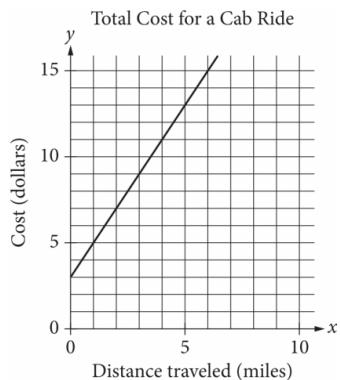


# Question ID 3f5375d9

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear functions	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div>

ID: 3f5375d9

The line graphed in the  $xy$ -plane below models the total cost, in dollars, for a cab ride,  $y$ , in a certain city during nonpeak hours based on the number of miles traveled,  $x$ .



According to the graph, what is the cost for each additional mile traveled, in dollars, of a cab ride?

- A. \$2.00
- B. \$2.60
- C. \$3.00
- D. \$5.00

## Question ID fdee0fbf

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear equations in two variables	<div style="width: 30%; background-color: #0056b3; height: 10px;"></div> <div style="width: 30%; background-color: #0056b3; height: 10px;"></div> <div style="width: 30%; background-color: #0056b3; height: 10px;"></div>

ID: fdee0fbf

In the  $xy$ -plane, line  $k$  intersects the  $y$ -axis at the point  $(0, -6)$  and passes through the point  $(2, 2)$ . If the point  $(20, w)$  lies on line  $k$ , what is the value of  $w$ ?

# Question ID 620fe971

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear functions	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 50%; background-color: #e0e0e0; height: 10px;"></div>

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.

$$y = 120 - 25x$$

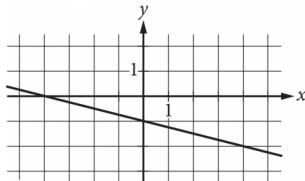
The graph of this equation in the  $xy$ -plane is a line. What is the best interpretation of the  $x$ -intercept in this context?

- 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 b2845d88

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear equations in two variables	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 25%; background-color: #e0e0e0; height: 10px;"></div> <div style="width: 25%; background-color: #e0e0e0; height: 10px;"></div>

ID: b2845d88



Which of the following is an equation of the graph shown in the  $xy$ -plane above?

- A.  $y = -\frac{1}{4}x - 1$
- B.  $y = -x - 4$
- C.  $y = -x - \frac{1}{4}$
- D.  $y = -4x - 1$

## Question ID f75bd744

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Systems of two linear equations in two variables	<div style="width: 75%; background-color: #0056b3; height: 10px;"></div>

ID: f75bd744

$$\begin{aligned}4x - 6y &= 10y + 2 \\ty &= \frac{1}{2} + 2x\end{aligned}$$

In the given system of equations,  $t$  is a constant. If the system has no solution, what is the value of  $t$ ?

## Question ID 17d80dc3

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear functions	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 50%; background-color: #e0e0e0; height: 10px;"></div>

ID: 17d80dc3

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 b3abf40f

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear functions	<div style="width: 60%; background-color: #0056b3; height: 10px;"></div>

ID: b3abf40f

$$F(x) = \frac{9}{5}(x - 273.15) + 32$$

The function  $F$  gives the temperature, in degrees Fahrenheit, that corresponds to a temperature of  $x$  kelvins. If a temperature increased by 9.10 kelvins, by how much did the temperature increase, in degrees Fahrenheit?

- A. 16.38
- B. 48.38
- C. 475.29
- D. 507.29

## Question ID 6ac23de7

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear equations in one variable	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div>

ID: 6ac23de7

$$\frac{4x}{5} = 20$$

In the equation above, what is the value of  $x$ ?

- A. 25
- B. 24
- C. 16
- D. 15

# Question ID 6e6a3241

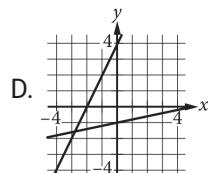
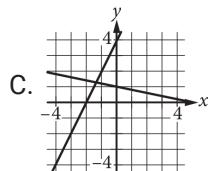
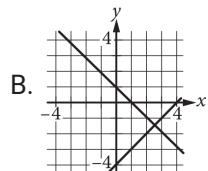
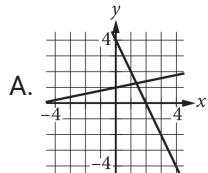
Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Systems of two linear equations in two variables	<div style="width: 25%; background-color: #003366; height: 10px;"></div> <div style="width: 25%; background-color: #003366; height: 10px;"></div> <div style="width: 50%; background-color: #cccccc; height: 10px;"></div>

ID: 6e6a3241

$$x + 5y = 5$$

$$2x - y = -4$$

Which of the following graphs in the  $xy$ -plane could be used to solve the system of equations above?



## Question ID e6cb2402

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear equations in one variable	<div style="width: 30%; background-color: #0056b3; height: 10px;"></div> <div style="width: 30%; background-color: #0056b3; height: 10px;"></div> <div style="width: 30%; background-color: #0056b3; height: 10px;"></div>

ID: e6cb2402

$$3(kx + 13) = \frac{48}{17}x + 36$$

In the given equation,  $k$  is a constant. The equation has no solution. What is the value of  $k$ ?

# Question ID af711d1b

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear functions	<div style="width: 25%; background-color: #0056b3;"></div> <div style="width: 25%; background-color: #0056b3;"></div> <div style="width: 50%; background-color: #e0e0e0;"></div>

ID: af711d1b

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 7392dfc1

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear equations in one variable	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div>

ID: 7392dfc1

Which of the following is equivalent to  $4x + 6 = 12$ ?

- A.  $2x + 4 = 6$
- B.  $x + 3 = 3$
- C.  $3x + 2 = 4$
- D.  $2x + 3 = 6$

## Question ID 93954cfa

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear equations in one variable	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div>

ID: 93954cfa

One pound of grapes costs \$2. At this rate, how many dollars will  $c$  pounds of grapes cost?

A.  $2c$

B.  $2+c$

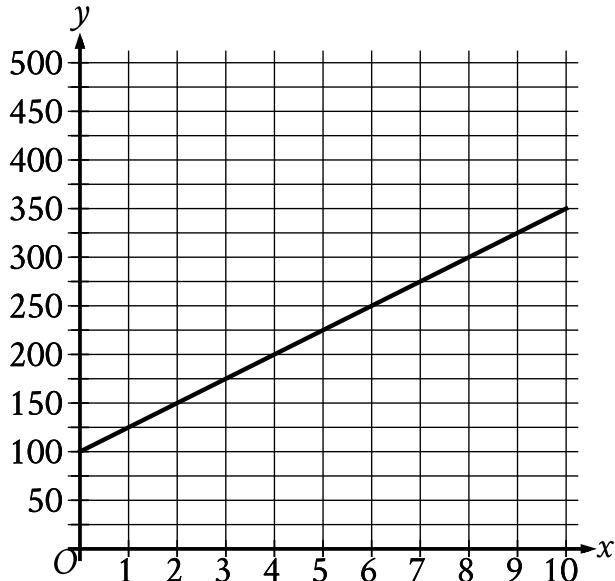
C.  $\frac{2}{c}$

D.  $\frac{c}{2}$

# Question ID 5cf1bbc9

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear functions	<div style="width: 20%; background-color: #0056b3; height: 10px;"></div> <div style="width: 20%; background-color: #0056b3; height: 10px;"></div> <div style="width: 60%; background-color: #e0e0e0; height: 10px;"></div>

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.

## Question ID 9c7741c6

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear equations in two variables	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 50%; background-color: #e0e0e0; height: 10px;"></div>

ID: 9c7741c6

On a 210-mile trip, Cameron drove at an average speed of 60 miles per hour for the first  $x$  hours. He then completed the trip, driving at an average speed of 50 miles per hour for the remaining  $y$  hours. If  $x = 1$ , what is the value of  $y$ ?

# Question ID 8abed0fb

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Systems of two linear equations in two variables	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div>

ID: 8abed0fb

$$y = 2x + 3$$

$$x = 1$$

What is the solution  $(x, y)$  to the given system of equations?

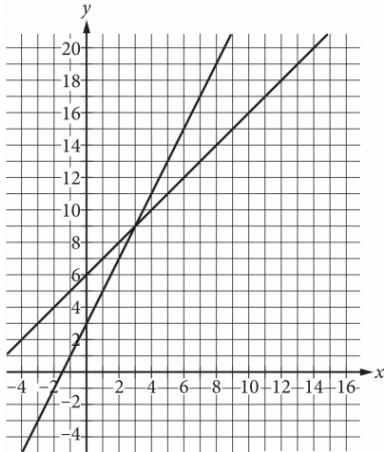
- A.  $(1, 2)$
- B.  $(1, 5)$
- C.  $(2, 3)$
- D.  $(2, 7)$

# Question ID e1259a5a

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Systems of two linear equations in two variables	<div style="width: 25%; background-color: #003366; height: 10px;"></div> <div style="width: 25%; background-color: #cccccc; height: 10px;"></div> <div style="width: 25%; background-color: #cccccc; height: 10px;"></div>

ID: e1259a5a

A system of two linear equations is graphed in the  $xy$ -plane below.



Which of the following points is the solution to the system of equations?

- A. (3,9)
- B. (6,15)
- C. (8,10)
- D. (12,18)

# Question ID 018a2704

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear equations in one variable	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 50%; background-color: #e0e0e0; height: 10px;"></div>

ID: 018a2704

If  $46 = 16 + 2(x - 8)$ , what is the value of  $2(x - 8)$ ?

- A. 16
- B. 23
- C. 30
- D. 38

# Question ID b988eeec

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear functions	<div style="width: 75%; background-color: #0056b3; height: 10px;"></div>

ID: b988eeec

The functions  $f$  and  $g$  are defined as  $f(x) = \frac{1}{4}x - 9$  and  $g(x) = \frac{3}{4}x + 21$ . If the function  $h$  is defined as  $h(x) = f(x) + g(x)$ , what is the  $x$ -coordinate of the  $x$ -intercept of the graph of  $y = h(x)$  in the  $xy$ -plane?

## Question ID 3d04de9c

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear equations in one variable	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div>

ID: 3d04de9c

A principal used a total of **25** flags that were either blue or yellow for field day. The principal used **20** blue flags. How many yellow flags were used?

- A. **5**
- B. **20**
- C. **25**
- D. **30**

# Question ID 70feb725

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Systems of two linear equations in two variables	<div style="width: 75%; background-color: #0056b3; height: 10px;"></div>

ID: 70feb725

During a month, Morgan ran  $r$  miles at 5 miles per hour and biked  $b$  miles at 10 miles per hour. She ran and biked a total of 200 miles that month, and she biked for twice as many hours as she ran. What is the total number of miles that Morgan biked during the month?

- A. 80
- B. 100
- C. 120
- D. 160

# Question ID 60f71697

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear equations in one variable	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div>

ID: 60f71697

$$8x = 88$$

What value of  $x$  is the solution to the given equation?

- A. 11
- B. 80
- C. 96
- D. 704

# Question ID ed92fb68

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Systems of two linear equations in two variables	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 50%; background-color: #e0e0e0; height: 10px;"></div>

ID: ed92fb68

$$4x + 5y = 100$$

$$5x + 4y = 62$$

If the system of equations above has solution  $(x, y)$ ,

what is the value of  $x + y$ ?

A. 0

B. 9

C. 18

D. 38

# Question ID 606cdce7

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear equations in two variables	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 50%; background-color: #e0e0e0; height: 10px;"></div>

ID: 606cdce7

$x$	$y$
-6	65
-3	56
3	38
6	29

The table shows four values of  $x$  and their corresponding values of  $y$ . There is a linear relationship between  $x$  and  $y$ . Which of the following equations represents this relationship?

- A.  $9x + 3y = 141$
- B.  $9x + 3y = 3$
- C.  $3x + 9y = 141$
- D.  $3x + 9y = 3$

## Question ID 1a621af4

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear inequalities in one or two variables	<div style="width: 75%; background-color: #0056b3; height: 10px;"></div>

ID: 1a621af4

A number  $x$  is at most 2 less than 3 times the value of  $y$ . If the value of  $y$  is  $-4$ , what is the greatest possible value of  $x$ ?

## Question ID af2ba762

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear functions	<div style="width: 75%; background-color: #0056b3; height: 10px;"></div>

ID: af2ba762

According to data provided by the US Department of Energy, the average price per gallon of regular gasoline in the United States from September 1, 2014, to December 1, 2014, is modeled by the function  $F$  defined below, where  $F(x)$  is the average price per gallon  $x$  months after September 1.

$$F(x) = 2.74 - 0.19(x - 3)$$

The constant 2.74 in this function estimates which of the following?

- A. The average monthly decrease in the price per gallon
- B. The difference in the average price per gallon from September 1, 2014, to December 1, 2014
- C. The average price per gallon on September 1, 2014
- D. The average price per gallon on December 1, 2014

# Question ID 19fdf387

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Systems of two linear equations in two variables	<div style="width: 25%; background-color: #003366; height: 10px;"></div> <div style="width: 25%; background-color: #003366; height: 10px;"></div> <div style="width: 50%; background-color: #cccccc; height: 10px;"></div>

ID: 19fdf387

In the  $xy$ -plane, the graph of  $y = x + 3$  intersects the graph of  $y = 2x - 6$  at the point  $(a, b)$ . What is the value of  $a$ ?

- A. 3
- B. 6
- C. 9
- D. 12

## Question ID a775af14

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear functions	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 50%; background-color: #e0e0e0; height: 10px;"></div>

ID: a775af14

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 b9835972

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear equations in two variables	<div style="width: 30%; background-color: #0056b3; height: 10px;"></div> <div style="width: 30%; background-color: #0056b3; height: 10px;"></div> <div style="width: 30%; background-color: #0056b3; height: 10px;"></div>

ID: b9835972

In the  $xy$ -plane, line  $\ell$  passes through the point  $(0, 0)$  and is parallel to the line represented by the equation  $y = 8x + 2$ . If line  $\ell$  also passes through the point  $(3, d)$ , what is the value of  $d$ ?

## Question ID df32b09c

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear inequalities in one or two variables	<div style="width: 25%; background-color: #002B36; height: 10px;"></div> <div style="width: 75%; background-color: #D9D9D9; height: 10px;"></div>

ID: df32b09c

Tom scored 85, 78, and 98 on his first three exams in history class. Solving which inequality gives the score,  $G$ , on Tom's fourth exam that will result in a mean score on all four exams of at least 90?

- A.  $90 - (85 + 78 + 98) \leq 4G$
- B.  $4G + 85 + 78 + 98 \geq 360$
- C.  $\frac{(G + 85 + 78 + 98)}{4} \geq 90$
- D.  $\frac{(85 + 78 + 98)}{4} \geq 90 - 4G$

## Question ID e1248a5c

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Systems of two linear equations in two variables	<div style="width: 75%; background-color: #0056b3; height: 10px;"></div>

ID: e1248a5c

In the system of equations below,  $a$  and  $c$  are constants.

$$\frac{1}{2}x + \frac{1}{3}y = \frac{1}{6}$$

$$ax + y = c$$

If the system of equations has an infinite number of solutions  $(x, y)$ , what is the value of  $a$ ?

A.  $-\frac{1}{2}$

B. 0

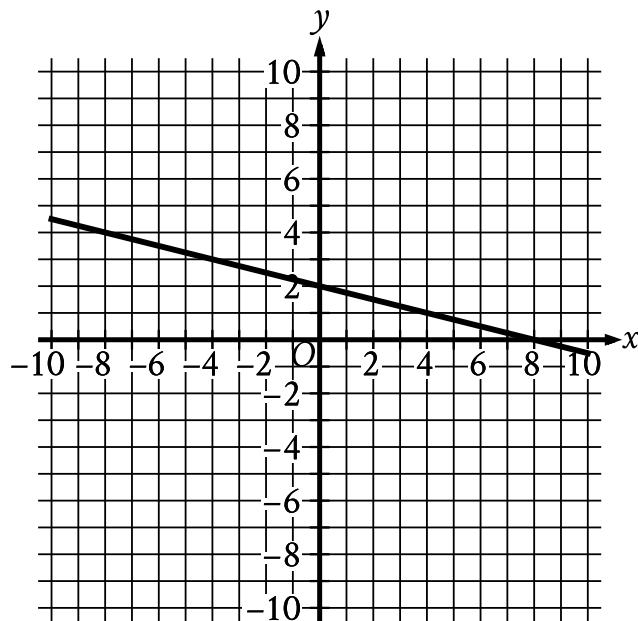
C.  $\frac{1}{2}$

D.  $\frac{3}{2}$

# Question ID 05bb1af9

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear equations in two variables	<div style="width: 30%; background-color: #0056b3; height: 10px;"></div> <div style="width: 30%; background-color: #0056b3; height: 10px;"></div> <div style="width: 30%; background-color: #0056b3; height: 10px;"></div>

ID: 05bb1af9



The graph of  $y = f(x) + 14$  is shown. Which equation defines function  $f$ ?

- A.  $f(x) = -\frac{1}{4}x - 12$
- B.  $f(x) = -\frac{1}{4}x + 16$
- C.  $f(x) = -\frac{1}{4}x + 2$
- D.  $f(x) = -\frac{1}{4}x - 14$

# Question ID dae126d7

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear functions	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 50%; background-color: #e0e0e0; height: 10px;"></div>

ID: dae126d7

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

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

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

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

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

# Question ID bf5f80c6

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear inequalities in one or two variables	<div style="width: 25%; background-color: #003366; height: 10px;"></div> <div style="width: 25%; background-color: #003366; height: 10px;"></div> <div style="width: 50%; background-color: #cccccc; height: 10px;"></div>

ID: bf5f80c6

$$y < -4x + 4$$

Which point  $(x, y)$  is a solution to the given inequality in the  $xy$ -plane?

