee that has a body weight of 0.5 grams?

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear functions	■■□

ID: 7e3f8363

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 620fe971

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear functions	■■☐

ID: 620fe971

A team of workers has been moving cargo off of a ship. The equation below models the approximate number of tons of cargo, y, that remains to be moved x hours after the team started working.

$y = 120 - 25x$

The graph of this equation in the xy-plane is a line. What is the best interpretation of the x-intercept in this context?

A. The team will have moved all the cargo in about 4.8 hours.

B. The team has been moving about 4.8 tons of cargo per hour.

C. The team has been moving about 25 tons of cargo per hour.

D. The team started with 120 tons of cargo to move.

Question ID 5cf1bbc9

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear functions	■■☐

ID: 5cf1bbc9
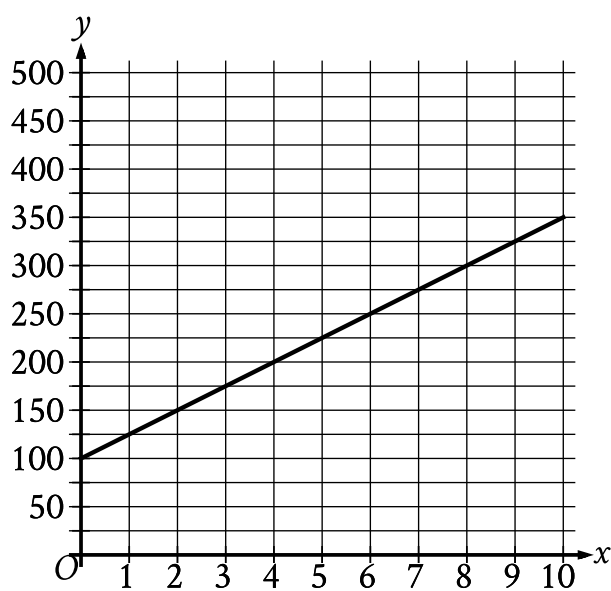
The graph of the function f, where $y = f(x)$, gives the total cost y, in dollars, for a certain video game system and x games. What is the best interpretation of the slope of the graph in this context?

A. Each game costs $\$25$.

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

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

D. Each game costs $\$100$.

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear functions	■■□

ID: dae126d7

The boiling point of water at sea level is 212 degrees Fahrenheit $(°F)$. For every 550 feet above sea level, the boiling point of water is lowered by about $1°F$. Which of the following equations can be used to find the boiling point B of water, in $°F$, x feet above sea level?

A. $B = 550 + \dfrac{x}{212}$

B. $B = 550 - \dfrac{x}{212}$

C. $B = 212 + \dfrac{x}{550}$

D. $B = 212 - \dfrac{x}{550}$

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear functions	■■□

ID: 271f7e3f

$$f(x) = \frac{(x+7)}{4}$$

For the function f defined above, what is the value of $f(9) - f(1)$?

A. 1

B. 2

C. $\dfrac{1}{4}$

D. $\dfrac{9}{4}$

Question ID c651cc56

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear functions	■■□

ID: c651cc56

x	$f(x)$
0	–2
2	4
6	16

Some values of the linear function f are shown in the table above. What is the value of $f(3)$?

A. 6

B. 7

C. 8

D. 9

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear functions	■■□

ID: c22b5f25

In the xy-plane, the points $(-2,3)$ and $(4,-5)$ lie on the graph of which of the following linear functions?
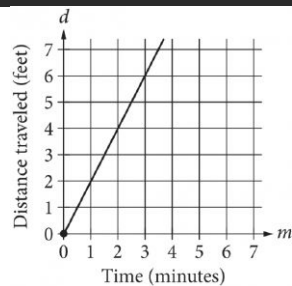
A. $f(x) = x + 5$

B. $f(x) = \dfrac{1}{2}x + 4$

C. $f(x) = -\dfrac{4}{3}x + \dfrac{1}{3}$

D. $f(x) = -\dfrac{3}{2}x + 1$

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear functions	■■□

ID: 11e1ab81

The graph above shows the distance traveled d, in feet, by a product on a conveyor belt m minutes after the product is placed on the belt. Which of the following equations correctly relates d and m ?

A. $d = 2m$

B. $d = \dfrac{1}{2}m$

C. $d = m + 2$

D. $d = 2m + 2$

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear functions	■■☐

ID: 4fe4fd7c

$$c(x) = mx + 500$$

A company's total cost $c(x)$, in dollars, to produce x shirts is given by the function above, where m is a constant and $x > 0$. The total cost to produce 100 shirts is $800. What is the total cost, in dollars, to produce 1000 shirts? (Disregard the $ sign when gridding your answer.)

Question ID 3122fc7b

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear functions	■■□

ID: 3122fc7b

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 c01f4a95

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear functions	■■□

ID: c01f4a95

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

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

Question ID 868fc236

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear functions	■■□

ID: 868fc236

Energy per Gram of Typical Macronutrients

Macronutrient	Food calories	Kilojoules
Protein	4.0	16.7
Fat	9.0	37.7
Carbohydrate	4.0	16.7

The table above gives the typical amounts of energy per gram, expressed in both food calories and kilojoules, of the three macronutrients in food. If x food calories is equivalent to k kilojoules, of the following, which best represents the relationship between x and k ?

A. $k = 0.24x$

B. $k = 4.2x$

C. $x = 4.2k$

D. $xk = 4.2$

Question ID 042aa429

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear functions	■■□

ID: 042aa429

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 113b938e

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear functions	■■☐

ID: 113b938e

$$y = 18 - 5x$$

The equation above represents the speed y, in feet per second, of Sheila's bicycle x seconds after she applied the brakes at the end of a ride. If the equation is graphed in the xy-plane, which of the following is the best interpretation of the x-coordinate of the line's x-intercept in the context of the problem?

A. The speed of Sheila's bicycle, in feet per second, before Sheila applied the brakes

B. The number of feet per second the speed of Sheila's bicycle decreased each second after Sheila applied the brakes

C. The number of seconds it took from the time Sheila began applying the brakes until the bicycle came to a complete stop

D. The number of feet Sheila's bicycle traveled from the time she began applying the brakes until the bicycle came to a complete stop

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear functions	■■☐

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 8a6de407

2.17

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear functions	■■☐

ID: 8a6de407

The function *f* is defined by $f(x) = mx + b$, where *m* and *b* are constants. If $f(0) = 18$ and $f(1) = 20$, what is the value of *m* ?

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear functions	■■□

ID: 41fdc0b8

Population of Greenleaf, Idaho

Year	Population
2000	862
2010	846

The table above shows the population of Greenleaf, Idaho, for the years 2000 and 2010. If the relationship between population and year is linear, which of the following functions P models the population of Greenleaf t years after 2000?

A. $P(t) = 862 - 1.6t$

B. $P(t) = 862 - 16t$

C. $P(t) = 862 + 16(t - 2{,}000)$

D. $P(t) = 862 - 1.6(t - 2{,}000)$