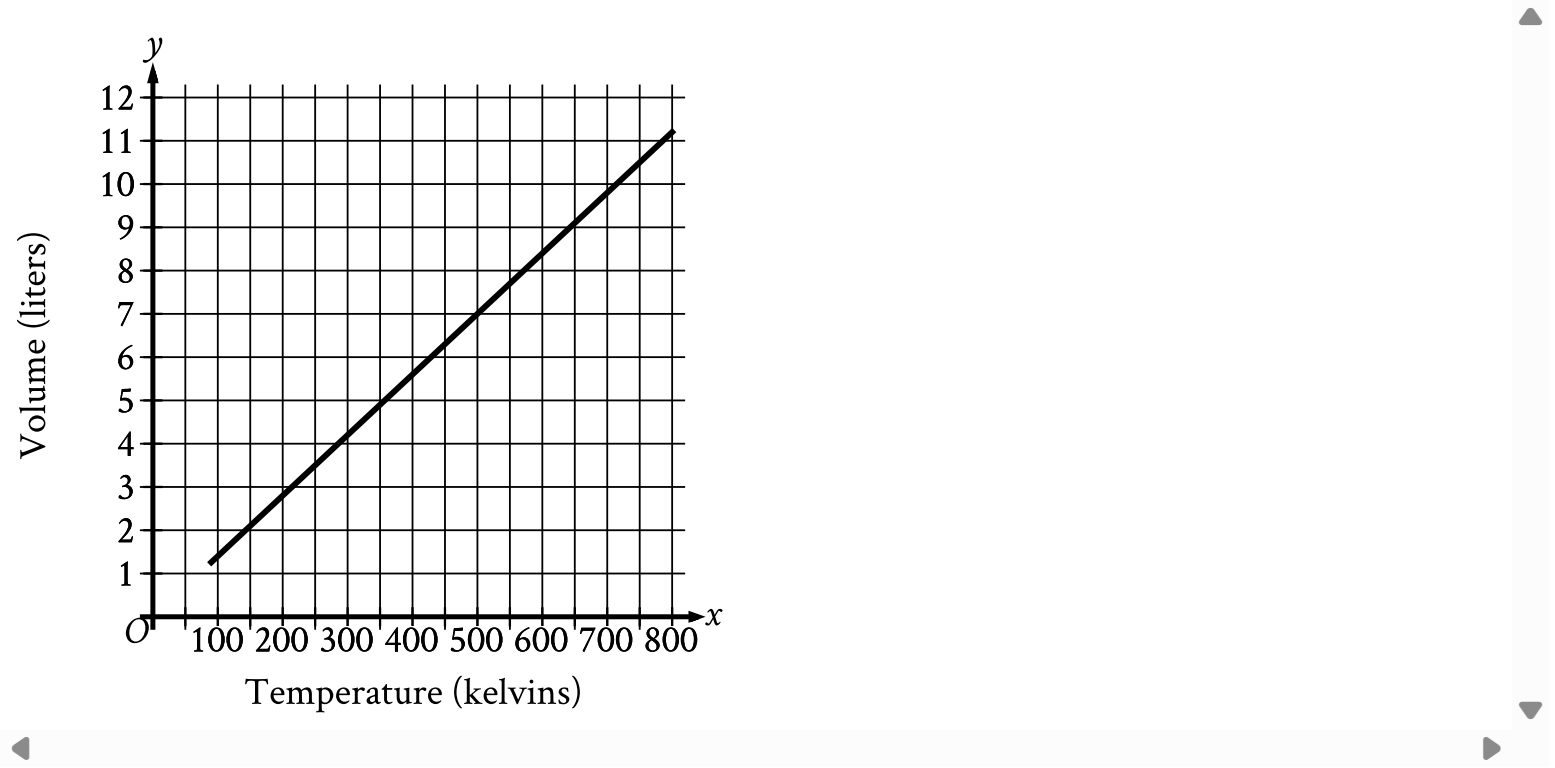


Question ID 20562018

Assessment	Test	Domain	Skill	Difficulty
PSAT 8/9	Math	Algebra	Linear functions	

ID: 20562018

Hydrogen is placed inside a container and kept at a constant pressure. The graph shows the estimated volume y , in liters, of the hydrogen when its temperature is x kelvins.