- A.  $(-4, 0)$
- B.  $(0, 5)$
- C.  $(2, 1)$
- D.  $(2, -1)$

# Question ID 12983c1e

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear functions	<div style="width: 25%; background-color: #0056b3;"></div> <div style="width: 75%; background-color: #e0e0e0;"></div> <div style="width: 75%; background-color: #e0e0e0;"></div>

ID: 12983c1e

x	f(x)
1	5
3	13
5	21

Some values of the linear function  $f$  are shown in the table above.

Which of the following defines  $f$ ?

- A.  $f(x) = 2x + 3$
- B.  $f(x) = 3x + 2$
- C.  $f(x) = 4x + 1$
- D.  $f(x) = 5x$

## Question ID 52cb8ea4

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Systems of two linear equations in two variables	<div style="width: 75%; background-color: #0056b3; height: 10px;"></div>

ID: 52cb8ea4

$$7x - 5y = 4$$

$$4x - 8y = 9$$

If  $(x, y)$  is the solution to the system of equations above,

what is the value of  $3x + 3y$ ?

- A. -13
- B. -5
- C. 5
- D. 13

# Question ID 8adf1335

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear equations in two variables	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div>

ID: 8adf1335

A city's total expense budget for one year was  $x$  million dollars. The city budgeted  $y$  million dollars for departmental expenses and 201 million dollars for all other expenses. Which of the following represents the relationship between  $x$  and  $y$  in this context?

- A.  $x + y = 201$
- B.  $x - y = 201$
- C.  $2x - y = 201$
- D.  $y - x = 201$

## Question ID 80da233d

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear inequalities in one or two variables	<div style="width: 25%; background-color: #003366; height: 10px;"></div> <div style="width: 25%; background-color: #003366; height: 10px;"></div> <div style="width: 50%; background-color: #cccccc; height: 10px;"></div>

ID: 80da233d

A certain elephant weighs 200 pounds at birth and gains more than 2 but less than 3 pounds per day during its first year. Which of the following inequalities represents all possible weights  $w$ , in pounds, for the elephant 365 days after birth?

- A.  $400 < w < 600$
- B.  $565 < w < 930$
- C.  $730 < w < 1,095$
- D.  $930 < w < 1,295$

# Question ID 271f7e3f

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear functions	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 50%; background-color: #e0e0e0; height: 10px;"></div>

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.  $\frac{1}{4}$
- D.  $\frac{9}{4}$

# Question ID 70e29454

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear equations in one variable	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 50%; background-color: #e0e0e0; height: 10px;"></div>

ID: 70e29454

$$a(3-x) - b = -1 - 2x$$

In the equation above,  $a$  and  $b$  are constants. If the equation has infinitely many solutions, what are the values of  $a$  and  $b$ ?

- A.  $a = 2$  and  $b = 1$
- B.  $a = 2$  and  $b = 7$
- C.  $a = -2$  and  $b = 5$
- D.  $a = -2$  and  $b = -5$

# Question ID 0b46bad5

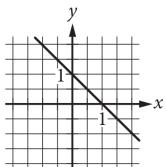
Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear equations in two variables	<div style="width: 30%; background-color: #0056b3; height: 10px;"></div> <div style="width: 30%; background-color: #0056b3; height: 10px;"></div> <div style="width: 30%; background-color: #0056b3; height: 10px;"></div>

ID: 0b46bad5

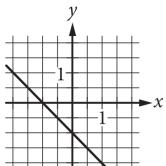
$$ax + by = b$$

In the equation above,  $a$  and  $b$  are constants and  $0 < a < b$ . Which of the following could represent the graph of the equation in the  $xy$ -plane?

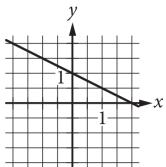
A.



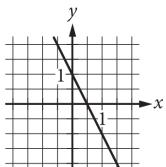
B.



C.



D.



# Question ID b31c3117

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear inequalities in one or two variables	<div style="width: 25%; background-color: #003366; height: 10px;"></div> <div style="width: 25%; background-color: #003366; height: 10px;"></div> <div style="width: 50%; background-color: #cccccc; height: 10px;"></div>

ID: b31c3117

$$H = 120p + 60$$

The Karvonen formula above shows the relationship between Alice's target heart rate  $H$ , in beats per minute (bpm), and the intensity level  $p$  of different activities. When  $p = 0$ , Alice has a resting heart rate. When  $p = 1$ , Alice has her maximum heart rate. It is recommended that  $p$  be between 0.5 and 0.85 for Alice when she trains. Which of the following inequalities describes Alice's target training heart rate?

- A.  $120 \leq H \leq 162$
- B.  $102 \leq H \leq 120$
- C.  $60 \leq H \leq 162$
- D.  $60 \leq H \leq 102$

## Question ID f09097b1

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear equations in one variable	<div style="width: 25%; background-color: #005a9f;"></div> <div style="width: 25%; background-color: #005a9f;"></div> <div style="width: 50%; background-color: #e0e0e0;"></div>

ID: f09097b1

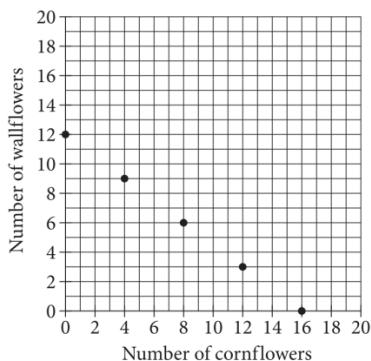
An agricultural scientist studying the growth of corn plants recorded the height of a corn plant at the beginning of a study and the height of the plant each day for the next 12 days. The scientist found that the height of the plant increased by an average of 1.20 centimeters per day for the 12 days. If the height of the plant on the last day of the study was 36.8 centimeters, what was the height, in centimeters, of the corn plant at the beginning of the study?

# Question ID c362c210

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear equations in two variables	<div style="width: 30%; background-color: #0056b3; height: 10px;"></div> <div style="width: 30%; background-color: #0056b3; height: 10px;"></div> <div style="width: 30%; background-color: #0056b3; height: 10px;"></div>

ID: c362c210

Number of Cornflowers and Wallflowers at Garden Store



The points plotted in the coordinate plane above represent the possible numbers of wallflowers and cornflowers that someone can buy at the Garden Store in order to spend exactly \$24.00 total on the two types of flowers. The price of each wallflower is the same and the price of each cornflower is the same. What is the price, in dollars, of 1 cornflower?

## Question ID 94b48cbf

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear equations in two variables	<div style="width: 75%; background-color: #0056b3; height: 10px;"></div>

ID: 94b48cbf

The graph of  $7x + 2y = -31$  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  $\frac{b}{a}$ ?

- A.  $-\frac{7}{2}$
- B.  $-\frac{2}{7}$
- C.  $\frac{2}{7}$
- D.  $\frac{7}{2}$

## Question ID c5082ce3

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Systems of two linear equations in two variables	<div style="width: 25%; background-color: #005a9f; height: 10px;"></div> <div style="width: 25%; background-color: #005a9f; height: 10px;"></div> <div style="width: 50%; background-color: #e0e0e0; height: 10px;"></div>

ID: c5082ce3

The score on a trivia game is obtained by subtracting the number of incorrect answers from twice the number of correct answers. If a player answered 40 questions and obtained a score of 50, how many questions did the player answer correctly?

## Question ID dd797fe2

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear equations in two variables	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div>

ID: dd797fe2

$$4x + 3y = 24$$

Mario purchased 4 binders that cost  $x$  dollars each and 3 notebooks that cost  $y$  dollars each. If the given equation represents this situation, which of the following is the best interpretation of 24 in this context?

- A. The total cost, in dollars, for all binders purchased
- B. The total cost, in dollars, for all notebooks purchased
- C. The total cost, in dollars, for all binders and notebooks purchased
- D. The difference in the total cost, in dollars, between the number of binders and notebooks purchased

## Question ID 550b352c

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear equations in one variable	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div>

ID: 550b352c

$$10 = 2x + 4$$

How many solutions exist to the equation shown above?

- A. None
- B. Exactly 1
- C. Exactly 3
- D. Infinitely many

## Question ID a396ed75

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear functions	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div>

ID: a396ed75

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 50f4cb9c

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear functions	<div style="width: 60%; background-color: #0056b3; height: 10px;"></div>

ID: 50f4cb9c

$x$	$f(x)$
1	-64
2	0
3	64

For the linear function  $f$ , the table shows three values of  $x$  and their corresponding values of  $f(x)$ . Function  $f$  is defined by  $f(x) = ax + b$ , where  $a$  and  $b$  are constants. What is the value of  $a - b$ ?

- A. -64
- B. 62
- C. 128
- D. 192

# Question ID 87071893

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear equations in one variable	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div>

ID: 87071893

$$x + 40 = 95$$

What value of  $x$  is the solution to the given equation?

# Question ID 16889ef3

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear functions	<div style="width: 75%; background-color: #0056b3; height: 10px;"></div>

ID: 16889ef3

Oil and gas production in a certain area dropped from 4 million barrels in 2000 to 1.9 million barrels in 2013. Assuming that the oil and gas production decreased at a constant rate, which of the following linear functions  $f$  best models the production, in millions of barrels,  $t$  years after the year 2000?

A.  $f(t) = \frac{21}{130}t + 4$

B.  $f(t) = \frac{19}{130}t + 4$

C.  $f(t) = -\frac{21}{130}t + 4$

D.  $f(t) = -\frac{19}{130}t + 4$

# Question ID c651cc56

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear functions	<div style="width: 25%; background-color: #0056b3;"></div> <div style="width: 25%; background-color: #0056b3;"></div> <div style="width: 50%; background-color: #e0e0e0;"></div>

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

## Question ID c22b5f25

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear functions	<div style="width: 60%; background-color: #0056b3; height: 10px;"></div> <div style="width: 60%; background-color: #0056b3; height: 10px;"></div> <div style="width: 40%; background-color: #e0e0e0; height: 10px;"></div>

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

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

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

# Question ID 6cb9bf45

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear inequalities in one or two variables	<div style="width: 25%; background-color: #003366; height: 10px;"></div> <div style="width: 25%; background-color: #003366; height: 10px;"></div> <div style="width: 50%; background-color: #cccccc; height: 10px;"></div>

ID: 6cb9bf45

$$y > 7x - 4$$

For which of the following tables are all the values of  $x$  and their corresponding values of  $y$  solutions to the given inequality?

A.

$x$	$y$
3	13
5	27
8	48

B.

$x$	$y$
3	17
5	31
8	52

C.

$x$	$y$
3	21
5	27
8	52

D.

$x$	$y$
3	21
5	35
8	56

## Question ID d7bf55e1

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Systems of two linear equations in two variables	<div style="width: 75%; background-color: #0056b3; height: 10px;"></div>

ID: d7bf55e1

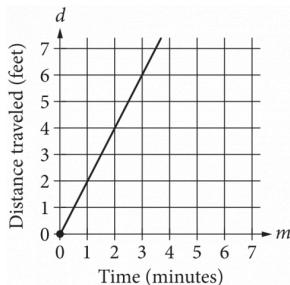
A movie theater sells two types of tickets, adult tickets for \$12 and child tickets for \$8.

If the theater sold 30 tickets for a total of \$300, how much, in dollars, was spent on adult tickets? (Disregard the \$ sign when gridding your answer.)

# Question ID 11e1ab81

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear functions	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 50%; background-color: #e0e0e0; height: 10px;"></div>

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.  $d = \frac{1}{2}m$
- C.  $d = m + 2$
- D.  $d = 2m + 2$

## Question ID 771bd0ca

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear equations in one variable	<div style="width: 30%; background-color: #0056b3; height: 10px;"></div> <div style="width: 30%; background-color: #0056b3; height: 10px;"></div> <div style="width: 30%; background-color: #0056b3; height: 10px;"></div>

ID: 771bd0ca

$$5(t + 3) - 7(t + 3) = 38$$

What value of  $t$  is the solution to the given equation?

# Question ID df78b361

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear equations in two variables	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 50%; background-color: #e0e0e0; height: 10px;"></div>

ID: df78b361

Lily made **36** cups of jam. Lily then filled  $x$  small containers and  $y$  large containers with all the jam she made. The equation  $4x + 6y = 36$  represents this situation. Which is the best interpretation of  $6y$  in this context?

- A. The number of large containers Lily filled
- B. The number of small containers Lily filled
- C. The total number of cups of jam in the large containers
- D. The total number of cups of jam in the small containers

# Question ID 4fe4fd7c

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear functions	<div style="width: 25%; background-color: #0056b3;"></div> <div style="width: 25%; background-color: #0056b3;"></div> <div style="width: 50%; background-color: #e0e0e0;"></div>

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 789975b7

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear equations in two variables	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div>

ID: 789975b7

A gardener buys two kinds of fertilizer. Fertilizer A contains 60% filler materials by weight and Fertilizer B contains 40% filler materials by weight. Together, the fertilizers bought by the gardener contain a total of 240 pounds of filler materials. Which equation models this relationship, where  $x$  is the number of pounds of Fertilizer A and  $y$  is the number of pounds of Fertilizer B?

- A.  $0.4x + 0.6y = 240$
- B.  $0.6x + 0.4y = 240$
- C.  $40x + 60y = 240$
- D.  $60x + 40y = 240$

# Question ID a309803e

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear functions	<div style="width: 75%; background-color: #0056b3; height: 10px;"></div>

ID: a309803e

One gallon of paint will cover **220** square feet of a surface. A room has a total wall area of  $w$  square feet. Which equation represents the total amount of paint  $P$ , in gallons, needed to paint the walls of the room twice?

- A.  $P = \frac{w}{110}$
- B.  $P = 440w$
- C.  $P = \frac{w}{220}$
- D.  $P = 220w$

## Question ID 55ea82f3

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear inequalities in one or two variables	<div style="width: 75%; background-color: #0056b3; height: 10px;"></div>

ID: 55ea82f3

A team hosting an event to raise money for new uniforms plans to sell at least **140** tickets before this event and at least **220** tickets during this event to raise a total of at least **\$5,820** from all tickets sold. The price of a ticket during this event is **\$3** less than the price of a ticket before this event. Which inequality represents this situation, where  $x$  is the price, in dollars, of a ticket sold during this event?

- A.  $140(x + 3) + 220x \leq 5,820$
- B.  $140(x + 3) + 220x \geq 5,820$
- C.  $140(x - 3) + 220x \leq 5,820$
- D.  $140(x - 3) + 220x \geq 5,820$

# Question ID cea27ab2

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear equations in two variables	<div style="width: 25%; background-color: #0056b3;"></div> <div style="width: 75%; background-color: #e0e0e0;"></div> <div style="width: 75%; background-color: #e0e0e0;"></div>

ID: cea27ab2

$$7x - 4y = -84$$

For the given equation, which table gives three values of  $x$  and their corresponding values of  $y$ ?

A.

$x$	0	4	8
$y$	21	28	35

B.

$x$	0	4	8
$y$	35	28	21

C.

$x$	21	28	35
$y$	0	4	8

D.

$x$	21	28	35
$y$	8	4	0

## Question ID 0d1b1e35

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear equations in two variables	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 50%; background-color: #e0e0e0; height: 10px;"></div>

ID: 0d1b1e35

A batch of banana milkshakes consists of **4** cups of ice cream and **2** bananas and has **1,114 milligrams (mg)** of calcium. There is **276 mg** of calcium in **1** cup of the ice cream used to make this batch of milkshakes. How much calcium, **in mg**, is in **1** banana?

- A. 5
- B. 10
- C. 419
- D. 1,104

## Question ID 2554b413

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear equations in two variables	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 25%; background-color: #e0e0e0; height: 10px;"></div> <div style="width: 25%; background-color: #e0e0e0; height: 10px;"></div>

ID: 2554b413

In the  $xy$ -plane, a line has a slope of 6 and passes through the point  $(0,8)$ . Which of the following is an equation of this line?

- A.  $y = 6x + 8$
- B.  $y = 6x + 48$
- C.  $y = 8x + 6$
- D.  $y = 8x + 48$

## Question ID 620abf36

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear equations in one variable	<div style="width: 25%; background-color: #0056b3;"></div> <div style="width: 25%; background-color: #0056b3;"></div> <div style="width: 50%; background-color: #e0e0e0;"></div>

ID: 620abf36

If  $5(x + 4) = 4(x + 4) + 29$ , what is the value of  $x + 4$ ?

- A. -4
- B. 25
- C. 29
- D. 33

## Question ID d62ad380

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear equations in two variables	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 50%; background-color: #e0e0e0; height: 10px;"></div>

ID: d62ad380

An artist paints and sells square tiles. The selling price  $P$ , in dollars, of a painted tile is a linear function of the side length of the tile  $s$ , in inches, as shown in the table below.

Side length, $s$ (inches)	Price, $P$ (dollars)
3	8.00
6	18.00
9	28.00

Which of the following could define the relationship between  $s$  and  $P$ ?

- A.  $P = 3s + 10$
- B.  $P = \frac{10}{3}s + 8$
- C.  $P = \frac{10}{3}s - 2$
- D.  $P = \frac{3}{10}s - \frac{1}{10}$

## Question ID ed18c4f7

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear equations in one variable	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div>

ID: ed18c4f7

Cathy has  $n$  CDs. Gerry has 3 more than twice the number of CDs that Cathy has. In terms of  $n$ , how many CDs does Gerry have?

