

Question ID 8e21bc65

Assessment	Test	Domain	Skill	Difficulty
PSAT/NMSQT & PSAT 10	Math	Algebra	Linear functions	<div><div></div><div></div><div></div></div>

ID: 8e21bc65

$f(x) = 39$

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 9f5ff8c2

Assessment	Test	Domain	Skill	Difficulty
PSAT/NMSQT & PSAT 10	Math	Algebra	Linear functions	<div><div></div><div></div><div></div></div>

ID: 9f5ff8c2

The function f defined by $f(t) = 14t + 9$ gives the estimated length, in inches, of a vine plant t months after Tavon purchased it. Which of the following is the best interpretation of 9 in this context?

- A. Tavon will keep the vine plant for 9 months.
- B. The vine plant is expected to grow 9 inches each month.
- C. The vine plant is expected to grow to a maximum length of 9 inches.
- D. The estimated length of the vine plant was 9 inches when Tavon purchased it.

Question ID a762cee2

Assessment	Test	Domain	Skill	Difficulty
PSAT/NMSQT & PSAT 10	Math	Algebra	Linear functions	<div><div></div><div></div><div></div></div>

ID: a762cee2

As part of a science project on evaporation, Amaya measured the height of a liquid in a container over a period of time. The function $f(x) = 33 - 0.18x$ gives the estimated height, in centimeters (cm), of the liquid in the container x days after the start of the project. Which of the following is the best interpretation of **33** in this context?

- A. The estimated height, in cm, of the liquid at the start of the project
- B. The estimated height, in cm, of the liquid at the end of the project
- C. The estimated change in the height, in cm, of the liquid each day
- D. The estimated number of days for all of the liquid to evaporate

Question ID 1ff7bc88

Assessment	Test	Domain	Skill	Difficulty
PSAT/NMSQT & PSAT 10	Math	Algebra	Linear functions	<div><div></div><div></div><div></div></div>

ID: 1ff7bc88

For the linear function f , $f(0) = 17$ and $f(1) = 17$. Which equation defines f ?

- A. $f(x) = \frac{1}{17}$
- B. $f(x) = 1$
- C. $f(x) = 17$
- D. $f(x) = 34$

Question ID 2573a53e

Assessment	Test	Domain	Skill	Difficulty
PSAT/NMSQT & PSAT 10	Math	Algebra	Linear functions	<div><div></div><div></div><div></div></div>

ID: 2573a53e

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 36b3a5b7

Assessment	Test	Domain	Skill	Difficulty
PSAT/NMSQT & PSAT 10	Math	Algebra	Linear functions	<div><div></div><div></div><div></div></div>

ID: 36b3a5b7

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**

Question ID ac181113

Assessment	Test	Domain	Skill	Difficulty
PSAT/NMSQT & PSAT 10	Math	Algebra	Linear functions	<div><div></div><div></div><div></div></div>

ID: ac181113

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 f762f4c4

Assessment	Test	Domain	Skill	Difficulty
PSAT/NMSQT & PSAT 10	Math	Algebra	Linear functions	<div><div></div><div></div><div></div></div>

ID: f762f4c4

$$f(x) = x + b$$

For the linear function f , b is a constant. When $x = 0$, $f(x) = 30$. What is the value of b ?

- A. -30
- B. $-\frac{1}{30}$
- C. $\frac{1}{30}$
- D. 30

Question ID b6c5bfb3

Assessment	Test	Domain	Skill	Difficulty
PSAT/NMSQT & PSAT 10	Math	Algebra	Linear functions	<div><div></div><div></div><div></div></div>

ID: b6c5bfb3

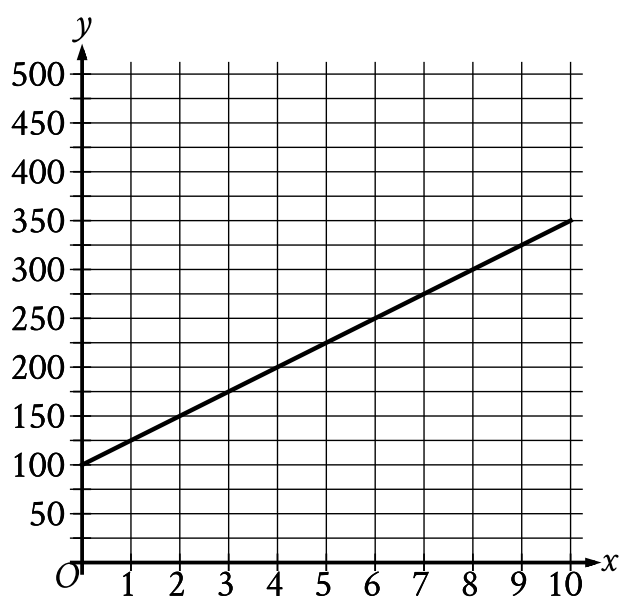
In the xy -plane, the graph of the linear function f contains the points $(0, 2)$ and $(8, 34)$. Which equation defines f , where $y = f(x)$?