What is the estimated volume, in liters, of the hydrogen when its temperature is **500** kelvins?

- A. 0
- B. $\frac{7}{500}$
- C. 7
- D. $\frac{500}{7}$

Question ID 54992d37

Assessment	Test	Domain	Skill	Difficulty
PSAT 8/9	Math	Algebra	Linear functions	

ID: 54992d37

The function g is defined by $g(x) = 10x + 8$. What is the value of $g(x)$ when $x = 8$?

- A. 0
- B. 8
- C. 10
- D. 88

Question ID 128943f2

Assessment	Test	Domain	Skill	Difficulty
PSAT 8/9	Math	Algebra	Linear functions	

ID: 128943f2

The function f is defined by $f(x) = 4x - 3$. What is the value of $f(10)$?

- A. -30
- B. 37
- C. 40
- D. 43

Question ID e2a76ea9

Assessment	Test	Domain	Skill	Difficulty
PSAT 8/9	Math	Algebra	Linear functions	

ID: e2a76ea9

For a training program, Juan rides his bike at an average rate of **5.7** minutes per mile. Which function *m* models the number of minutes it will take Juan to ride *x* miles at this rate?

- A. $m(x) = \frac{x}{5.7}$
- B. $m(x) = x + 5.7$
- C. $m(x) = x - 5.7$
- D. $m(x) = 5.7x$

Question ID 453e6c36

Assessment	Test	Domain	Skill	Difficulty
PSAT 8/9	Math	Algebra	Linear functions	

ID: 453e6c36

$$d = 16t$$

The given equation represents the distance d , in inches, where t represents the number of seconds since an object started moving. Which of the following is the best interpretation of 16 in this context?

- A. The object moved a total of 16 inches.
- B. The object moved a total of $16t$ inches.
- C. The object is moving at a rate of 16 inches per second.
- D. The object is moving at a rate of $\frac{1}{16}$ inches per second.

Question ID 3bdfa76a

Assessment	Test	Domain	Skill	Difficulty
PSAT 8/9	Math	Algebra	Linear functions	

ID: 3bdfa76a

$f(x) = 4x + b$

For the linear function f , b is a constant and $f(7) = 28$. What is the value of b ?

- A. 0
- B. 1
- C. 4
- D. 7

Question ID e59b14c8

Assessment	Test	Domain	Skill	Difficulty
PSAT 8/9	Math	Algebra	Linear functions	

ID: e59b14c8

A veterinarian recommends that each day a certain rabbit should eat **25** calories per pound of the rabbit’s weight, plus an additional **11** calories. Which equation represents this situation, where *c* is the total number of calories the veterinarian recommends the rabbit should eat each day if the rabbit’s weight is *x* pounds?

- A. $c = 25x$
- B. $c = 36x$
- C. $c = 11x + 25$
- D. $c = 25x + 11$

Question ID 866abd4d

Assessment	Test	Domain	Skill	Difficulty
PSAT 8/9	Math	Algebra	Linear functions	

ID: 866abd4d

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

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 9966047c

Assessment	Test	Domain	Skill	Difficulty
PSAT 8/9	Math	Algebra	Linear functions	

ID: 9966047c

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 d6de4c72

Assessment	Test	Domain	Skill	Difficulty
PSAT 8/9	Math	Algebra	Linear functions	

ID: d6de4c72

For the function f , the graph of $y = f(x)$ in the xy -plane has a slope of 3 and passes through the point $(0, -8)$. Which equation defines f ?

- A. $f(x) = 3x$
- B. $f(x) = 3x - 8$
- C. $f(x) = 3x + 5$
- D. $f(x) = 3x + 11$

Question ID 39f6e4e8

Assessment	Test	Domain	Skill	Difficulty
PSAT 8/9	Math	Algebra	Linear functions	

ID: 39f6e4e8

The function f is defined by $f(x) = \frac{7}{10}x + 55$. What is the value of $f(20)$?