- A.  $3n - 2$
- B.  $3n + 2$
- C.  $2n - 3$
- D.  $2n + 3$

# Question ID 3462d850

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear functions	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div>

ID: 3462d850

Marisol drove 3 hours from City A to City B. The equation below estimates the distance  $d$ , in miles, Marisol traveled after driving for  $t$  hours.

$$d = 45t$$

Which of the following does 45 represent in the equation?

- A. Marisol took 45 trips from City A to City B.
- B. The distance between City A and City B is 45 miles.
- C. Marisol drove at an average speed of about 45 miles per hour.
- D. It took Marisol 45 hours to drive from City A to City B.

## Question ID d9d83c02

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear equations in one variable	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div>

ID: d9d83c02

For what value of  $w$  does

$$w - 10 = 2(w + 5)$$
?

- A. 5
- B. 0
- C. -15
- D. -20

# Question ID 23dedddd

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear functions	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 50%; background-color: #e0e0e0; height: 10px;"></div>

ID: 23dedddd

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 a91a2b75

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear functions	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 50%; background-color: #e0e0e0; height: 10px;"></div>

ID: a91a2b75

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 98d3393a

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear equations in two variables	<div style="width: 75%; background-color: #0056b3; height: 10px;"></div>

ID: 98d3393a

Line  $\ell$  in the  $xy$ -plane is perpendicular to the line with equation

$x = 2$ . What is the slope of line  $\ell$ ?

- A. 0
- B.  $-\frac{1}{2}$
- C. -2
- D. The slope of line  $\ell$  is undefined.

# Question ID 4f669597

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear equations in one variable	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 50%; background-color: #e0e0e0; height: 10px;"></div>

ID: 4f669597

$$2(p + 1) + 8(p - 1) = 5p$$

What value of  $p$  is the solution of the equation above?

## Question ID 3c4ce699

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear equations in one variable	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div>

ID: 3c4ce699

If  $6 + x = 9$ , what is the value of  $18 + 3x$ ?

## Question ID 0b0fa68b

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear functions	<div style="width: 75%; background-color: #0056b3; height: 10px;"></div>

ID: 0b0fa68b

For the function  $f$ ,  $f(cx) = x - 8$  for all values of  $x$ , where  $c$  is a positive constant. If  $f(2) = 35$ , what is the value of  $c$ ?

# Question ID 6989c80a

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear functions	<div style="width: 75%; background-color: #0056b3; height: 10px;"></div>

ID: 6989c80a

$$F(x) = \frac{9}{5}(x - 273.15) + 32$$

The function  $F$  gives the temperature, in degrees Fahrenheit, that corresponds to a temperature of  $x$  kelvins. If a temperature increased by **2.10** kelvins, by how much did the temperature increase, in degrees Fahrenheit?

- A. **3.78**
- B. **35.78**
- C. **487.89**
- D. **519.89**

# Question ID 9d9fe1e6

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear functions	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div>

ID: 9d9fe1e6

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 255996a6

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear functions	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div>

ID: 255996a6

$$T = 1,000 + 18h$$

In the equation above,  $T$  represents Brittany's total take-home pay, in dollars, for her first week of work, where  $h$  represents the number of hours she worked that week and 1,000 represents a sign-on bonus. If Brittany's total take-home pay was \$1,576, for how many hours was Brittany paid for her first week of work?

- A. 16
- B. 32
- C. 55
- D. 88

# Question ID a1696f3e

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear functions	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div>

ID: a1696f3e

The function  $g$  is defined as  $g(x) = 5x + a$ , where  $a$  is a constant. If  $g(4) = 31$ , what is the value of  $a$ ?

- A. 30
- B. 22
- C. 11
- D. -23

# Question ID dfa45424

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear equations in two variables	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div>

ID: dfa45424

Tony spends \$80 per month on public transportation. A 10-ride pass costs \$12.50, and a single-ride pass costs \$1.50. If  $g$  represents the number of 10-ride passes Tony buys in a month and  $t$  represents the number of single-ride passes Tony buys in a month, which of the following equations best represents the relationship between  $g$  and  $t$ ?

- A.  $g + t = 80$
- B.  $g + t = 1.50 + 12.50$
- C.  $1.50g + 12.50t = 80$
- D.  $12.50g + 1.50t = 80$

## Question ID 431c3038

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear equations in two variables	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 50%; background-color: #e0e0e0; height: 10px;"></div>

ID: 431c3038

In an article about exercise, it is estimated that a 160-pound adult uses 200 calories for every 30 minutes of hiking and 150 calories for every 30 minutes of bicycling. An adult who weighs 160 pounds has completed 1 hour of bicycling. Based on the article, how many hours should the adult hike to use a total of 1,900 calories from bicycling and hiking?

- A. 9.5
- B. 8.75
- C. 6
- D. 4

# Question ID bd45df49

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Systems of two linear equations in two variables	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 50%; background-color: #e0e0e0; height: 10px;"></div>

ID: bd45df49

$$y = 3x + 9$$

$$3y = 8x - 6$$

The solution to the given system of equations is  $(x, y)$ . What is the value of  $x - y$ ?

- A. **-123**
- B. **-33**
- C. **3**
- D. **57**

# Question ID 868fc236

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear functions	<div style="width: 25%; background-color: #0056b3;"></div> <div style="width: 25%; background-color: #0056b3;"></div> <div style="width: 50%; background-color: #e0e0e0;"></div>

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 e8f9e117

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear inequalities in one or two variables	<div style="width: 75%; background-color: #0056b3; height: 10px;"></div>

ID: e8f9e117

$$I = \frac{V}{R}$$

The formula above is Ohm's law for an electric circuit with current  $I$ , in amperes, potential difference  $V$ , in volts, and resistance  $R$ , in ohms. A circuit has a resistance of 500 ohms, and its potential difference will be generated by  $n$  six-volt batteries that produce a total potential difference of  $6n$  volts. If the circuit is to have a current of no more than 0.25 ampere, what is the greatest number,  $n$ , of six-volt batteries that can be used?

## Question ID ce314070

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear equations in one variable	<div style="width: 25%; background-color: #0056b3;"></div> <div style="width: 25%; background-color: #0056b3;"></div> <div style="width: 50%; background-color: #e0e0e0;"></div>

ID: ce314070

If  $4x - \frac{1}{2} = -5$ , what is the value of  $8x - 1$ ?

A. 2

B.  $-\frac{9}{8}$

C.  $-\frac{5}{2}$

D.  $-10$

## Question ID a7e2859a

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear functions	<div style="width: 75%; background-color: #0056b3; height: 10px;"></div>

ID: a7e2859a

The cost of renting a large canopy tent for up to 10 days is \$430 for the first day and \$215 for each additional day. Which of the following equations gives the cost  $y$ , in dollars, of renting the tent for  $x$  days, where  $x$  is a positive integer and  $x \leq 10$ ?

- A.  $y = 215x + 215$
- B.  $y = 430x - 215$
- C.  $y = 430x + 215$
- D.  $y = 215x + 430$

# Question ID feb78194

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear equations in one variable	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 50%; background-color: #e0e0e0; height: 10px;"></div>

ID: feb78194

A museum rents tablets to visitors. The museum earns revenue of **\$14** for each tablet rented for the day. On Wednesday, the museum earned **\$406** in profit from renting tablets after paying daily expenses of **\$112**. How many tablets did the museum rent on Wednesday? (**profit = total revenue – total expenses**)

## Question ID f718c9cf

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Systems of two linear equations in two variables	<div style="width: 75%; background-color: #0056b3; height: 10px;"></div>

ID: f718c9cf

$$5x + 14y = 45$$

$$10x + 7y = 27$$

The solution to the given system of equations is  $(x, y)$ . What is the value of  $xy$ ?

## Question ID 6e50ce28

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Systems of two linear equations in two variables	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 50%; background-color: #e0e0e0; height: 10px;"></div>

ID: 6e50ce28

The sum of a number  $x$  and 7 is twice as large as a number  $y$ . The number  $y$  is 3 less than the number  $x$ . Which system of equations describes this situation?

A.  $x + 7 = 2y$

$y = x - 3$

B.  $x + 7 = 2y$

$y = 3 - x$

C.  $2(x + 7) = y$

$y = x - 3$

D.  $2(x + 7) = y$

$y = 3 - x$

# Question ID 915463e0

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear inequalities in one or two variables	<div style="width: 25%; background-color: #002B36; height: 10px;"></div> <div style="width: 75%; background-color: #D9D9D9; height: 10px;"></div> <div style="width: 75%; background-color: #D9D9D9; height: 10px;"></div>

ID: 915463e0

Normal body temperature for an adult is between  $97.8^{\circ}\text{F}$  and  $99^{\circ}\text{F}$ , inclusive. If Kevin, an adult male, has a body temperature that is considered to be normal, which of the following could be his body temperature?

- A.  $96.7^{\circ}\text{F}$
- B.  $97.6^{\circ}\text{F}$
- C.  $97.9^{\circ}\text{F}$
- D.  $99.7^{\circ}\text{F}$

# Question ID 89541f9b

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear inequalities in one or two variables	<div style="width: 25%; background-color: #003366; height: 10px;"></div> <div style="width: 75%; background-color: #cccccc; height: 10px;"></div>

ID: 89541f9b

Which of the following ordered pairs  $(x, y)$  satisfies the inequality  $5x - 3y < 4$  ?

1.  $(1, 1)$
2.  $(2, 5)$
3.  $(3, 2)$

- A. I only
- B. II only
- C. I and II only
- D. I and III only

# Question ID 2875ba81

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Systems of two linear equations in two variables	<div style="width: 25%; background-color: #003366; height: 10px;"></div> <div style="width: 25%; background-color: #003366; height: 10px;"></div> <div style="width: 50%; background-color: #cccccc; height: 10px;"></div>

ID: 2875ba81

$$6x + 7y = 28$$

$$2x + 2y = 10$$

The solution to the given system of equations is  $(x, y)$ . What is the value of  $y$ ?

- A. -2
- B. 7
- C. 14
- D. 18

## Question ID 0ef4a7b6

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear inequalities in one or two variables	<div style="width: 25%; background-color: #003366; height: 10px;"></div> <div style="width: 25%; background-color: #003366; height: 10px;"></div> <div style="width: 50%; background-color: #cccccc; height: 10px;"></div>

ID: 0ef4a7b6

A particular botanist classifies a species of plant as tall if its typical height when fully grown is more than **100** centimeters. Each of the following inequalities represents the possible heights  $h$ , in centimeters, for a specific plant species when fully grown. Which inequality represents the possible heights  $h$ , in centimeters, for a tall plant species?

- A.  $106 < h < 158$
- B.  $80 < h < 100$
- C.  $42 < h < 87$
- D.  $17 < h < 85$

# Question ID ee031767

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Systems of two linear equations in two variables	<div style="width: 25%; background-color: #003366; height: 10px;"></div> <div style="width: 75%; background-color: #cccccc; height: 10px;"></div>

ID: ee031767

A dance teacher ordered outfits for students for a dance recital. Outfits for boys cost \$26, and outfits for girls cost \$35. The dance teacher ordered a total of 28 outfits and spent \$881. If  $b$  represents the number of outfits the dance teacher ordered for boys and  $g$  represents the number of outfits the dance teacher ordered for girls, which of the following systems of equations can be solved to find  $b$  and  $g$ ?

A.  $26b + 35g = 28$

A.  $b + g = 881$

B.  $26b + 35g = 881$

B.  $b + g = 28$

C.  $26g + 35b = 28$

C.  $b + g = 881$

D.  $26g + 35b = 881$

D.  $b + g = 28$

# Question ID dcc4886a

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Systems of two linear equations in two variables	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 50%; background-color: #e0e0e0; height: 10px;"></div>

ID: **dcc4886a**

$$y = \frac{2}{7}x + 3$$

One of the two equations in a system of linear equations is given. The system has infinitely many solutions. If the second equation in the system is  $y = mx + b$ , where  $m$  and  $b$  are constants, what is the value of  $b$ ?

- A.  $-3$
- B.  $-\frac{1}{3}$
- C.  $\frac{1}{3}$
- D.  $3$

## Question ID 466b87e3

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Systems of two linear equations in two variables	<div style="width: 75%; background-color: #0056b3; height: 10px;"></div>

ID: 466b87e3

$$y = \frac{1}{2}x + 8$$

$$y = cx + 10$$

In the system of equations above, c is a constant. If the system has no solution, what is the value of c ?

## Question ID ce6b52d8

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear equations in one variable	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 50%; background-color: #e0e0e0; height: 10px;"></div>

ID: ce6b52d8

If  $2(3t - 10) + t = 40 + 4t$ , what is the value of  $3t$ ?

## Question ID aee9fd2d

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear equations in one variable	<div style="width: 75%; background-color: #0056b3; height: 10px;"></div>

ID: aee9fd2d

If  $\frac{x+6}{3} = \frac{x+6}{13}$ , the value of  $x + 6$  is between which of the following pairs of values?

- A.  $-7$  and  $-3$
- B.  $-2$  and  $2$
- C.  $2$  and  $7$
- D.  $8$  and  $13$

## Question ID 6daf8d70

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear inequalities in one or two variables	<div style="width: 25%; background-color: #003366; height: 10px;"></div> <div style="width: 25%; background-color: #003366; height: 10px;"></div> <div style="width: 50%; background-color: #cccccc; height: 10px;"></div>

ID: 6daf8d70

A city employee will plant two types of bushes, azaleas and boxwoods, in a park. There will be no more than **164** total bushes planted, and the number of azaleas planted will be at most three times the number of boxwoods planted. Which of the following systems of inequalities best represents this situation, where  $a$  is the number of azaleas that will be planted, and  $b$  is the number of boxwoods that will be planted?

A.  $a + b \geq 164$

$3a \geq b$

B.  $a + b \geq 164$

$a \leq 3b$

C.  $a + b \leq 164$

$3a \geq b$

D.  $a + b \leq 164$

$a \leq 3b$

## Question ID 84d0d07e

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear inequalities in one or two variables	<div style="width: 25%; background-color: #003366; height: 10px;"></div> <div style="width: 75%; background-color: #cccccc; height: 10px;"></div>

ID: 84d0d07e

A clothing store is having a sale on shirts and pants. During the sale, the cost of each shirt is \$15 and the cost of each pair of pants is \$25. Geoff can spend at most \$120 at the store. If Geoff buys  $s$  shirts and  $p$  pairs of pants, which of the following must be true?

- A.  $15s + 25p \leq 120$
- B.  $15s + 25p \geq 120$
- C.  $25s + 15p \leq 120$
- D.  $25s + 15p \geq 120$

## Question ID 7a987ae4

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear equations in one variable	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div>

ID: 7a987ae4

If  $\frac{2n}{5} = 10$ , what is the value of  $2n - 1$ ?

- A. 24
- B. 49
- C. 50
- D. 99

# Question ID 0366d965

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear equations in two variables	<div style="width: 75%; background-color: #0056b3; height: 10px;"></div>

ID: 0366d965

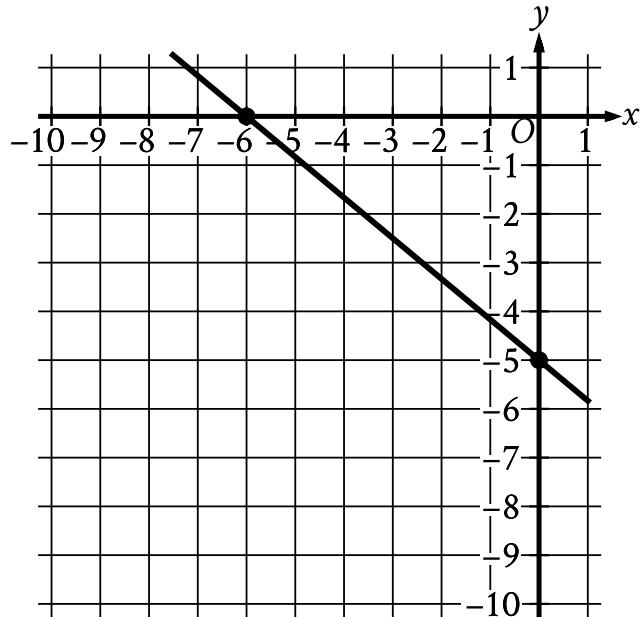
$x$	$y$
3	7
$k$	11
12	$n$

The table above shows the coordinates of three points on a line in the  $xy$ -plane, where  $k$  and  $n$  are constants. If the slope of the line is 2, what is the value of  $k + n$ ?

# Question ID 6d8ad460

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear equations in two variables	<div style="width: 100px; height: 10px; background-color: #0056b3;"></div> <div style="width: 100px; height: 10px; background-color: #0056b3;"></div> <div style="width: 100px; height: 10px; background-color: #0056b3;"></div>

ID: 6d8ad460



Line  $k$  is shown in the  $xy$ -plane. Line  $j$  (not shown) is perpendicular to line  $k$ . What is the slope of line  $j$ ?

## Question ID 963da34c

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear inequalities in one or two variables	<div style="width: 75%; background-color: #0056b3; height: 10px;"></div>

ID: 963da34c

A shipping service restricts the dimensions of the boxes it will ship for a certain type of service. The restriction states that for boxes shaped like rectangular prisms, the sum of the perimeter of the base of the box and the height of the box cannot exceed 130 inches. The perimeter of the base is determined using the width and length of the box. If a box has a height of 60 inches and its length is 2.5 times the width, which inequality shows the allowable width  $x$ , in inches, of the box?