- A. $f(x) = 2x + 42$
- B. $f(x) = 32x + 36$
- C. $f(x) = 4x + 2$
- D. $f(x) = 8x + 2$

Question ID d9958f0c

Assessment	Test	Domain	Skill	Difficulty
PSAT/NMSQT & PSAT 10	Math	Algebra	Linear functions	<div><div></div><div></div><div></div></div>

ID: d9958f0c



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 95e42caf

Assessment	Test	Domain	Skill	Difficulty
PSAT/NMSQT & PSAT 10	Math	Algebra	Linear functions	<div><div></div><div></div><div></div></div>

ID: 95e42caf

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 39423fbf

Assessment	Test	Domain	Skill	Difficulty
PSAT/NMSQT & PSAT 10	Math	Algebra	Linear functions	<div><div></div><div></div><div></div></div>

ID: 39423fbf

For the linear function f , the graph of $y = f(x)$ in the xy -plane has a slope of **39** and passes through the point **(0, 0)**. Which equation defines f ?

- A. $f(x) = -39x$
- B. $f(x) = \frac{1}{39}x$
- C. $f(x) = x - 39$
- D. $f(x) = 39x$

Question ID b771895f

Assessment	Test	Domain	Skill	Difficulty
PSAT/NMSQT & PSAT 10	Math	Algebra	Linear functions	<div><div></div><div></div><div></div></div>

ID: b771895f

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 3bf5b5b3

Assessment	Test	Domain	Skill	Difficulty
PSAT/NMSQT & PSAT 10	Math	Algebra	Linear functions	<div><div></div><div></div><div></div></div>

ID: 3bf5b5b3

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 77830a4f

Assessment	Test	Domain	Skill	Difficulty
PSAT/NMSQT & PSAT 10	Math	Algebra	Linear functions	<div><div></div><div></div><div></div></div>

ID: 77830a4f

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

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 7c71d844

Assessment	Test	Domain	Skill	Difficulty
PSAT/NMSQT & PSAT 10	Math	Algebra	Linear functions	<div><div></div><div></div><div></div></div>

ID: 7c71d844

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

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 52484f52

Assessment	Test	Domain	Skill	Difficulty
PSAT/NMSQT & PSAT 10	Math	Algebra	Linear functions	<div><div></div><div></div><div></div></div>

ID: 52484f52

The function g is defined by $g(x) = 4x - 6$. What is the value of $g(-7)$?

- A. -34
- B. -22
- C. $-\frac{13}{4}$
- D. $-\frac{1}{4}$

Question ID 82297d55

Assessment	Test	Domain	Skill	Difficulty
PSAT/NMSQT & PSAT 10	Math	Algebra	Linear functions	<div><div></div><div></div><div></div></div>

ID: 82297d55

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 5ddc0ad1

Assessment	Test	Domain	Skill	Difficulty
PSAT/NMSQT & PSAT 10	Math	Algebra	Linear functions	<div><div></div><div></div><div></div></div>

ID: 5ddc0ad1

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 63a9331e

Assessment	Test	Domain	Skill	Difficulty
PSAT/NMSQT & PSAT 10	Math	Algebra	Linear functions	<div><div></div><div></div><div></div></div>

ID: 63a9331e

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 1f65f0a8

Assessment	Test	Domain	Skill	Difficulty
PSAT/NMSQT & PSAT 10	Math	Algebra	Linear functions	<div><div></div><div></div><div></div></div>

ID: 1f65f0a8

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 224d2503

Assessment	Test	Domain	Skill	Difficulty
PSAT/NMSQT & PSAT 10	Math	Algebra	Linear functions	<div><div></div><div></div><div></div></div>

ID: 224d2503

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 bf9315c0

Assessment	Test	Domain	Skill	Difficulty
PSAT/NMSQT & PSAT 10	Math	Algebra	Linear functions	<div><div></div><div></div><div></div></div>