Question ID dfe1a300

Assessment	Test	Domain	Skill	Difficulty
PSAT 8/9	Math	Algebra	Linear functions	

ID: dfe1a300

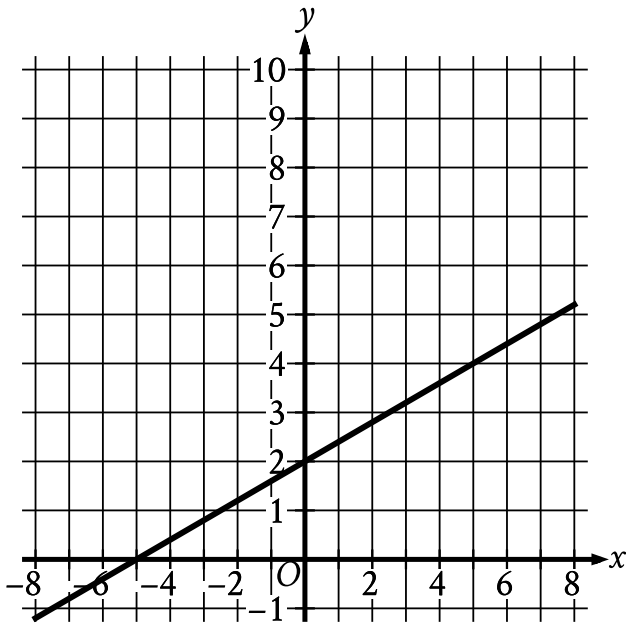
In the linear function h , $h(0) = 41$ and $h(1) = 40$. Which equation defines h ?

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

Question ID 28f49aaf

Assessment	Test	Domain	Skill	Difficulty
PSAT 8/9	Math	Algebra	Linear functions	

ID: 28f49aaf



The graph of the linear function f is shown. What is the y -intercept of the graph of $y = f(x)$?

- A. $(-5, 0)$
- B. $(2, 0)$
- C. $(0, 2)$
- D. $(0, -5)$

Question ID b590994d

Assessment	Test	Domain	Skill	Difficulty
PSAT 8/9	Math	Algebra	Linear functions	

ID: b590994d

The function f is defined by $f(x) = \frac{1}{2}(x + 6)$. What is the value of $f(4)$?

- A. 20
- B. 12
- C. 10
- D. 5

Question ID 429a5c49

Assessment	Test	Domain	Skill	Difficulty
PSAT 8/9	Math	Algebra	Linear functions	

ID: 429a5c49

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 aa528598

Assessment	Test	Domain	Skill	Difficulty
PSAT 8/9	Math	Algebra	Linear functions	

ID: aa528598

The function h is defined by $h(x) = 3x - 7$. What is the value of $h(-2)$?

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

Question ID 2db60e9f

Assessment	Test	Domain	Skill	Difficulty
PSAT 8/9	Math	Algebra	Linear functions	

ID: 2db60e9f

The total cost $f(x)$, in dollars, to lease a car for **36** months from a particular car dealership is given by $f(x) = 36x + 1,000$, where x is the monthly payment, in dollars. What is the total cost to lease a car when the monthly payment is **\$400**?

- A. **\$13,400**
- B. **\$13,000**
- C. **\$15,400**
- D. **\$37,400**

Question ID 7a18ecbe

Assessment	Test	Domain	Skill	Difficulty
PSAT 8/9	Math	Algebra	Linear functions	

ID: 7a18ecbe

The number y is ~~84~~ less than the number x . Which equation represents the relationship between x and y ?

- A. $y = x + 84$
- B. $y = \frac{1}{84}x$
- C. $y = 84x$
- D. $y = x - 84$

Question ID 2c78116f

Assessment	Test	Domain	Skill	Difficulty
PSAT 8/9	Math	Algebra	Linear functions	

ID: 2c78116f

The function h is defined by $h(x) = x + 200$. What is the value of $h(50)$?