A.  $0 < x \leq 10$

B.  $0 < x \leq 11\frac{2}{3}$

C.  $0 < x \leq 17\frac{1}{2}$

D.  $0 < x \leq 20$

## Question ID 76f29fa5

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear equations in one variable	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 50%; background-color: #e0e0e0; height: 10px;"></div>

ID: 76f29fa5

The cost to rent a commercial fishing boat from a certain company is \$950 for the first 2 hours and an additional \$50 per hour for each hour after the first 2 hours. If the total cost to rent the commercial fishing boat from the company for  $t$  hours, where  $t > 2$ , is \$1,100, which equation represents this situation?

- A.  $950(t - 2) + 50t = 1,100$
- B.  $950(2t) + 50t = 1,100$
- C.  $950 + 50(t - 2) = 1,100$
- D.  $950 + 50(2t) = 1,100$

## Question ID b2de69bd

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear equations in two variables	<div style="width: 25%; background-color: #0056b3;"></div> <div style="width: 75%; background-color: #e0e0e0;"></div> <div style="width: 75%; background-color: #e0e0e0;"></div>

ID: b2de69bd

x	y
1	5
2	7
3	9
4	11

The table above shows some pairs of  $x$  values and  $y$  values. Which of the following equations could represent the relationship between  $x$  and  $y$ ?

- A.  $y = 2x + 3$
- B.  $y = 3x - 2$
- C.  $y = 4x - 1$
- D.  $y = 5x$

# Question ID 042aa429

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear functions	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 50%; background-color: #e0e0e0; height: 10px;"></div>

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 cd33b015

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Systems of two linear equations in two variables	<div style="width: 25%; background-color: #003366; height: 10px;"></div> <div style="width: 75%; background-color: #cccccc; height: 10px;"></div>

ID: cd33b015

$$x + y = 20$$

$$2(x + y) + 3y = 85$$

If  $(x, y)$  is the solution to the given system of equations, what is the value of  $y$ ?

- A. 10
- B. 15
- C. 60
- D. 65

## Question ID e2e3942f

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Systems of two linear equations in two variables	<div style="width: 75%; background-color: #0056b3; height: 10px;"></div>

ID: e2e3942f

$$y = 2x + 1$$

$$y = ax - 8$$

In the system of equations above,  $a$  is a constant. If the system of equations has no solution, what is the value of  $a$ ?

A.  $-\frac{1}{2}$

B. 0

C. 1

D. 2

# Question ID de6fe450

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear functions	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div>

ID: de6fe450

On January 1, 2015, a city's minimum hourly wage was \$9.25. It will increase by \$0.50 on the first day of the year for the next 5 years. Which of the following functions best models the minimum hourly wage, in dollars,  $x$  years after January 1, 2015, where  $x = 1, 2, 3, 4, 5$ ?

- A.  $f(x) = 9.25 - 0.50x$
- B.  $f(x) = 9.25x - 0.50$
- C.  $f(x) = 9.25 + 0.50x$
- D.  $f(x) = 9.25x + 0.50$

# Question ID 4f8bd093

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear equations in one variable	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div>

ID: 4f8bd093

What value of  $x$  is the solution to the equation  $16x + 24 = 24x$ ?

- A.  $-4$
- B.  $\frac{3}{10}$
- C.  $\frac{1}{3}$
- D.  $3$

## Question ID 2d54c272

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear equations in two variables	<div style="width: 30%; background-color: #0056b3; height: 10px;"></div> <div style="width: 30%; background-color: #0056b3; height: 10px;"></div> <div style="width: 30%; background-color: #0056b3; height: 10px;"></div>

ID: 2d54c272

$$5G + 45R = 380$$

At a school fair, students can win colored tokens that are worth a different number of points depending on the color. One student won  $G$  green tokens and  $R$  red tokens worth a total of **380** points. The given equation represents this situation. How many more points is a red token worth than a green token?

# Question ID 4fb8adf7

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Systems of two linear equations in two variables	<div style="width: 25%; background-color: #003366; height: 10px;"></div> <div style="width: 75%; background-color: #cccccc; height: 10px;"></div>

ID: 4fb8adf7

$$4x - 3y = 5$$

$$x = 8$$

What is the solution  $(x, y)$  to the given system of equations?

- A.  $(8, 9)$
- B.  $(8, -24)$
- C.  $(8, -9)$
- D.  $(8, 24)$

## Question ID 1e0a46e4

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Systems of two linear equations in two variables	<div style="width: 75%; background-color: #0056b3; height: 10px;"></div>

ID: 1e0a46e4

Which system of linear equations has no solution?

A.  $-2x + 3y = -9$

$2x - 3y = 9$

B.  $2x - 3y = 9$

$3x + 4y = 10$

C.  $2x - 3y = 9$

$-6x + 9y = -27$

D.  $-2x + 3y = 9$

$4x - 6y = 18$

## Question ID 1e11190a

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Systems of two linear equations in two variables	<div style="width: 75%; background-color: #0056b3; height: 10px;"></div>

ID: 1e11190a

Store A sells raspberries for **\$5.50** per pint and blackberries for **\$3.00** per pint. Store B sells raspberries for **\$6.50** per pint and blackberries for **\$8.00** per pint. A certain purchase of raspberries and blackberries would cost **\$37.00** at Store A or **\$66.00** at Store B. How many pints of blackberries are in this purchase?

- A. 4
- B. 5
- C. 8
- D. 12

## Question ID c39dbbdf

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear equations in two variables	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 50%; background-color: #e0e0e0; height: 10px;"></div>

ID: c39dbbdf

Line  $r$  is defined by the equation  $4x - 9y = 3$ . Line  $s$  is parallel to line  $r$  in the  $xy$ -plane. What is the slope of line  $s$ ?

- A.  $\frac{9}{4}$
- B.  $\frac{4}{9}$
- C.  $-4$
- D.  $-9$

# Question ID 78391fcc

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear functions	<div style="width: 75%; background-color: #0056b3; height: 10px;"></div>

ID: 78391fcc

x	-11	-10	-9	-8
$f(x)$	21	18	15	12

The table above shows some values of  $x$  and their corresponding values  $f(x)$  for the linear function  $f$ . What is the  $x$ -intercept of the graph of  $y = f(x)$  in the  $xy$ -plane?

- A. (-3,0)
- B. (-4,0)
- C. (-9,0)
- D. (-12,0)

## Question ID 9ff10b3b

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear equations in one variable	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div>

ID: 9ff10b3b

If  $\frac{1}{2}x - \frac{1}{6}x = 1$ , what is the value of  $x$ ?

A. -4

B.  $\frac{1}{3}$

C. 3

D. 6

# Question ID e77a76ce

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Systems of two linear equations in two variables	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 50%; background-color: #e0e0e0; height: 10px;"></div>

ID: e77a76ce

Which of the following systems of linear equations has no solution?

A.  $y = 6x + 3$

$y = 6x + 9$

B.  $y = 10$

$y = 10x + 10$

C.  $y = 14x + 14$

$y = 10x + 14$

D.  $x = 3$

$y = 10$

# Question ID b2fe7ab6

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear functions	<div style="width: 25%; background-color: #0056b3;"></div> <div style="width: 25%; background-color: #0056b3;"></div> <div style="width: 50%; background-color: #e0e0e0;"></div>

ID: b2fe7ab6

$x$	$g(x)$
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 68c5c81a

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear inequalities in one or two variables	<div style="width: 75%; background-color: #0056b3; height: 10px;"></div>

ID: 68c5c81a

$$11x + 14y \leq 115$$

Anthony will spend at most \$115 to purchase  $x$  small cheese pizzas and  $y$  large cheese pizzas for a team dinner. The given inequality represents this situation. Which of the following is the best interpretation of  $14y$  in this context?

- A. The amount, in dollars, Anthony will spend on each large cheese pizza
- B. The amount, in dollars, Anthony will spend on each small cheese pizza
- C. The total amount, in dollars, Anthony will spend on large cheese pizzas
- D. The total amount, in dollars, Anthony will spend on small cheese pizzas

## Question ID b8e73b5b

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear inequalities in one or two variables	<div style="width: 30%; background-color: #0056b3; height: 10px;"></div> <div style="width: 30%; background-color: #0056b3; height: 10px;"></div> <div style="width: 30%; background-color: #0056b3; height: 10px;"></div>

ID: b8e73b5b

Ken is working this summer as part of a crew on a farm. He earned \$8 per hour for the first 10 hours he worked this week. Because of his performance, his crew leader raised his salary to \$10 per hour for the rest of the week. Ken saves 90% of his earnings from each week. What is the least number of hours he must work the rest of the week to save at least \$270 for the week?

- A. 38
- B. 33
- C. 22
- D. 16

# Question ID 830120b0

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear inequalities in one or two variables	<div style="width: 75%; background-color: #0056b3; height: 10px;"></div>

ID: 830120b0

$$y > 2x - 1$$

$$2x > 5$$

Which of the following consists of the  $y$ -coordinates of all the points that satisfy the system of inequalities above?

A.  $y > 6$

B.  $y > 4$

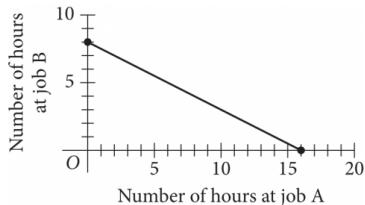
C.  $y > \frac{5}{2}$

D.  $y > \frac{3}{2}$

# Question ID c4ea43ef

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear equations in two variables	<div style="width: 100px; height: 10px; background-color: #0056b3;"></div> <div style="width: 100px; height: 10px; background-color: #0056b3;"></div> <div style="width: 100px; height: 10px; background-color: #0056b3;"></div>

ID: c4ea43ef



To earn money for college, Avery works two part-time jobs: A and B. She earns \$10 per hour working at job A and \$20 per hour working at job B. In one week, Avery earned a total of  $s$  dollars for working at the two part-time jobs. The graph above represents all possible combinations of numbers of hours Avery could have worked at the two jobs to earn  $s$  dollars. What is the value of  $s$ ?

- A. 128
- B. 160
- C. 200
- D. 320

## Question ID fb5e7f59

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Systems of two linear equations in two variables	<div style="width: 75%; background-color: #0056b3; height: 10px;"></div>

ID: fb5e7f59

$$-x - wy = -337$$

$$2x - wy = 47$$

In the given system of equations,  $w$  is a constant. In the  $xy$ -plane, the graphs of these equations intersect at the point  $(q, 19)$ , where  $q$  is a constant. What is the value of  $w$ ?

# Question ID 2869fe95

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear inequalities in one or two variables	<div style="width: 25%; background-color: #002B36; height: 10px;"></div> <div style="width: 75%; background-color: #D9D9D9; height: 10px;"></div> <div style="width: 75%; background-color: #D9D9D9; height: 10px;"></div>

ID: 2869fe95

For a 3-week period in a town in Illinois, the lowest recorded temperature was 31 degrees Fahrenheit ( $^{\circ}\text{F}$ ) and the highest recorded temperature was  $67^{\circ}\text{F}$ . Which inequality is true for any recorded temperature  $t$ , in  $^{\circ}\text{F}$ , in this town for this 3-week period?

- A.  $t \geq 98$
- B.  $t \geq 67$
- C.  $31 \leq t \leq 67$
- D.  $t \leq 31$

## Question ID 113b938e

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear functions	<div style="width: 25%; background-color: #0056b3;"></div> <div style="width: 25%; background-color: #0056b3;"></div> <div style="width: 50%; background-color: #e0e0e0;"></div>

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

## Question ID 029c2dc2

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear equations in two variables	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div>

ID: 029c2dc2

A teacher is creating an assignment worth **70** points. The assignment will consist of questions worth **1** point and questions worth **3** points. Which equation represents this situation, where  $x$  represents the number of 1-point questions and  $y$  represents the number of 3-point questions?

- A.  $4xy = 70$
- B.  $4(x + y) = 70$
- C.  $3x + y = 70$
- D.  $x + 3y = 70$

# Question ID 2e1a7f66

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear equations in two variables	<div style="width: 20%; background-color: #0056b3; height: 10px;"></div> <div style="width: 20%; background-color: #0056b3; height: 10px;"></div> <div style="width: 60%; background-color: #e0e0e0; height: 10px;"></div>

ID: 2e1a7f66

Figure A and figure B are both regular polygons. The sum of the perimeter of figure A and the perimeter of figure B is **63** inches. The equation  $3x + 6y = 63$  represents this situation, where  $x$  is the number of sides of figure A and  $y$  is the number of sides of figure B. Which statement is the best interpretation of **6** in this context?

- A. Each side of figure B has a length of **6** inches.
- B. The number of sides of figure B is **6**.
- C. Each side of figure A has a length of **6** inches.
- D. The number of sides of figure A is **6**.

## Question ID 5e422ff9

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Systems of two linear equations in two variables	<div style="width: 25%; background-color: #003366; height: 10px;"></div> <div style="width: 25%; background-color: #003366; height: 10px;"></div> <div style="width: 50%; background-color: #cccccc; height: 10px;"></div>

ID: 5e422ff9

$$y = 2x - 3$$

$$3y = 5x$$

In the solution to the system of equations above, what is the value of  $y$ ?

- A. -15
- B. -9
- C. 9
- D. 15

# Question ID e744499e

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear inequalities in one or two variables	<div style="width: 25%; background-color: #002B36; height: 10px;"></div> <div style="width: 75%; background-color: #D9D9D9; height: 10px;"></div> <div style="width: 75%; background-color: #D9D9D9; height: 10px;"></div>

ID: e744499e

An elementary school teacher is ordering  $x$  workbooks and  $y$  sets of flash cards for a math class. The teacher must order at least 20 items, but the total cost of the order must not be over \$80. If the workbooks cost \$3 each and the flash cards cost \$4 per set, which of the following systems of inequalities models this situation?

A.  $x + y \geq 20$   
 $3x + 4y \leq 80$

B.  $x + y \geq 20$   
 $3x + 4y \geq 80$

C.  $3x + 4y \leq 20$   
 $x + y \geq 80$

D.  $x + y \leq 20$   
 $3x + 4y \geq 80$

# Question ID f01ef454

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear inequalities in one or two variables	<div style="width: 25%; background-color: #002B36; height: 10px;"></div> <div style="width: 75%; background-color: #D9D9D9; height: 10px;"></div> <div style="width: 75%; background-color: #D9D9D9; height: 10px;"></div>

ID: f01ef454

A geologist estimates that the volume of a slab of granite is greater than **12.7** cubic feet but less than **15.7** cubic feet. The geologist also estimates that the slab of granite weighs **165** pounds per cubic foot of volume. Which inequality represents this situation, where  $x$  represents the estimated total weight, in pounds, of the slab of granite?

- A.  $165 - 15.7 < x < 165 - 12.7$
- B.  $165 + 12.7 < x < 165 + 15.7$
- C.  $165(12.7) < x < 165(15.7)$
- D.  $\frac{165}{15.7} < x < \frac{165}{12.7}$

## Question ID 6efcc0a3

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear functions	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div>

ID: 6efcc0a3

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 74c98c82

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear inequalities in one or two variables	<div style="width: 25%; background-color: #003366; height: 10px;"></div> <div style="width: 25%; background-color: #003366; height: 10px;"></div> <div style="width: 50%; background-color: #cccccc; height: 10px;"></div>

ID: 74c98c82

An event planner is planning a party. It costs the event planner a onetime fee of **\$35** to rent the venue and **\$10.25** per attendee. The event planner has a budget of **\$200**. What is the greatest number of attendees possible without exceeding the budget?

## Question ID 36ab4122

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear equations in one variable	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 50%; background-color: #e0e0e0; height: 10px;"></div>

ID: 36ab4122

Megan's regular wage at her job is  $p$  dollars per hour for the first 8 hours of work in a day plus 1.5 times her regular hourly wage for work in excess of 8 hours that day. On a given day, Megan worked for 10 hours, and her total earnings for that day were \$137.50. What is Megan's regular hourly wage?

- A. \$11.75
- B. \$12.50
- C. \$13.25
- D. \$13.75

# Question ID 1efd8202

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear equations in two variables	<div style="width: 25%; background-color: #0056b3;"></div> <div style="width: 75%; background-color: #e0e0e0;"></div> <div style="width: 75%; background-color: #e0e0e0;"></div>

ID: 1efd8202

$$y = 70x + 8$$

Which table gives three values of  $x$  and their corresponding values of  $y$  for the given equation?

A.

$x$	$y$
0	8
2	148
4	288

B.

$x$	$y$
0	70
2	78
4	86

C.

$x$	$y$
0	70
2	140
4	280

D.

$x$	$y$
0	8
2	132
4	272

## Question ID 4f7981a0

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear equations in one variable	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div>

ID: 4f7981a0

If  $3x + 2 = 8$ , what is the value of  $9x + 6$ ?

## Question ID e9ef0e6b

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear inequalities in one or two variables	<div style="width: 25%; background-color: #003366; height: 10px;"></div> <div style="width: 25%; background-color: #003366; height: 10px;"></div> <div style="width: 50%; background-color: #cccccc; height: 10px;"></div>

ID: e9ef0e6b

A model estimates that whales from the genus *Eschrichtius* travel **72** to **77** miles in the ocean each day during their migration. Based on this model, which inequality represents the estimated total number of miles,  $x$ , a whale from the genus *Eschrichtius* could travel in **16** days of its migration?