ID: bf9315c0

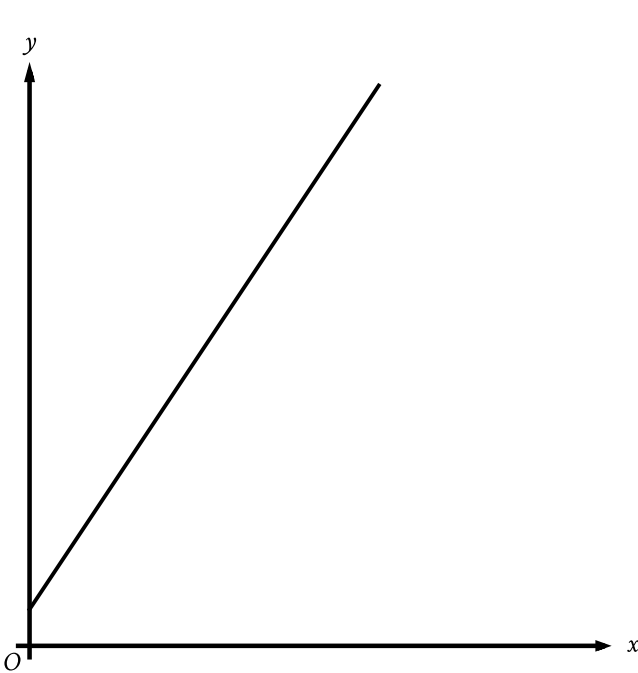
Gabriella deposits **\$35** in a savings account at the end of each week. At the beginning of the **1st** week of a year there was **\$600** in that savings account. How much money, in dollars, will be in the account at the end of the **4th** week of that year?

- A. **460**
- B. **635**
- C. **639**
- D. **740**

Question ID 85c1496b

Assessment	Test	Domain	Skill	Difficulty
PSAT/NMSQT & PSAT 10	Math	Algebra	Linear functions	<div><div></div><div></div><div></div></div>

ID: 85c1496b



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 d9069ff3

Assessment	Test	Domain	Skill	Difficulty
PSAT/NMSQT & PSAT 10	Math	Algebra	Linear functions	<div><div></div><div></div><div></div></div>

ID: d9069ff3

$$f(x) = 14 + 4x$$

The function f represents the total cost, in dollars, of attending an arcade when x games are played. How many games can be played for a total cost of \$58?

Question ID 61bbd673

Assessment	Test	Domain	Skill	Difficulty
PSAT/NMSQT & PSAT 10	Math	Algebra	Linear functions	<div><div></div><div></div><div></div></div>

ID: 61bbd673

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 14a65be1

Assessment	Test	Domain	Skill	Difficulty
PSAT/NMSQT & PSAT 10	Math	Algebra	Linear functions	<div><div></div><div></div><div></div></div>

ID: 14a65be1

The function f is defined by $f(x) = 5x + 8$. For what value of x does $f(x) = 58$?

- A. 10
- B. 13
- C. 50
- D. 298

Question ID d791004d

Assessment	Test	Domain	Skill	Difficulty
PSAT/NMSQT & PSAT 10	Math	Algebra	Linear functions	<div><div></div><div></div><div></div></div>

ID: d791004d

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 be74dbbf

Assessment	Test	Domain	Skill	Difficulty
PSAT/NMSQT & PSAT 10	Math	Algebra	Linear functions	<div><div></div><div></div><div></div></div>

ID: be74dbbf

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

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 2df665b8

Assessment	Test	Domain	Skill	Difficulty
PSAT/NMSQT & PSAT 10	Math	Algebra	Linear functions	<div><div></div><div></div><div></div></div>

ID: 2df665b8

For the linear function f , the graph of $y = f(x)$ in the xy -plane has a slope of 2 and has a y -intercept at $(0, -5)$. Which equation defines f ?

- A. $f(x) = \frac{1}{2}x - 5$
- B. $f(x) = -\frac{1}{2}x - 5$
- C. $f(x) = -2x - 5$
- D. $f(x) = 2x - 5$

Question ID de24df33

Assessment	Test	Domain	Skill	Difficulty
PSAT/NMSQT & PSAT 10	Math	Algebra	Linear functions	<div><div></div><div></div><div></div></div>