- A. 200
- B. 250
- C. 10,000
- D. 50,200

Question ID d86f3bf8

Assessment	Test	Domain	Skill	Difficulty
PSAT 8/9	Math	Algebra	Linear functions	

ID: d86f3bf8

In science class, Diego conducted an experiment to learn about evaporation. Diego measured the height of fluid in a beaker over a period of time. The function $f(x) = 39 - 0.18x$ gives the estimated height, **in centimeters (cm)**, of the fluid in the beaker x days after the start of the experiment. Which of the following is the best interpretation of **39** in this context?

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

Question ID 359de99c

Assessment	Test	Domain	Skill	Difficulty
PSAT 8/9	Math	Algebra	Linear functions	

ID: 359de99c

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 28d1e562

Assessment	Test	Domain	Skill	Difficulty
PSAT 8/9	Math	Algebra	Linear functions	

ID: 28d1e562

$$s = 40 + 3t$$

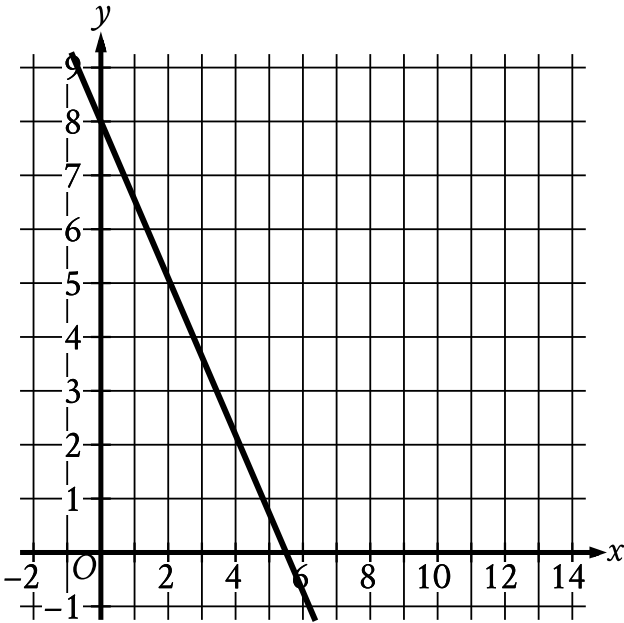
The equation gives the speed s , in miles per hour, of a certain car t seconds after it began to accelerate. What is the speed, in miles per hour, of the car 5 seconds after it began to accelerate?

- A. 40
- B. 43
- C. 45
- D. 55

Question ID 70267fc7

Assessment	Test	Domain	Skill	Difficulty
PSAT 8/9	Math	Algebra	Linear functions	

ID: 70267fc7



The graph of the linear function f is shown, where $y = f(x)$. What is the y -intercept of the graph of f ?

- A. $(0, 0)$
- B. $(0, -\frac{16}{11})$
- C. $(0, -8)$
- D. $(0, 8)$

Question ID 9082f4ab

Assessment	Test	Domain	Skill	Difficulty
PSAT 8/9	Math	Algebra	Linear functions	

ID: 9082f4ab

The function f is defined by $f(x) = 4x$. For what value of x does $f(x) = 8$?

Question ID 541e97f5

Assessment	Test	Domain	Skill	Difficulty
PSAT 8/9	Math	Algebra	Linear functions	

ID: 541e97f5

Area (square feet)	Water (gallons)
2,520	4,536
3,780	6,804
5,040	9,072

The buildings of a shopping center are designed to allow water to drain from the roof into gutters on the sides of the buildings. The table shows the relationship between the area x , in square feet, of a roof and the amount of water $f(x)$, in gallons, drained from the roof into the gutters over a certain period of time. Which equation could define f ?

- A. $f(x) = 0.6x$
- B. $f(x) = 1.8x$
- C. $f(x) = 2,268x$
- D. $f(x) = 4,536x$

Question ID 5b31baa1

Assessment	Test	Domain	Skill	Difficulty
PSAT 8/9	Math	Algebra	Linear functions	

ID: 5b31baa1

The function f is defined by the equation $f(x) = 7x + 2$. What is the value of $f(x)$ when $x = 4$?

Question ID c2007c9d

Assessment	Test	Domain	Skill	Difficulty
PSAT 8/9	Math	Algebra	Linear functions	

ID: c2007c9d

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 526ec188

Assessment	Test	Domain	Skill	Difficulty
PSAT 8/9	Math	Algebra	Linear functions	

ID: 526ec188

The function f is defined by $f(x) = 3x - 8$. What is the value of $f(7)$?