- A.  $72 + 16 \leq x \leq 77 + 16$
- B.  $(72)(16) \leq x \leq (77)(16)$
- C.  $72 \leq 16 + x \leq 77$
- D.  $72 \leq 16x \leq 77$

## Question ID cb58833c

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear equations in two variables	<div style="width: 30%; background-color: #0056b3; height: 10px;"></div> <div style="width: 30%; background-color: #0056b3; height: 10px;"></div> <div style="width: 30%; background-color: #0056b3; height: 10px;"></div>

ID: cb58833c

The line with the equation  $\frac{4}{5}x + \frac{1}{3}y = 1$  is graphed in the  $xy$ -plane. What is the  $x$ -coordinate of the  $x$ -intercept of the line?

# Question ID 97eab129

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear functions	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div>

ID: 97eab129

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 567ac7ab

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Systems of two linear equations in two variables	<div style="width: 75%; background-color: #0056b3; height: 10px;"></div>

ID: 567ac7ab

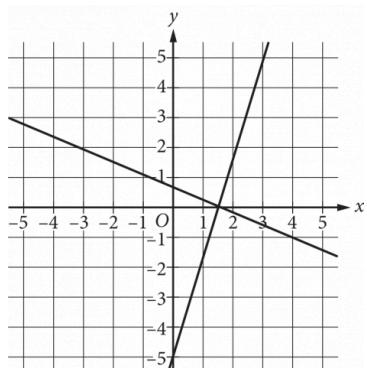
One of the two equations in a linear system is  $2x + 6y = 10$ . The system has no solution. Which of the following could be the other equation in the system?

- A.  $x + 3y = 5$
- B.  $x + 3y = -20$
- C.  $6x - 2y = 0$
- D.  $6x + 2y = 10$

# Question ID 2704399f

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Systems of two linear equations in two variables	<div style="width: 25%; background-color: #003366; height: 10px;"></div> <div style="width: 25%; background-color: #003366; height: 10px;"></div> <div style="width: 50%; background-color: #cccccc; height: 10px;"></div>

ID: 2704399f



Which of the following systems of equations has the same solution as the system of equations graphed above?

A.  $y = 0$   
 $x = \frac{3}{2}$

B.  $y = 0$   
 $x = 1$

C.  $y = 0$   
 $x = 0$

D.  $y = 1$   
 $x = 0$

## Question ID daad7c32

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear functions	<div style="width: 75%;"><div style="width: 100px; height: 10px; background-color: #0056b3;"></div></div>

ID: daad7c32

An object hangs from a spring. The formula  $\ell = 30 + 2w$  relates the length  $\ell$ , in centimeters, of the spring to the weight  $w$ , in newtons, of the object. Which of the following describes the meaning of the 2 in this context?

- A. The length, in centimeters, of the spring with no weight attached
- B. The weight, in newtons, of an object that will stretch the spring 30 centimeters
- C. The increase in the weight, in newtons, of the object for each one-centimeter increase in the length of the spring
- D. The increase in the length, in centimeters, of the spring for each one-newton increase in the weight of the object

## Question ID 3f8a701b

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear equations in one variable	<div style="width: 75%; background-color: #0056b3; height: 10px;"></div>

ID: 3f8a701b

The equation  $9x + 5 = a(x + b)$ , where  $a$  and  $b$  are constants, has no solutions. Which of the following must be true?

- I.  $a = 9$
  - II.  $b = 5$
  - III.  $b \neq \frac{5}{9}$
- A. None  
B. I only  
C. I and II only  
D. I and III only

# Question ID 0d1dca87

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Systems of two linear equations in two variables	<div style="width: 25%; background-color: #003366; height: 10px;"></div> <div style="width: 75%; background-color: #cccccc; height: 10px;"></div>

ID: 0d1dca87

$$3x + y = 29$$

$$x = 2$$

If  $(x, y)$  is the solution to the given system of equations, what is the value of  $y$ ?

## Question ID b9839f9e

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear equations in two variables	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div>

ID: b9839f9e

$$F = 2.50x + 7.00y$$

In the equation above,  $F$  represents the total amount of money, in dollars, a food truck charges for  $x$  drinks and  $y$  salads. The price, in dollars, of each drink is the same, and the price, in dollars, of each salad is the same. Which of the following is the best interpretation for the number 7.00 in this context?

- A. The price, in dollars, of one drink
- B. The price, in dollars, of one salad
- C. The number of drinks bought during the day
- D. The number of salads bought during the day

# Question ID 023c0a8d

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear functions	<div style="width: 75%; background-color: #0056b3; height: 10px;"></div>

ID: 023c0a8d

For the function  $f$ , if  $f(3x) = x - 6$  for all values of  $x$ ,  
what is the value of  $f(6)$ ?

- A.  $-6$
- B.  $-4$
- C.  $0$
- D.  $2$

## Question ID a7a14e87

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear equations in two variables	<div style="width: 75%; background-color: #0056b3; height: 10px;"></div>

ID: a7a14e87

In the  $xy$ -plane, line  $k$  is defined by  $x + y = 0$ . Line  $j$  is perpendicular to line  $k$ , and the  $y$ -intercept of line  $j$  is  $(0, 3)$ . Which of the following is an equation of line  $j$ ?

- A.  $x + y = 3$
- B.  $x + y = -3$
- C.  $x - y = 3$
- D.  $x - y = -3$

## Question ID 90bd9ef8

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear inequalities in one or two variables	<div style="width: 20%; background-color: #003366; height: 10px;"></div> <div style="width: 20%; background-color: #003366; height: 10px;"></div> <div style="width: 60%; background-color: #cccccc; height: 10px;"></div>

ID: 90bd9ef8

The average annual energy cost for a certain home is \$4,334. The homeowner plans to spend \$25,000 to install a geothermal heating system. The homeowner estimates that the average annual energy cost will then be \$2,712. Which of the following inequalities can be solved to find  $t$ , the number of years after installation at which the total amount of energy cost savings will exceed the installation cost?

- A.  $25,000 > (4,334 - 2,712)t$
- B.  $25,000 < (4,334 - 2,712)t$
- C.  $25,000 - 4,334 > 2,712t$
- D.  $25,000 > \frac{4,332}{2,712}t$

## Question ID 429fb7c0

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear equations in one variable	<div style="width: 30%; background-color: #0056b3; height: 10px;"></div> <div style="width: 30%; background-color: #0056b3; height: 10px;"></div> <div style="width: 30%; background-color: #0056b3; height: 10px;"></div>

ID: 429fb7c0

What value of  $t$  is the solution to the equation  $0.8t - 0.46 = 8(t - 0.001) + 1.9$ ?

## Question ID 5ad9eff0

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear equations in one variable	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 50%; background-color: #e0e0e0; height: 10px;"></div>

ID: 5ad9eff0

The width of a rectangular dance floor is  $w$  feet. The length of the floor is 6 feet longer than its width. Which of the following expresses the perimeter, in feet, of the dance floor in terms of  $w$ ?

- A.  $2w + 6$
- B.  $4w + 12$
- C.  $w^2 + 6$
- D.  $w^2 + 6w$

# Question ID 39617468

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear equations in two variables	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div>

ID: 39617468

$$x + y = 350$$

The given equation relates the total number of maple trees,  $x$ , and the total number of birch trees,  $y$ , planted in a 14-acre forest preserve. If 245 maple trees were planted in the forest preserve, how many birch trees were planted in the forest preserve?

- A. 14
- B. 25
- C. 105
- D. 245

## Question ID 038d87d7

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear equations in two variables	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 50%; background-color: #e0e0e0; height: 10px;"></div>

ID: 038d87d7

A neighborhood consists of a **2**-hectare park and a **35**-hectare residential area. The total number of trees in the neighborhood is **3,934**. The equation  $2x + 35y = 3,934$  represents this situation. Which of the following is the best interpretation of  $x$  in this context?

- A. The average number of trees per hectare in the park
- B. The average number of trees per hectare in the residential area
- C. The total number of trees in the park
- D. The total number of trees in the residential area

# Question ID 46f68129

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear equations in one variable	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div>

ID: 46f68129

A librarian has 43 books to distribute to a group of children. If he gives each child 2 books, he will have 7 books left over. How many children are in the group?

- A. 15
- B. 18
- C. 25
- D. 29

# Question ID 2eef7e61

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear functions	<div style="width: 25%; background-color: #0056b3;"></div> <div style="width: 25%; background-color: #cccccc;"></div> <div style="width: 25%; background-color: #cccccc;"></div>

ID: 2eef7e61

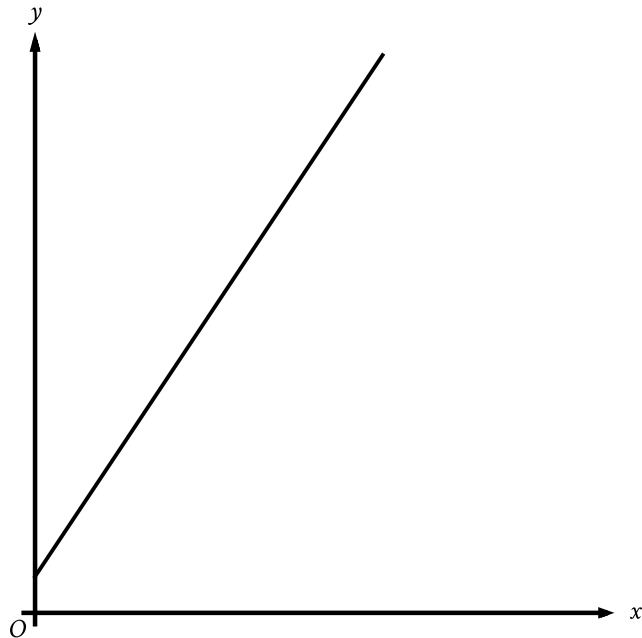
The graph of the function  $f$  is a line in the  $xy$ -plane. If the line has slope  $\frac{3}{4}$  and  $f(0) = 3$ , which of the following defines  $f$ ?

- A.  $f(x) = \frac{3}{4}x - 3$
- B.  $f(x) = \frac{3}{4}x + 3$
- C.  $f(x) = 4x - 3$
- D.  $f(x) = 4x + 3$

# Question ID f0773a55

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear functions	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 50%; background-color: #e0e0e0; height: 10px;"></div>

ID: f0773a55



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 8da536c6

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear equations in two variables	<div style="width: 25%; background-color: #005a9f;"></div> <div style="width: 25%; background-color: #e0e0e0;"></div> <div style="width: 25%; background-color: #e0e0e0;"></div>

ID: 8da536c6

In **2010**, a swim club had a total of **35** swimmers, each classified as either advanced or intermediate. From **2010** to **2020**, the number of advanced swimmers in the club increased by approximately **53%**, and the number of intermediate swimmers in the club increased by approximately **44%**. The total number of swimmers in the club increased by approximately **49%**. Which equation best represents this situation, where  $a$  represents the number of advanced swimmers in the club in **2010** and  $b$  represents the number of intermediate swimmers in the club in **2010**?

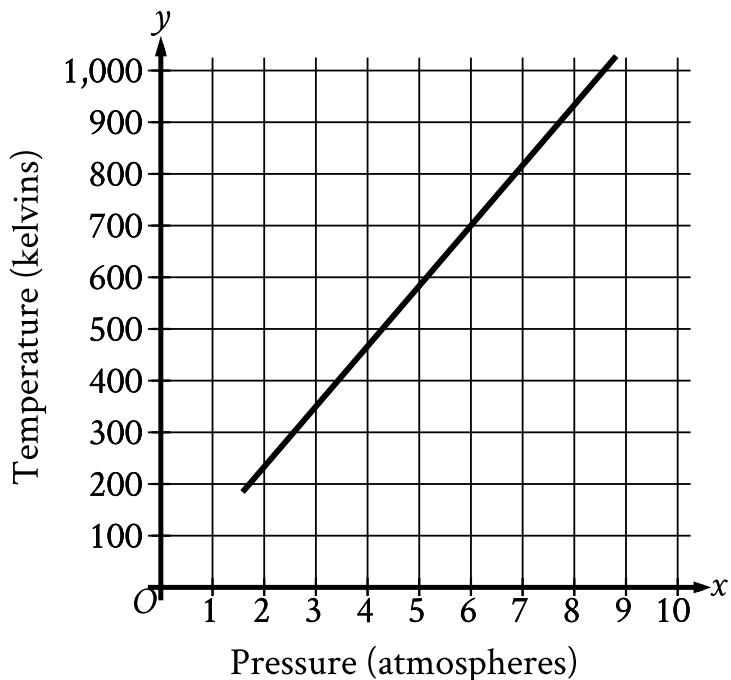
- A.  $1.53a + 1.49b = 35(1.44)$
- B.  $1.49a + 0.53b = 35(1.44)$
- C.  $1.53a + 1.44b = 35(1.49)$
- D.  $1.44a + 1.53b = 35(1.49)$

# Question ID 0ea7ef01

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear functions	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div>

ID: 0ea7ef01

Oxygen gas is placed inside a tank with a constant volume. The graph shows the estimated temperature  $y$ , in kelvins, of the oxygen gas when its pressure is  $x$  atmospheres.



What is the estimated temperature, in kelvins, of the oxygen gas when its pressure is 6 atmospheres?

- A. 6
- B. 60
- C. 700
- D. 760

# Question ID 0df106df

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Systems of two linear equations in two variables	<div style="width: 25%; background-color: #002B36; height: 10px;"></div> <div style="width: 75%; background-color: #D9D9D9; height: 10px;"></div> <div style="width: 75%; background-color: #D9D9D9; height: 10px;"></div>

ID: 0df106df

An online bookstore sells novels and magazines. Each novel sells for \$4, and each magazine sells for \$1. If Sadie purchased a total of 11 novels and magazines that have a combined selling price of \$20, how many novels did she purchase?

- A. 2
- B. 3
- C. 4
- D. 5

## Question ID e53870b6

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear equations in one variable	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div>

ID: e53870b6

$$6x + k = 6x + 5$$

In the given equation,  $k$  is a constant. If the equation has infinitely many solutions, what is the value of  $k$  ?

## Question ID f5ff91b2

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear equations in one variable	<div style="width: 30%; background-color: #0056b3; height: 10px;"></div> <div style="width: 30%; background-color: #0056b3; height: 10px;"></div> <div style="width: 30%; background-color: #0056b3; height: 10px;"></div>

ID: f5ff91b2

If  $\frac{x-5}{7} = \frac{x-5}{9}$ , the value of  $x - 5$  is between which of the following pairs of values?

- A. **-9** and **-7**
- B. **-3** and **3**
- C. **4.5** and **5.5**
- D. **6.75** and **9.25**

# Question ID a1fd2304

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear equations in two variables	<div style="width: 30%; background-color: #0056b3; height: 10px;"></div> <div style="width: 30%; background-color: #0056b3; height: 10px;"></div> <div style="width: 30%; background-color: #0056b3; height: 10px;"></div>

ID: a1fd2304

How many liters of a 25% saline solution must be added to 3 liters of a 10% saline solution to obtain a 15% saline solution?

## Question ID b544a348

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Systems of two linear equations in two variables	<div style="width: 20%; background-color: #0056b3; height: 10px;"></div> <div style="width: 20%; background-color: #0056b3; height: 10px;"></div> <div style="width: 60%; background-color: #e0e0e0; height: 10px;"></div>

ID: b544a348

$$5x + 3y = 38$$

$$x + 3y = 10$$

In the solution  $(x, y)$  to the system of equations

above, what is the value of  $x$ ?

## Question ID 628300a9

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear equations in one variable	<div style="width: 30%; background-color: #0056b3; height: 10px;"></div> <div style="width: 30%; background-color: #0056b3; height: 10px;"></div> <div style="width: 30%; background-color: #0056b3; height: 10px;"></div>

ID: 628300a9

A science teacher is preparing the 5 stations of a science laboratory. Each station will have either Experiment A materials or Experiment B materials, but not both.

Experiment A requires 6 teaspoons of salt, and Experiment B requires 4 teaspoons of salt. If  $x$  is the number of stations that will be set up for Experiment A and the remaining stations will be set up for Experiment B, which of the following expressions represents the total number of teaspoons of salt required?

- A.  $5x$
- B.  $10x$
- C.  $2x + 20$
- D.  $10x + 20$

## Question ID 9ed4c1a2

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear equations in two variables	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 50%; background-color: #e0e0e0; height: 10px;"></div>

ID: 9ed4c1a2

What is the slope of the graph of  $y = \frac{1}{4}(27x + 15) + 7x$  in the  $xy$ -plane?

## Question ID 45bba652

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear equations in one variable	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 50%; background-color: #e0e0e0; height: 10px;"></div>

ID: 45bba652

If  $2(x - 5) + 3(x - 5) = 10$ , what is the value of  $x - 5$  ?

- A. 2
- B. 5
- C. 7
- D. 12

# Question ID 208626df

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear inequalities in one or two variables	<div style="width: 25%; background-color: #003366; height: 10px;"></div> <div style="width: 75%; background-color: #cccccc; height: 10px;"></div>

ID: 208626df

$$2\ell + 2w \leq 27$$

A rectangle has length  $\ell$  and width  $w$ . The inequality gives the possible values of  $\ell$  and  $w$  for which the perimeter of this rectangle is less than or equal to 27. Which statement is the best interpretation of  $(\ell, w) = (8, 3)$  in this context?

- A. If the rectangle has length 3 and width 8, its perimeter is less than or equal to 27.
- B. If the rectangle has length 8 and width 3, its perimeter is less than or equal to 27.
- C. If the rectangle has length 3 and width 8, its perimeter is greater than or equal to 27.
- D. If the rectangle has length 8 and width 3, its perimeter is greater than or equal to 27.