ID: de24df33

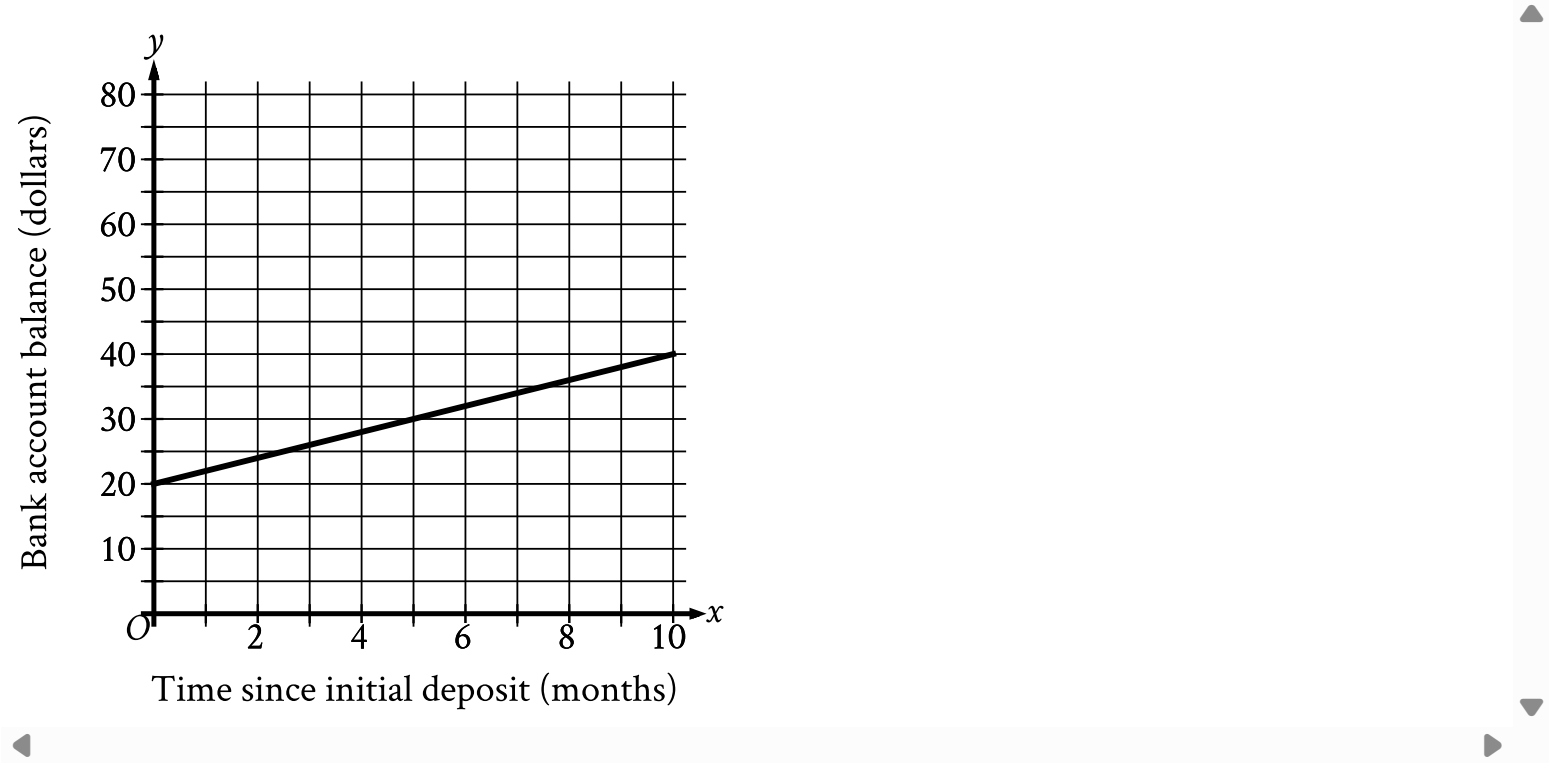
In the linear function h , $h(0) = 41$ and $h(1) = 40$. Which equation defines h ?

- A. $h(x) = -x + 41$
- B. $h(x) = -x$
- C. $h(x) = -41x$
- D. $h(x) = -41$

Question ID 909d7e2b

Assessment	Test	Domain	Skill	Difficulty
PSAT/NMSQT & PSAT 10	Math	Algebra	Linear functions	<div><div></div><div></div><div></div></div>

ID: 909d7e2b



A bank account was opened with an initial deposit. Over the next several months, regular deposits were made into this account, and there were no withdrawals made during this time. The graph of the function f shown, where $y = f(x)$, estimates the account balance, in dollars, in this bank account x months since the initial deposit. To the nearest whole dollar, what is the amount of the initial deposit estimated by the graph?

Question ID 336e802a

Assessment	Test	Domain	Skill	Difficulty
PSAT/NMSQT & PSAT 10	Math	Algebra	Linear functions	<div><div></div><div></div><div></div></div>

ID: 336e802a

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 a0755945

Assessment	Test	Domain	Skill	Difficulty
PSAT/NMSQT & PSAT 10	Math	Algebra	Linear functions	<div><div></div><div></div><div></div></div>

ID: a0755945

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 fd5ffee5

Assessment	Test	Domain	Skill	Difficulty
PSAT/NMSQT & PSAT 10	Math	Algebra	Linear functions	<div><div></div><div></div><div></div></div>

ID: fd5ffee5

$g(x) = 11x + 4$

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

A.

x	$g(x)$
-1	7
0	11
1	15

B.

x	$g(x)$
-1	-4
0	0
1	4

C.

x	$g(x)$
-1	-7
0	4
1	15

D.

x	$g(x)$
-1	-11
0	0
1	11

Question ID 55ce77fa

Assessment	Test	Domain	Skill	Difficulty
PSAT/NMSQT & PSAT 10	Math	Algebra	Linear functions	<div><div></div><div></div><div></div></div>

ID: 55ce77fa

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. $y = 3x + 26$