- A. 29
- B. 13
- C. −5
- D. −29

Question ID a827de8e

Assessment	Test	Domain	Skill	Difficulty
PSAT 8/9	Math	Algebra	Linear functions	

ID: a827de8e

Hana deposited a fixed amount into her bank account each month. The function $f(t) = 100 + 25t$ gives the amount, in dollars, in Hana's bank account after t monthly deposits. What is the best interpretation of **25** in this context?

- A. With each monthly deposit, the amount in Hana's bank account increased by **\$25**.
- B. Before Hana made any monthly deposits, the amount in her bank account was **\$25**.
- C. After **1** monthly deposit, the amount in Hana's bank account was **\$25**.
- D. Hana made a total of **25** monthly deposits.

Question ID 9d00ff8c

Assessment	Test	Domain	Skill	Difficulty
PSAT 8/9	Math	Algebra	Linear functions	

ID: 9d00ff8c

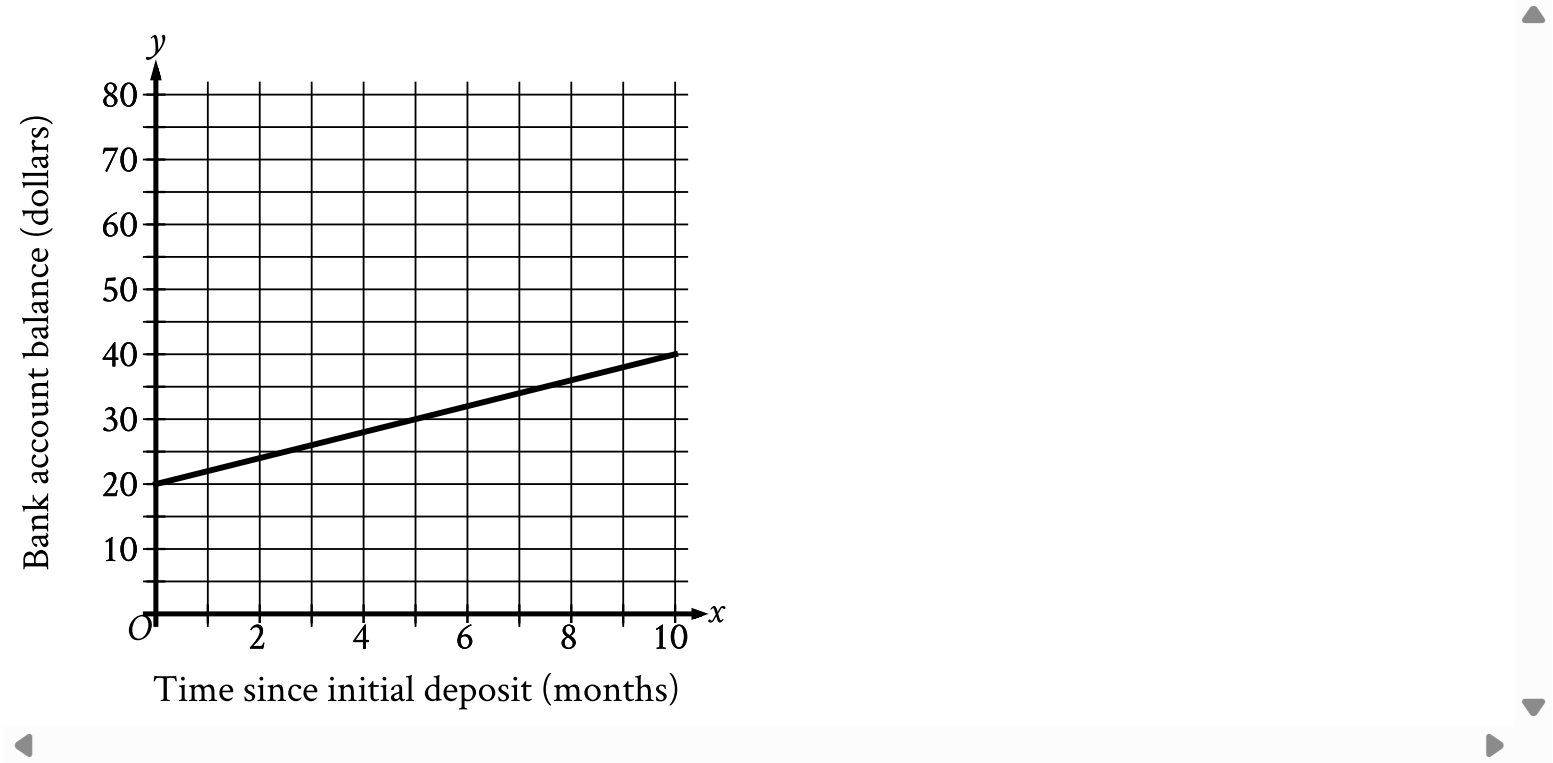
A contract for a certain service requires a onetime activation cost of **\$35** and a monthly cost of **\$23**. Which equation represents this situation, where c is the total cost, in dollars, of this service contract for t months?