# Question ID b75f7812

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear inequalities in one or two variables	<div style="width: 25%; background-color: #002B36; height: 10px;"></div> <div style="width: 75%; background-color: #D9D9D9; height: 10px;"></div> <div style="width: 75%; background-color: #D9D9D9; height: 10px;"></div>

ID: b75f7812

Maria plans to rent a boat. The boat rental costs \$60 per hour, and she will also have to pay for a water safety course that costs \$10. Maria wants to spend no more than \$280 for the rental and the course. If the boat rental is available only for a whole number of hours, what is the maximum number of hours for which Maria can rent the boat?

## Question ID 1ecaa9c0

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear functions	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div>

ID: 1ecaa9c0

Robert rented a truck to transport materials he purchased from a hardware store. He was charged an initial fee of \$20.00 plus an additional \$0.70 per mile driven. If the truck was driven 38 miles, what was the total amount Robert was charged?

- A. \$46.60
- B. \$52.90
- C. \$66.90
- D. \$86.50

# Question ID fb43b85f

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear equations in two variables	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 50%; background-color: #e0e0e0; height: 10px;"></div>

ID: fb43b85f

A line passes through the points  $(4, 6)$  and  $(15, 24)$  in the  $xy$ -plane. What is the slope of the line?

# Question ID 7d89376f

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Systems of two linear equations in two variables	<div style="width: 25%; background-color: #003366; height: 10px;"></div> <div style="width: 75%; background-color: #cccccc; height: 10px;"></div>

ID: 7d89376f

A discount airline sells a certain number of tickets,  $x$ , for a flight for \$90 each. It sells the number of remaining tickets,  $y$ , for \$250 each. For a particular flight, the airline sold 120 tickets and collected a total of \$27,600 from the sale of those tickets. Which system of equations represents this relationship between  $x$  and  $y$ ?

- A.  $\begin{cases} x+y=120 \\ 90x+250y=27,600 \end{cases}$
- B.  $\begin{cases} x+y=120 \\ 90x+250y=120(27,600) \end{cases}$
- C.  $\begin{cases} x+y=27,600 \\ 90x+250y=120(27,600) \end{cases}$
- D.  $\begin{cases} 90x=250y \\ 120x+120y=27,600 \end{cases}$

# Question ID 0bd33265

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear functions	<div style="width: 75%; background-color: #0056b3; height: 10px;"></div>

ID: 0bd33265

The equation  $h = \frac{9(v-273.15)}{5} + 32$  gives the corresponding temperature  $h$ , in degrees Fahrenheit, of any substance that has a temperature of  $v$  kelvins, where  $v > 0$ . If a substance has a temperature of 467.33 degrees Fahrenheit, what is the corresponding temperature, in kelvins, of this substance?

## Question ID 17f176ec

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Systems of two linear equations in two variables	<div style="width: 25%; background-color: #003366; height: 10px;"></div> <div style="width: 75%; background-color: #cccccc; height: 10px;"></div>

ID: 17f176ec

A movie theater charges \$11 for each full-price ticket and \$8.25 for each reduced-price ticket. For one movie showing, the theater sold a total of 214 full-price and reduced-price tickets for \$2,145. Which of the following systems of equations could be used to determine the number of full-price tickets,  $f$ , and the number of reduced-price tickets,  $r$ , sold?

A.  $f + r = 2,145$

A.  $11f + 8.25r = 214$

B.  $f + r = 214$

B.  $11f + 8.25r = 2,145$

C.  $f + r = 214$

C.  $8.25f + 11r = 2,145$

D.  $f + r = 2,145$

D.  $8.25f + 11r = 214$

## Question ID 8a6de407

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear functions	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 50%; background-color: #e0e0e0; height: 10px;"></div>

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  $m$ ?

# Question ID 8643d906

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear functions	<div style="width: 25%; background-color: #003366; height: 10px;"></div> <div style="width: 75%; background-color: #cccccc; height: 10px;"></div> <div style="width: 75%; background-color: #cccccc; height: 10px;"></div>

ID: 8643d906

$$P(t) = 250 + 10t$$

The population of snow leopards in a certain area can be modeled by the function  $P$  defined above, where  $P(t)$  is the population  $t$  years after 1990. Of the following, which is the best interpretation of the equation  $P(30) = 550$ ?

- A. The snow leopard population in this area is predicted to be 30 in the year 2020.
- B. The snow leopard population in this area is predicted to be 30 in the year 2030.
- C. The snow leopard population in this area is predicted to be 550 in the year 2020.
- D. The snow leopard population in this area is predicted to be 550 in the year 2030.

# Question ID bbf9e5ce

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear functions	<div style="width: 60%; background-color: #0056b3; height: 10px;"></div>

ID: bbf9e5ce

For groups of **25** or more people, a museum charges **\$21** per person for the first **25** people and **\$14** for each additional person. Which function  $f$  gives the total charge, in dollars, for a tour group with  $n$  people, where  $n \geq 25$ ?

- A.  $f(n) = 14n + 175$
- B.  $f(n) = 14n + 525$
- C.  $f(n) = 35n - 350$
- D.  $f(n) = 14n + 21$

# Question ID a4d6fbec

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear functions	<div style="width: 25%; background-color: #0056b3;"></div> <div style="width: 75%; background-color: #e0e0e0;"></div> <div style="width: 75%; background-color: #e0e0e0;"></div>

ID: a4d6fbec

If  $y = 5x + 10$ , what is the value of  $y$  when  $x = 8$ ?

# Question ID 65833256

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Systems of two linear equations in two variables	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 50%; background-color: #e0e0e0; height: 10px;"></div>

ID: 65833256

$$\begin{aligned}y &= 6x + 16 \\ -7x - y &= 36\end{aligned}$$

What is the solution  $(x, y)$  to the given system of equations?

- A.  $(-4, -8)$
- B.  $(-\frac{20}{13}, -\frac{80}{13})$
- C.  $(4, 40)$
- D.  $(20, 136)$

# Question ID 44d65912

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Systems of two linear equations in two variables	<div style="width: 25%; background-color: #003366; height: 10px;"></div> <div style="width: 75%; background-color: #cccccc; height: 10px;"></div>

ID: 44d65912

Angela is playing a video game. In this game, players can score points only by collecting coins and stars. Each coin is worth  $c$  points, and each star is worth  $s$  points.

- The first time she played, Angela scored 700 points. She collected 20 coins and 10 stars.
- The second time she played, Angela scored 850 points. She collected 25 coins and 12 stars.

Which system of equations can be used to correctly determine the values of  $c$  and  $s$ ?

A.  $10c + 20s = 700$

$12c + 25s = 850$

B.  $20c + 10s = 700$

$25c + 12s = 850$

C.  $20c + 700s = 10$

$25c + 850s = 12$

D.  $700c + 20s = 10$

$850c + 25s = 12$

# Question ID 41fdc0b8

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear functions	<div style="width: 60%; background-color: #0056b3; height: 10px;"></div> <div style="width: 60%; background-color: #0056b3; height: 10px;"></div> <div style="width: 40%; background-color: #e0e0e0; height: 10px;"></div>

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

## Question ID 8b2a2a63

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear equations in two variables	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div>

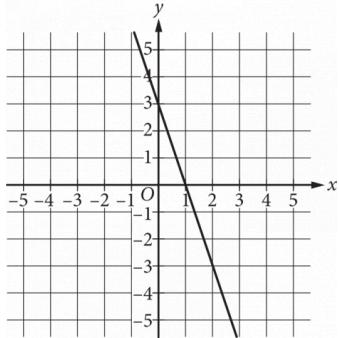
ID: 8b2a2a63

The  $y$ -intercept of the graph of  $y = -6x - 32$  in the  $xy$ -plane is  $(0, y)$ . What is the value of  $y$ ?

# Question ID 8a1544f1

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear equations in two variables	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 25%; background-color: #e0e0e0; height: 10px;"></div> <div style="width: 25%; background-color: #e0e0e0; height: 10px;"></div>

ID: 8a1544f1



What is the equation of the line shown in the  $xy$ -plane above?

- A.  $y = 3x - 3$
- B.  $y = -3x + 3$
- C.  $y = \frac{1}{3}x - 3$
- D.  $y = -\frac{1}{3}x + 3$

## Question ID a9c04a21

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear equations in one variable	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div>

ID: a9c04a21

What is the solution to the equation  $2x + 3 = 7$ ?

- A. 1
- B. 1.5
- C. 2
- D. 4

## Question ID a73a5c22

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear functions	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div>

ID: a73a5c22

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 8c515062

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear equations in one variable	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 50%; background-color: #e0e0e0; height: 10px;"></div>

ID: 8c515062

A candle is made of **17** ounces of wax. When the candle is burning, the amount of wax in the candle decreases by **1** ounce every **4** hours. If **6** ounces of wax remain in this candle, for how many hours has it been burning?

- A. **3**
- B. **6**
- C. **24**
- D. **44**

## Question ID 4b76c7f1

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Systems of two linear equations in two variables	<div style="width: 25%; background-color: #003366; height: 10px;"></div> <div style="width: 75%; background-color: #cccccc; height: 10px;"></div>

ID: 4b76c7f1

$$2x + 7y = 9$$

$$8x + 28y = a$$

In the given system of equations,  $a$  is a constant. If the system has infinitely many solutions, what is the value of  $a$ ?

A. 4

B. 9

C. 36

D. 54

# Question ID 1993561d

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear functions	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div>

ID: 1993561d

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 a8e6bd75

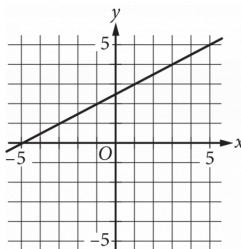
Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear functions	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div>

ID: a8e6bd75

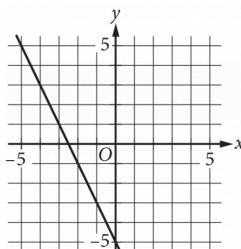
Which of the following is the graph of the equation

$$y = 2x - 5$$
 in the  $xy$ -plane?

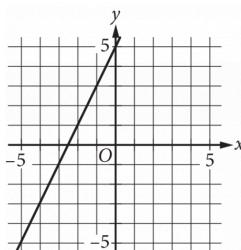
A.



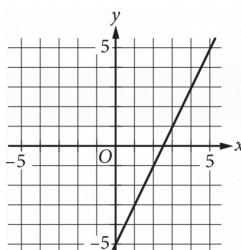
B.



C.



D.



# Question ID 948087f2

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear inequalities in one or two variables	<div style="width: 20%; background-color: #003366; height: 10px;"></div> <div style="width: 20%; background-color: #003366; height: 10px;"></div> <div style="width: 60%; background-color: #cccccc; height: 10px;"></div>

ID: 948087f2

$$y \leq 3x + 1$$

$$x - y > 1$$

Which of the following ordered pairs  $(x, y)$  satisfies the system of inequalities above?

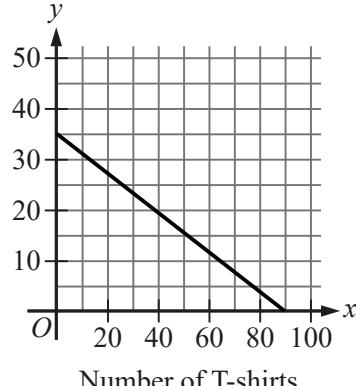
- A.  $(-2, -1)$
- B.  $(-1, 3)$
- C.  $(1, 5)$
- D.  $(2, -1)$

# Question ID 00b9bd37

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear equations in two variables	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 50%; background-color: #e0e0e0; height: 10px;"></div>

ID: 00b9bd37

Number of sweatshirts



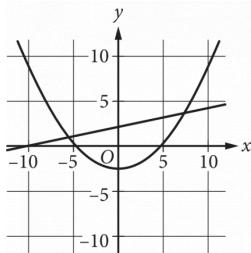
The graph models the relationship between the number of T-shirts,  $x$ , and the number of sweatshirts,  $y$ , that Kira can purchase for a school fundraiser. Which equation could represent this relationship?

- A.  $y = 7x + 18$
- B.  $7x + 18y = 630$
- C.  $y = 18x + 7$
- D.  $18x + 7y = 630$

# Question ID a5663025

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear equations in one variable and systems of equations in two variables	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 50%; background-color: #e0e0e0; height: 10px;"></div>

ID: a5663025



A system of equations consists of a quadratic equation and a linear equation. The equations in this system are graphed in the  $xy$ -plane above. How many solutions does this system have?

- A. 0
- B. 1
- C. 2
- D. 3

## Question ID 3c95093c

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear equations in one variable and systems of equations in two variables	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div>

ID: 3c95093c

$$6x - 9y > 12$$

Which of the following inequalities is equivalent to the inequality above?

- A.  $x - y > 2$
- B.  $2x - 3y > 4$
- C.  $3x - 2y > 4$
- D.  $3y - 2x > 2$

# Question ID d0a7871e

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear equations in one variable and systems of equations in two variables	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 50%; background-color: #e0e0e0; height: 10px;"></div>

ID: d0a7871e

$$y = x + 1$$

$$y = x^2 + x$$

If  $(x, y)$  is a solution to the system of equations above, which of the following could be the value of  $x$ ?

- A. -1
- B. 0
- C. 2
- D. 3

## Question ID dd4ab4c4

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Equivalent expressions	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 50%; background-color: #e0e0e0; height: 10px;"></div>

ID: dd4ab4c4

$$4a^2 + 20ab + 25b^2$$

Which of the following is a factor of the polynomial above?

- A.  $a + b$
- B.  $2a + 5b$
- C.  $4a + 5b$
- D.  $4a + 25b$

## Question ID b8caaf84

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Equivalent expressions	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 50%; background-color: #e0e0e0; height: 10px;"></div>

ID: b8caaf84

If  $p = 3x + 4$  and  $v = x + 5$ , which of the following is equivalent to  $pv - 2p + v$ ?

- A.  $3x^2 + 12x + 7$
- B.  $3x^2 + 14x + 17$
- C.  $3x^2 + 19x + 20$
- D.  $3x^2 + 26x + 33$

# Question ID 7f81d0c3

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear equations in one variable and systems of equations in two variables	<div style="width: 20%; background-color: #0056b3; height: 10px;"></div> <div style="width: 20%; background-color: #0056b3; height: 10px;"></div> <div style="width: 60%; background-color: #e0e0e0; height: 10px;"></div>

ID: 7f81d0c3

$$x^2 - x - 1 = 0$$

What values satisfy the equation above?

A.  $x = 1$  and  $x = 2$

B.  $x = -\frac{1}{2}$  and  $x = \frac{3}{2}$

C.  $x = \frac{1+\sqrt{5}}{2}$  and  $x = \frac{1-\sqrt{5}}{2}$

D.  $x = \frac{-1+\sqrt{5}}{2}$  and  $x = \frac{-1-\sqrt{5}}{2}$

## Question ID 332cd67b

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear equations in one variable and systems of equations in two variables	<div style="width: 25%; background-color: #002B36; height: 10px;"></div> <div style="width: 75%; background-color: #D9D9D9; height: 10px;"></div> <div style="width: 75%; background-color: #D9D9D9; height: 10px;"></div>

ID: 332cd67b

$$3x^2 - 15x + 18 = 0$$

How many distinct real solutions are there to the given equation?

- A. Exactly one
- B. Exactly two
- C. Infinitely many
- D. Zero

## Question ID 128c75e2

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear functions	<div style="width: 75%; background-color: #0056b3; height: 10px;"></div>

ID: 128c75e2

The function  $g$  is defined by  $g(x) = \frac{|x|}{a} - 14$ , where  $a < 0$ . What is the product of  $g(15a)$  and  $g(7a)$ ?

# Question ID e312081b

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Equivalent expressions	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div>

ID: e312081b

$$(x + 5) + (2x - 3)$$

Which of the following is equivalent to the given expression?

- A.  $3x - 2$
- B.  $3x + 2$
- C.  $3x - 8$
- D.  $3x + 8$

# Question ID 91e7ea5e

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear functions	<div style="width: 75%; background-color: #0056b3; height: 10px;"></div>

ID: 91e7ea5e

$$h(x) = 2(x - 4)^2 - 32$$

The quadratic function  $h$  is defined as shown. In the  $xy$ -plane, the graph of  $y = h(x)$  intersects the  $x$ -axis at the points  $(0, 0)$  and  $(t, 0)$ , where  $t$  is a constant. What is the value of  $t$ ?

- A. 1
- B. 2
- C. 4
- D. 8

## Question ID 3a9d60b2

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear equations in one variable and systems of equations in two variables	<div style="width: 75%; background-color: #0056b3; height: 10px;"></div>

ID: 3a9d60b2

$$2|4 - x| + 3|4 - x| = 25$$

What is the positive solution to the given equation?

# Question ID ebed7dc6

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear functions	<div style="width: 75%; background-color: #0056b3; height: 10px;"></div>

ID: ebed7dc6

An auditorium has seats for **1,800** people. Tickets to attend a show at the auditorium currently cost **\$4.00**. For each **\$1.00** increase to the ticket price, **100** fewer tickets will be sold. This situation can be modeled by the equation

$y = -100x^2 + 1,400x + 7,200$ , where  $x$  represents the increase in ticket price, in dollars, and  $y$  represents the revenue, in dollars, from ticket sales. If this equation is graphed in the  $xy$ -plane, at what value of  $x$  is the maximum of the graph?

- A. 4
- B. 7
- C. 14
- D. 18

## Question ID fc3d783a

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear equations in one variable and systems of equations in two variables	<div style="width: 75%; background-color: #0056b3; height: 10px;"></div>

ID: fc3d783a

In the  $xy$ -plane, a line with equation  $2y = 4.5$  intersects a parabola at exactly one point. If the parabola has equation  $y = -4x^2 + bx$ , where  $b$  is a positive constant, what is the value of  $b$ ?