- A. $c = \frac{t}{23} + 35$
- B. $c = \frac{t}{35} + 23$
- C. $c = 23t + 35$
- D. $c = 35t + 23$

Question ID 45bd797b

Assessment	Test	Domain	Skill	Difficulty
PSAT 8/9	Math	Algebra	Linear functions	

ID: 45bd797b



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 1e5aa7c5

Assessment	Test	Domain	Skill	Difficulty
PSAT 8/9	Math	Algebra	Linear functions	

ID: 1e5aa7c5

The function f is defined by $f(x) = \frac{1}{10}x - 2$. What is the y -intercept of the graph of $y = f(x)$ in the xy -plane?

- A. $(-2, 0)$
- B. $(0, -2)$
- C. $(0, \frac{1}{10})$
- D. $(\frac{1}{10}, 0)$

Question ID f0452309

Assessment	Test	Domain	Skill	Difficulty
PSAT 8/9	Math	Algebra	Linear functions	

ID: f0452309

$$d = 16 - \frac{x}{30}$$

The equation shown gives the estimated amount of diesel d , in gallons, that remains in the gas tank of a truck after being driven x miles, where $0 \leq x \leq 480$. What is the estimated amount of diesel, in gallons, that remains in the gas tank of the truck when $x = 300$?

- A. 0
- B. 6
- C. 14
- D. 16

Question ID 4b676fa9

Assessment	Test	Domain	Skill	Difficulty
PSAT 8/9	Math	Algebra	Linear functions	

ID: 4b676fa9

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

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 bfd193f7

Assessment	Test	Domain	Skill	Difficulty
PSAT 8/9	Math	Algebra	Linear functions	

ID: bfd193f7

A student council group is selling school posters for a fundraiser. They use the function $p(x) = 5x - 220$ to determine their profit $p(x)$, in dollars, for selling x school posters. In order to earn a profit of \$900, how many school posters must they sell?

Question ID 0041a21e

Assessment	Test	Domain	Skill	Difficulty
PSAT 8/9	Math	Algebra	Linear functions	

ID: 0041a21e

$$f(x) = x + \frac{8}{11}$$

The function f is defined by the given equation. What is the value of $f(x)$ when $x = \frac{3}{11}$?

Question ID 7984ca2e

Assessment	Test	Domain	Skill	Difficulty
PSAT 8/9	Math	Algebra	Linear functions	

ID: 7984ca2e

The function f is defined by $f(x) = -3x + 60$. What is the value of $f(x)$ when $x = -8$?

- A. 49
- B. 52
- C. 57
- D. 84

Question ID 355d8347

Assessment	Test	Domain	Skill	Difficulty
PSAT 8/9	Math	Algebra	Linear functions	

ID: 355d8347

x	$f(x)$
0	29
1	32
2	35

For the linear function f , the table shows three values of x and their corresponding values of $f(x)$. Which equation defines $f(x)$?

- A. $f(x) = 3x + 29$
- B. $f(x) = 29x + 32$
- C. $f(x) = 35x + 29$
- D. $f(x) = 32x + 35$

Question ID f20a49b1

Assessment	Test	Domain	Skill	Difficulty
PSAT 8/9	Math	Algebra	Linear functions	

ID: f20a49b1

The function g is defined by $g(x) = 6x$. For what value of x is $g(x) = 54$?

Question ID 3535aecd

Assessment	Test	Domain	Skill	Difficulty
PSAT 8/9	Math	Algebra	Linear functions	

ID: 3535aecd

Sean rents a tent at a cost of **\$11** per day plus a onetime insurance fee of **\$10**. Which equation represents the total cost c , in dollars, to rent the tent with insurance for d days?

- A. $c = 11(d + 10)$
- B. $c = 10(d + 11)$
- C. $c = 11d + 10$
- D. $c = 10d + 11$

Question ID a3e1df31

Assessment	Test	Domain	Skill	Difficulty
PSAT 8/9	Math	Algebra	Linear functions	

ID: a3e1df31

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

The function f gives the estimated height, in feet, of a willow tree x years after its height was first measured. Which statement is the best interpretation of 4 in this context?

- A. The tree will be measured each year for 4 years.
- B. The tree is estimated to grow to a maximum height of 4 feet.
- C. The estimated height of the tree increased by 4 feet each year.
- D. The estimated height of the tree was 4 feet when it was first measured.

Question ID 6069320c

Assessment	Test	Domain	Skill	Difficulty
PSAT 8/9	Math	Algebra	Linear functions	

ID: 6069320c

The function f is defined by $f(x) = 8x$. For what value of x does $f(x) = 72$?

- A. 8
- B. 9
- C. 64
- D. 80

Question ID 88449695

Assessment	Test	Domain	Skill	Difficulty
PSAT 8/9	Math	Algebra	Linear functions	

ID: 88449695

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 0baa121f

Assessment	Test	Domain	Skill	Difficulty
PSAT 8/9	Math	Algebra	Linear functions	

ID: 0baa121f

$g(x) = 11x + 4$

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 9e52bd8c

Assessment	Test	Domain	Skill	Difficulty
PSAT 8/9	Math	Algebra	Linear functions	

ID: 9e52bd8c

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 a87f0f51

Assessment	Test	Domain	Skill	Difficulty
PSAT 8/9	Math	Algebra	Linear functions	

ID: a87f0f51

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 11cf758c

Assessment	Test	Domain	Skill	Difficulty
PSAT 8/9	Math	Algebra	Linear functions	

ID: 11cf758c

$$f(x) = 7x + 1$$

The function gives the total number of people on a company retreat with x managers. What is the total number of people on a company retreat with 7 managers?

Question ID 150bf0b1

Assessment	Test	Domain	Skill	Difficulty
PSAT 8/9	Math	Algebra	Linear functions	

ID: 150bf0b1

The function f is defined by $f(x) = 80 - 6x$. What is the value of $f(7)$?

- A. 13
- B. 38
- C. 74
- D. 81

Question ID 80bcab8e

Assessment	Test	Domain	Skill	Difficulty
PSAT 8/9	Math	Algebra	Linear functions	

ID: 80bcab8e

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 12fecc78

Assessment	Test	Domain	Skill	Difficulty
PSAT 8/9	Math	Algebra	Linear functions	

ID: 12fecc78

For the linear function f , the graph of $y = f(x)$ in the xy -plane has a slope of $\frac{1}{4}$ and passes through the point $(0, 5)$. Which equation defines f ?

- A. $f(x) = \frac{1}{4}x + 5$
- B. $f(x) = \frac{1}{4}x + \frac{1}{5}$
- C. $f(x) = \frac{1}{4}x - \frac{5}{4}$
- D. $f(x) = \frac{1}{4}x - 5$

Question ID 812d9507

Assessment	Test	Domain	Skill	Difficulty
PSAT 8/9	Math	Algebra	Linear functions	

ID: 812d9507

The function f is defined by $f(x) = 25x + 30$. What is the value of $f(x)$ when $x = 2$?

- A. 50
- B. 57
- C. 80
- D. 110