## Question ID a9084ca4

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear functions	<div style="width: 75%; background-color: #0056b3; height: 10px;"></div>

ID: a9084ca4

$$f(x) = 9,000(0.66)^x$$

The given function  $f$  models the number of advertisements a company sent to its clients each year, where  $x$  represents the number of years since 1997, and  $0 \leq x \leq 5$ . If  $y = f(x)$  is graphed in the  $xy$ -plane, which of the following is the best interpretation of the  $y$ -intercept of the graph in this context?

- A. The minimum estimated number of advertisements the company sent to its clients during the 5 years was 1,708.
- B. The minimum estimated number of advertisements the company sent to its clients during the 5 years was 9,000.
- C. The estimated number of advertisements the company sent to its clients in 1997 was 1,708.
- D. The estimated number of advertisements the company sent to its clients in 1997 was 9,000.

## Question ID 4661e2a9

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear equations in one variable and systems of equations in two variables	<div style="width: 75%; background-color: #0056b3; height: 10px;"></div>

ID: 4661e2a9

$$x - y = 1$$

$$x + y = x^2 - 3$$

Which ordered pair is a solution to the system of equations above?

A.  $(1 + \sqrt{3}, \sqrt{3})$

B.  $(\sqrt{3}, -\sqrt{3})$

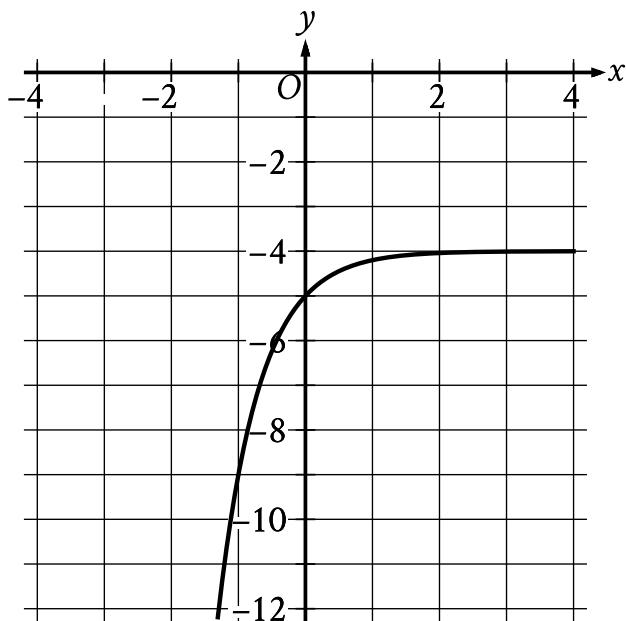
C.  $(1 + \sqrt{5}, \sqrt{5})$

D.  $(\sqrt{5}, -1 + \sqrt{5})$

# Question ID 6abec9a8

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear functions	<div style="width: 25%; background-color: #0056b3;"></div> <div style="width: 25%; background-color: #e0e0e0;"></div> <div style="width: 25%; background-color: #e0e0e0;"></div>

ID: 6abec9a8



What is the  $y$ -intercept of the graph shown?

- A.  $(-1, -9)$
- B.  $(0, -5)$
- C.  $(0, -4)$
- D.  $(0, 0)$

# Question ID ad2ec615

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Equivalent expressions	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 50%; background-color: #e0e0e0; height: 10px;"></div>

ID: ad2ec615

Which of the following is equivalent to the expression  $x^4 - x^2 - 6$ ?

- A.  $(x^2 + 1)(x^2 - 6)$
- B.  $(x^2 + 2)(x^2 - 3)$
- C.  $(x^2 + 3)(x^2 - 2)$
- D.  $(x^2 + 6)(x^2 - 1)$

## Question ID 42c71eb5

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Equivalent expressions	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 50%; background-color: #e0e0e0; height: 10px;"></div>

ID: 42c71eb5

$$(2x + 5)^2 - (x - 2) + 2(x + 3)$$

Which of the following is equivalent to the expression above?

- A.  $4x^2 + 21x + 33$
- B.  $4x^2 + 21x + 29$
- C.  $4x^2 + x + 29$
- D.  $4x^2 + x + 33$

## Question ID 371cbf6b

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Equivalent expressions	<div style="width: 75%; background-color: #0056b3; height: 10px;"></div>

ID: 371cbf6b

$$(ax + 3)(5x^2 - bx + 4) = 20x^3 - 9x^2 - 2x + 12$$

The equation above is true for all  $x$ , where  $a$  and  $b$  are constants. What is the value of  $ab$ ?

- A. 18
- B. 20
- C. 24
- D. 40

## Question ID a05bd3a4

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Equivalent expressions	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 50%; background-color: #e0e0e0; height: 10px;"></div>

ID: a05bd3a4

Which of the following expressions is equivalent to  $x^2 - 5$ ?

A.  $(x + \sqrt{5})^2$

B.  $(x - \sqrt{5})^2$

C.  $(x + \sqrt{5})(x - \sqrt{5})$

D.  $(x + 5)(x - 1)$

## Question ID c3b116d7

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Equivalent expressions	<div style="width: 75%; background-color: #0056b3; height: 10px;"></div>

ID: c3b116d7

Which of the following expressions is(are) a factor of  $3x^2 + 20x - 63$ ?

- I.  $x - 9$
- II.  $3x - 7$

- A. I only
- B. II only
- C. I and II
- D. Neither I nor II

## Question ID 40c09d66

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Equivalent expressions	<div style="width: 75%; background-color: #0056b3; height: 10px;"></div>

ID: 40c09d66

$$\text{If } \frac{\sqrt{x^5}}{\sqrt[3]{x^4}} = x^{\frac{a}{b}} \text{ for all positive values of } x,$$

what is the value of  $\frac{a}{b}$ ?

## Question ID b8f13a3a

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear functions	<div style="width: 60%; background-color: #0056b3; height: 10px;"></div>

ID: b8f13a3a

Function  $f$  is defined by  $f(x) = -ax + b$ , where  $a$  and  $b$  are constants. In the  $xy$ -plane, the graph of  $y = f(x) - 12$  has a  $y$ -intercept at  $(0, -\frac{75}{7})$ . The product of  $a$  and  $b$  is  $\frac{320}{7}$ . What is the value of  $a$ ?

# Question ID 1d3c5c95

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear functions	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 50%; background-color: #e0e0e0; height: 10px;"></div>

ID: 1d3c5c95

$$f(x) = 4,000(0.75)^x$$

An entomologist recommended a program to reduce a certain invasive beetle population in an area. The given function estimates this beetle species' population  $x$  years after **2012**, where  $x \leq 7$ . Which of the following is the best interpretation of **4,000** in this context?

- A. The estimated initial beetle population for this species and area in **2012**
- B. The estimated beetle population for this species and area **7** years after **2012**
- C. The estimated percent decrease in the beetle population for this species and area each year after **2012**
- D. The estimated percent decrease in the beetle population for this species and area every **7** years after **2012**

# Question ID f65288e8

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear equations in one variable and systems of equations in two variables	<div style="width: 75%; background-color: #0056b3; height: 10px;"></div>

ID: f65288e8

$$\frac{1}{x^2 + 10x + 25} = 4$$

If  $x$  is a solution to the given equation, which of the following is a possible value of  $x + 5$ ?

A.  $\frac{1}{2}$

B.  $\frac{5}{2}$

C.  $\frac{9}{2}$

D.  $\frac{11}{2}$

# Question ID 788bfd56

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear functions	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div>

ID: 788bfd56

The function  $f$  is defined by  $f(x) = 4 + \sqrt{x}$ . What is the value of  $f(144)$ ?

- A. 0
- B. 16
- C. 40
- D. 76

## Question ID f89af023

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear functions	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 50%; background-color: #e0e0e0; height: 10px;"></div>

ID: f89af023

A rectangular volleyball court has an area of 162 square meters. If the length of the court is twice the width, what is the width of the court, in meters?

- A. 9
- B. 18
- C. 27
- D. 54

## Question ID e53add44

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear functions	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 50%; background-color: #e0e0e0; height: 10px;"></div>

ID: e53add44

$$S(n) = 38,000a^n$$

The function  $S$  above models the annual salary, in dollars, of an employee  $n$  years after starting a job, where  $a$  is a constant. If the employee's salary increases by 4% each year, what is the value of  $a$ ?

- A. 0.04
- B. 0.4
- C. 1.04
- D. 1.4

## Question ID f2f3fa00

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear equations in one variable and systems of equations in two variables	<div style="width: 75%; background-color: #0056b3; height: 10px;"></div>

ID: f2f3fa00

During a 5-second time interval, the average acceleration  $a$ , in meters per second squared, of an object with an initial velocity of 12 meters per second is defined by the

$$a = \frac{v_f - 12}{5}, \text{ where } v_f \text{ is the final velocity of the object in}$$

meters per second. If the equation is rewritten in the form  $v_f = xa + y$ , where  $x$  and  $y$  are constants, what is the value of  $x$ ?

## Question ID 9654add7

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear functions	<div style="width: 75%; background-color: #0056b3; height: 10px;"></div>

ID: 9654add7

$$f(x) = -500x^2 + 25,000x$$

The revenue  $f(x)$ , in dollars, that a company receives from sales of a product is given by the function  $f$  above, where  $x$  is the unit price, in dollars, of the product. The graph of  $y = f(x)$  in the  $xy$ -plane intersects the  $x$ -axis at 0 and  $a$ . What does  $a$  represent?

- A. The revenue, in dollars, when the unit price of the product is \$0
- B. The unit price, in dollars, of the product that will result in maximum revenue
- C. The unit price, in dollars, of the product that will result in a revenue of \$0
- D. The maximum revenue, in dollars, that the company can make

# Question ID 34847f8a

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Equivalent expressions	<div style="width: 75%; background-color: #0056b3; height: 10px;"></div>

ID: 34847f8a

$$\frac{2}{x-2} + \frac{3}{x+5} = \frac{rx+t}{(x-2)(x+5)}$$

The equation above is true for all  $x > 2$ , where  $r$  and  $t$  are positive constants. What is the value of  $rt$ ?

- A. -20
- B. 15
- C. 20
- D. 60

## Question ID cc776a04

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Equivalent expressions	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 50%; background-color: #e0e0e0; height: 10px;"></div>

ID: cc776a04

Which of the following is an equivalent form of

$$(1.5x - 2.4)^2 - (5.2x^2 - 6.4) ?$$

- A.  $-2.2x^2 + 1.6$
- B.  $-2.2x^2 + 11.2$
- C.  $-2.95x^2 - 7.2x + 12.16$
- D.  $-2.95x^2 - 7.2x + 0.64$

# Question ID 263f9937

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear functions	<div style="width: 100px; height: 10px; background-color: #0056b3;"></div> <div style="width: 150px; height: 10px; background-color: #0056b3;"></div> <div style="width: 180px; height: 10px; background-color: #0056b3;"></div>

ID: 263f9937

## Growth of a Culture of Bacteria

Day	Number of bacteria per milliliter at end of day
1	$2.5 \times 10^5$
2	$5.0 \times 10^5$
3	$1.0 \times 10^6$

A culture of bacteria is growing at an exponential rate, as shown in the table above. At this rate, on which day would the number of bacteria per milliliter reach  $5.12 \times 10^8$ ?

- A. Day 5
- B. Day 9
- C. Day 11
- D. Day 12

# Question ID 926c246b

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear functions	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 50%; background-color: #e0e0e0; height: 10px;"></div>

ID: 926c246b

$$D = 5,640(1.9)^t$$

The equation above estimates the global data traffic  $D$ , in terabytes, for the year that is  $t$  years after 2010. What is the best interpretation of the number 5,640 in this context?

- A. The estimated amount of increase of data traffic, in terabytes, each year
- B. The estimated percent increase in the data traffic, in terabytes, each year
- C. The estimated data traffic, in terabytes, for the year that is  $t$  years after 2010
- D. The estimated data traffic, in terabytes, in 2010

## Question ID 137cc6fd

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Equivalent expressions	<div style="width: 75%; background-color: #0056b3; height: 10px;"></div>

ID: 137cc6fd

$$\sqrt[5]{70n} \left( \sqrt[6]{70n} \right)^2$$

For what value of  $x$  is the given expression equivalent to  $(70n)^{30x}$ , where  $n > 1$ ?

## Question ID 6ce95fc8

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear equations in one variable and systems of equations in two variables	<div style="width: 75%; background-color: #0056b3; height: 10px;"></div>

ID: 6ce95fc8

$$2x^2 - 2 = 2x + 3$$

Which of the following is a solution to the equation above?

- A. 2
- B.  $1 - \sqrt{11}$
- C.  $\frac{1}{2} + \sqrt{11}$
- D.  $\frac{1 + \sqrt{11}}{2}$

# Question ID 4dd4efcf

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear functions	<div style="width: 60%; background-color: #0056b3; height: 10px;"></div>

ID: 4dd4efcf

$$f(x) = ax^2 + 4x + c$$

In the given quadratic function,  $a$  and  $c$  are constants. The graph of  $y = f(x)$  in the  $xy$ -plane is a parabola that opens upward and has a vertex at the point  $(h, k)$ , where  $h$  and  $k$  are constants. If  $k < 0$  and  $f(-9) = f(3)$ , which of the following must be true?

- I.  $c < 0$
- II.  $a \geq 1$

- A. I only
- B. II only
- C. I and II
- D. Neither I nor II

## Question ID f5aa5040

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear equations in one variable and systems of equations in two variables	<div style="width: 75%; background-color: #0056b3; height: 10px;"></div>

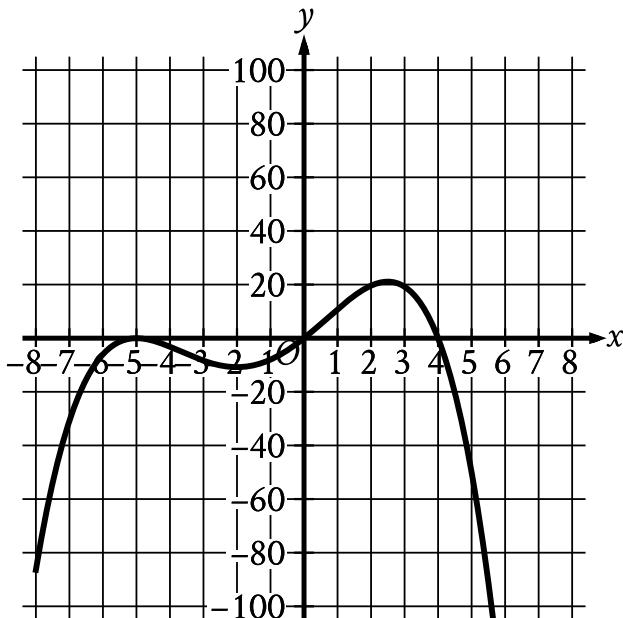
ID: f5aa5040

In the  $xy$ -plane, a line with equation  $2y = c$  for some constant  $c$  intersects a parabola at exactly one point. If the parabola has equation  $y = -2x^2 + 9x$ , what is the value of  $c$ ?

# Question ID 252a3b3a

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear functions	<div style="width: 20%; background-color: #0056b3; height: 10px;"></div> <div style="width: 20%; background-color: #0056b3; height: 10px;"></div> <div style="width: 60%; background-color: #e0e0e0; height: 10px;"></div>

ID: 252a3b3a



Which of the following could be the equation of the graph shown in the  $xy$ -plane?

- A.  $y = -\frac{1}{10}x(x - 4)(x + 5)$
- B.  $y = -\frac{1}{10}x(x - 4)(x + 5)^2$
- C.  $y = -\frac{1}{10}x(x - 5)(x + 4)$
- D.  $y = -\frac{1}{10}x(x - 5)^2(x + 4)$

# Question ID 58443765

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear equations in one variable and systems of equations in two variables	<div style="width: 25%; background-color: #002B36; height: 10px;"></div> <div style="width: 75%; background-color: #D9D9D9; height: 10px;"></div> <div style="width: 75%; background-color: #D9D9D9; height: 10px;"></div>

ID: 58443765

$$\begin{aligned}y &= 5x + 4 \\y &= 5x^2 + 4\end{aligned}$$

Which ordered pair  $(x, y)$  is a solution to the given system of equations?

- A.  $(0, 0)$
- B.  $(0, 4)$
- C.  $(8, 44)$
- D.  $(8, 84)$

# Question ID 70482e20

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Equivalent expressions	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div>

ID: 70482e20

Which expression is equivalent to  $11x^3 - 5x^3$ ?

- A.  $16x^3$
- B.  $6x^3$
- C.  $6x^6$
- D.  $16x^6$

# Question ID b39d74a0

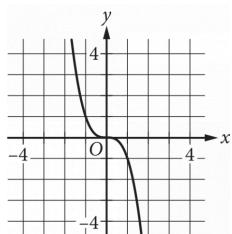
Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear functions	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div>

ID: b39d74a0

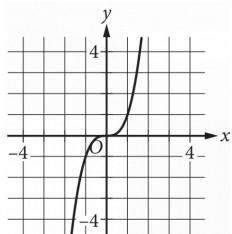
x	y
0	0
1	1
2	8
3	27

The table shown includes some values of  $x$  and their corresponding values of  $y$ . Which of the following graphs in the  $xy$ -plane could represent the relationship between  $x$  and  $y$ ?

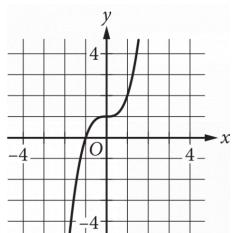
A.



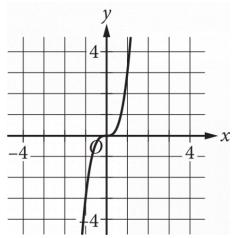
B.



C.



D.



## Question ID ea6d05bb

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Equivalent expressions	<div style="width: 75%; background-color: #0056b3; height: 10px;"></div>

ID: ea6d05bb

The expression  $(3x - 23)(19x + 6)$  is equivalent to the expression  $ax^2 + bx + c$ , where  $a$ ,  $b$ , and  $c$  are constants. What is the value of  $b$ ?

## Question ID 722de804

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear equations in one variable and systems of equations in two variables	<div style="width: 75%; background-color: #0056b3; height: 10px;"></div>

ID: 722de804

$$(x - 47)^2 = 1$$

What is the sum of the solutions to the given equation?

## Question ID 0536ad4f

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Equivalent expressions	<div style="width: 25%; background-color: #003366; height: 10px;"></div> <div style="width: 75%; background-color: #cccccc; height: 10px;"></div> <div style="width: 75%; background-color: #cccccc; height: 10px;"></div>

ID: 0536ad4f

Which expression is equivalent to  $20w - (4w + 3w)$ ?

- A.  $10w$
- B.  $13w$
- C.  $19w$
- D.  $21w$

# Question ID 433184f1

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Equivalent expressions	<div style="width: 75%; background-color: #0056b3; height: 10px;"></div>

ID: 433184f1

Which expression is equivalent to  $\frac{4}{4x-5} - \frac{1}{x+1}$ ?

- A.  $\frac{1}{(x+1)(4x-5)}$
- B.  $\frac{3}{3x-6}$
- C.  $-\frac{1}{(x+1)(4x-5)}$
- D.  $\frac{9}{(x+1)(4x-5)}$

# Question ID 1d3fee25

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Equivalent expressions	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div>

ID: 1d3fee25

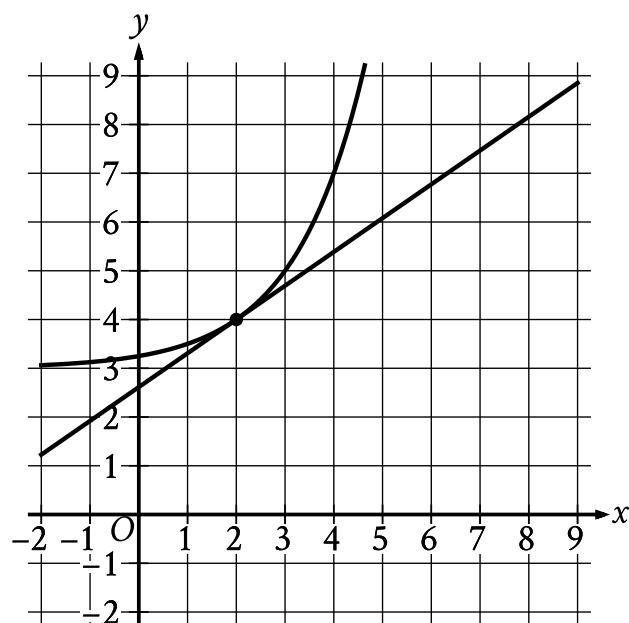
Which of the following is equivalent to  $3(x + 5) - 6$ ?

- A.  $3x - 3$
- B.  $3x - 1$
- C.  $3x + 9$
- D.  $15x - 6$

# Question ID 4ca30186

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear equations in one variable and systems of equations in two variables	<div style="width: 25%; background-color: #003366; height: 10px;"></div> <div style="width: 25%; background-color: #cccccc; height: 10px;"></div> <div style="width: 25%; background-color: #cccccc; height: 10px;"></div>

ID: 4ca30186



The graph of a system of a linear equation and a nonlinear equation is shown. What is the solution  $(x, y)$  to this system?

- A.  $(0, 0)$
- B.  $(0, 2)$
- C.  $(2, 4)$
- D.  $(4, 0)$

# Question ID 911383f2

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear equations in one variable and systems of equations in two variables	<div style="width: 25%; background-color: #002B36; height: 10px;"></div> <div style="width: 25%; background-color: #002B36; height: 10px;"></div> <div style="width: 50%; background-color: #D9D9D9; height: 10px;"></div>

ID: 911383f2

$$(x - 4)(x + 2)(x - 1) = 0$$

What is the product of the solutions to the given equation?

- A. 8
- B. 3
- C. -3
- D. -8

## Question ID d8789a4c

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Equivalent expressions	<div style="width: 75%; background-color: #0056b3; height: 10px;"></div>

ID: d8789a4c

$$\frac{x^2 - c}{x - b}$$

In the expression above,  $b$  and  $c$  are positive integers. If the expression is equivalent to  $x + b$  and  $x \neq b$ , which of the following could be the value of  $c$ ?

- A. 4
- B. 6
- C. 8
- D. 10

## Question ID b80d10d7

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear equations in one variable and systems of equations in two variables	<div style="width: 25%; background-color: #003366; height: 10px;"></div> <div style="width: 25%; background-color: #003366; height: 10px;"></div> <div style="width: 50%; background-color: #cccccc; height: 10px;"></div>

ID: b80d10d7

$$\frac{2(x+1)}{x+5} = 1 - \frac{1}{x+5}$$

What is the solution to the equation above?

- A. 0
- B. 2
- C. 3
- D. 5

# Question ID d4950429

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear functions	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 50%; background-color: #e0e0e0; height: 10px;"></div>

ID: d4950429

A rectangle has a length of  $x$  units and a width of  $(x - 15)$  units. If the rectangle has an area of 76 square units, what is the value of  $x$ ?

- A. 4
- B. 19
- C. 23
- D. 76

## Question ID fcdf87b7

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear equations in one variable and systems of equations in two variables	<div style="width: 25%; background-color: #003366; height: 10px;"></div> <div style="width: 25%; background-color: #003366; height: 10px;"></div> <div style="width: 50%; background-color: #cccccc; height: 10px;"></div>

ID: fcdf87b7

$$y = x^2 - 4x + 4$$

$$y = 4 - x$$

If the ordered pair  $(x, y)$  satisfies the system of equations above,

what is one possible value of  $x$ ?

## Question ID a520ba07

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Equivalent expressions	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 50%; background-color: #e0e0e0; height: 10px;"></div>

ID: a520ba07

$$\sqrt[3]{x^3y^6}$$

Which of the following expressions is equivalent to the expression above?

- A.  $y^2$
- B.  $xy^2$
- C.  $y^3$
- D.  $xy^3$

# Question ID 652054da

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear equations in one variable and systems of equations in two variables	<div style="width: 20%; background-color: #003366; height: 10px;"></div> <div style="width: 20%; background-color: #003366; height: 10px;"></div> <div style="width: 60%; background-color: #cccccc; height: 10px;"></div>

ID: 652054da

An oceanographer uses the equation  $s = \frac{3}{2}p$  to model the speed  $s$ , in knots, of an ocean wave, where  $p$  represents the period of the wave, in seconds. Which of the following represents the period of the wave in terms of the speed of the wave?

- A.  $p = \frac{2}{3}s$
- B.  $p = \frac{3}{2}s$
- C.  $p = \frac{2}{3} + s$
- D.  $p = \frac{3}{2} + s$

## Question ID a255ae72

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Equivalent expressions	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 50%; background-color: #e0e0e0; height: 10px;"></div>

ID: a255ae72

If  $x^2 = a + b$  and  $y^2 = a + c$ , which of the

following is equal to  $(x^2 - y^2)^2$ ?

- A.  $a^2 - 2ac + c^2$
- B.  $b^2 - 2bc + c^2$
- C.  $4a^2 - 4abc + c^2$
- D.  $4a^2 - 2abc + b^2c^2$

## Question ID dd3b1e1a

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear functions	<div style="width: 20%; background-color: #0056b3; height: 10px;"></div> <div style="width: 20%; background-color: #0056b3; height: 10px;"></div> <div style="width: 60%; background-color: #e0e0e0; height: 10px;"></div>

ID: dd3b1e1a

$$f(x) = x^5 + 9x + 17$$

For the given function  $f$ , the graph of  $y = f(x)$  in the  $xy$ -plane passes through the point  $(0, b)$ , where  $b$  is a constant. What is the value of  $b$ ?

## Question ID 3de7a7d7

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear equations in one variable and systems of equations in two variables	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div>

ID: 3de7a7d7

Which of the following is a solution to the equation  $2x^2 - 4 = x^2$ ?

- A. 1
- B. 2
- C. 3
- D. 4

# Question ID 35e05e19

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear functions	<div style="width: 75%; background-color: #0056b3; height: 10px;"></div>

ID: 35e05e19

A park ranger hung squirrel houses each in the shape of a right rectangular prism for fox squirrels. Each house has a height of **11** inches. The length of each house's base is  $x$  inches, which is **1** inch more than the width of the house's base. Which function  $V$  gives the volume of each house, in cubic inches, in terms of the length of the house's base?

- A.  $V(x) = 11x(x - 1)$
- B.  $V(x) = 11x(x + 1)$
- C.  $V(x) = x(x + 11)(x - 1)$
- D.  $V(x) = x(x + 11)(x + 1)$

# Question ID 463eec13

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Equivalent expressions	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 50%; background-color: #e0e0e0; height: 10px;"></div>

ID: 463eec13

If  $x \neq 0$ , which of the following expressions is

$$\frac{\sqrt{16x^4y^8}}{x^3} \quad ?$$

- A.  $8x^2y^4$
- B.  $4xy^4$
- C.  $4x^{-2}y^2$
- D.  $4x^{-1}y^4$

# Question ID 341ba5db

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear functions	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 50%; background-color: #e0e0e0; height: 10px;"></div>

ID: 341ba5db

$$g(x) = x^2 + 55$$

What is the minimum value of the given function?

- A. 0
- B. 55
- C. 110
- D. 3,025

# Question ID 18e35375

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear functions	<div style="width: 75%; background-color: #0056b3; height: 10px;"></div>

ID: 18e35375

$$f(x) = (x - 14)(x + 19)$$

The function  $f$  is defined by the given equation. For what value of  $x$  does  $f(x)$  reach its minimum?

- A.  $-266$
- B.  $-19$
- C.  $-\frac{33}{2}$
- D.  $-\frac{5}{2}$

## Question ID 6e02cd78

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear equations in one variable and systems of equations in two variables	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 50%; background-color: #e0e0e0; height: 10px;"></div>

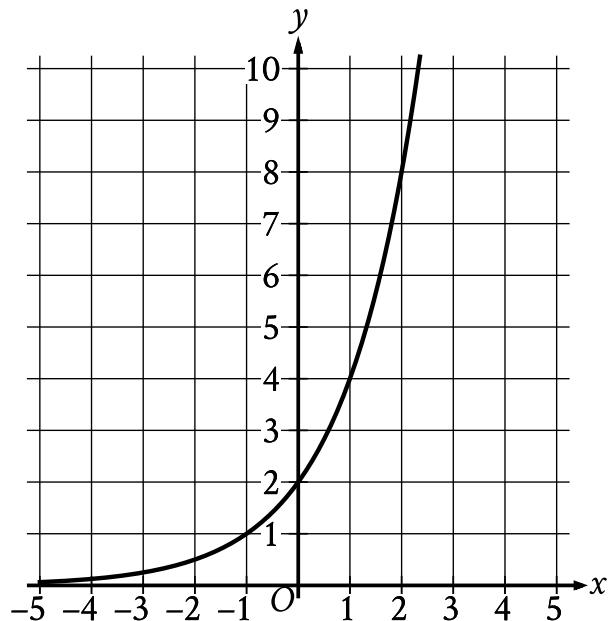
ID: 6e02cd78

In the  $xy$ -plane, what is the  $y$ -coordinate of the point of intersection of the graphs of  $y = (x - 1)^2$  and  $y = 2x - 3$ ?

# Question ID b5c43226

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear functions	<div style="width: 25%; background-color: #0056b3;"></div> <div style="width: 25%; background-color: #e0e0e0;"></div> <div style="width: 25%; background-color: #e0e0e0;"></div>

ID: b5c43226



What is the  $y$ -intercept of the graph shown?

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

## Question ID 13e5a5d5

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear equations in one variable and systems of equations in two variables	<div style="width: 25%; background-color: #002B36; height: 10px;"></div> <div style="width: 75%; background-color: #D9D9D9; height: 10px;"></div> <div style="width: 75%; background-color: #D9D9D9; height: 10px;"></div>

ID: 13e5a5d5

$$5|x| = 45$$

What is the positive solution to the given equation?

## Question ID 7bd10ef3

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear equations in one variable and systems of equations in two variables	<div style="width: 75%; background-color: #0056b3; height: 10px;"></div>

ID: 7bd10ef3

$$2x^2 - 4x = t$$

In the equation above,  $t$  is a constant. If the equation has no real solutions, which of the following could be the value of  $t$ ?

- A.  $-3$
- B.  $-1$
- C.  $1$
- D.  $3$

## Question ID 11ccf3e1

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear equations in one variable and systems of equations in two variables	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 50%; background-color: #e0e0e0; height: 10px;"></div>

ID: 11ccf3e1

$$14j + 5k = m$$

The given equation relates the numbers  $j$ ,  $k$ , and  $m$ . Which equation correctly expresses  $k$  in terms of  $j$  and  $m$ ?

- A.  $k = \frac{m-14j}{5}$
- B.  $k = \frac{1}{5}m - 14j$
- C.  $k = \frac{14j-m}{5}$
- D.  $k = 5m - 14j$

## Question ID 50e40f08

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear functions	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 50%; background-color: #e0e0e0; height: 10px;"></div>

ID: 50e40f08

$$f(x) = (x + 6)(x - 4)$$

If the given function  $f$  is graphed in the  $xy$ -plane, where  $y = f(x)$ , what is the  $x$ -coordinate of an  $x$ -intercept of the graph?

# Question ID cfff8f8e

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear functions	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div>

ID: cfff8f8e

At the time of posting a video, a social media channel had **53** subscribers. Each day for five days after the video was posted, the number of subscribers doubled from the number the previous day. Which equation gives the total number of subscribers,  $n$ , to the channel  $d$  days after the video was posted?

- A.  $n = (53)^d$
- B.  $n = 53(2)^d$
- C.  $n = 53\left(\frac{1}{2}\right)^d$
- D.  $n = (53)^2 + d$

# Question ID 88a0c425

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear equations in one variable and systems of equations in two variables	<div style="width: 75%; background-color: #0056b3; height: 10px;"></div>

ID: 88a0c425

$$-2x^2 + 20x + c = 0$$

In the given equation,  $c$  is a constant. The equation has exactly one solution. What is the value of  $c$ ?

- A. -68
- B. -50
- C. -32
- D. 0

# Question ID 8462b105

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear functions	<div style="width: 75%; background-color: #0056b3; height: 10px;"></div>

ID: 8462b105

The function  $f$  gives the product of a number,  $x$ , and a number that is 91 more than  $x$ . Which equation defines  $f$ ?

- A.  $f(x) = x^2 + x + 91$
- B.  $f(x) = x^2 + 91$
- C.  $f(x) = x^2 + 91x$
- D.  $f(x) = x^2 + 91x + 91$

# Question ID ce579859

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear functions	<div style="width: 75%; background-color: #0056b3; height: 10px;"></div>

ID: ce579859

A model estimates that at the end of each year from **2015** to **2020**, the number of squirrels in a population was **150%** more than the number of squirrels in the population at the end of the previous year. The model estimates that at the end of **2016**, there were **180** squirrels in the population. Which of the following equations represents this model, where  $n$  is the estimated number of squirrels in the population  $t$  years after the end of **2015** and  $t \leq 5$ ?

- A.  $n = 72(1.5)^t$
- B.  $n = 72(2.5)^t$
- C.  $n = 180(1.5)^t$
- D.  $n = 180(2.5)^t$

## Question ID 5355c0ef

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Equivalent expressions	<div style="width: 75%; background-color: #0056b3; height: 10px;"></div>

ID: 5355c0ef

$$0.36x^2 + 0.63x + 1.17$$

The given expression can be rewritten as  $a(4x^2 + 7x + 13)$ , where  $a$  is a constant. What is the value of  $a$ ?

## Question ID a1bf1c4e

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Equivalent expressions	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 50%; background-color: #e0e0e0; height: 10px;"></div>

ID: a1bf1c4e

$$x^2 + 6x + 4$$

Which of the following is equivalent to the expression above?

- A.  $(x + 3)^2 + 5$
- B.  $(x + 3)^2 - 5$
- C.  $(x - 3)^2 + 5$
- D.  $(x - 3)^2 - 5$

## Question ID c81b6c57

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Equivalent expressions	<div style="width: 75%; background-color: #0056b3; height: 10px;"></div>

ID: c81b6c57

In the expression  $3(2x^2 + px + 8) - 16x(p + 4)$ ,  $p$  is a constant. This expression is equivalent to the expression  $6x^2 - 155x + 24$ . What is the value of  $p$ ?

- A. **-3**
- B. **7**
- C. **13**
- D. **155**

## Question ID d139cf4b

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear functions	<div style="width: 60%; background-color: #0056b3; height: 10px;"></div>

ID: d139cf4b

$$f(t) = 55t - 2t^2$$

The function  $f$  is defined by the given equation. The function  $g$  is defined by  $g(t) = f(t) + 3$ . Which expression represents the maximum value of  $g(t)$ ?

- A.  $3 + \left(\frac{55}{2}\right)^2$
- B.  $3 + 2\left(\frac{55}{4}\right)^2$
- C.  $3 - 2\left(\frac{55}{4}\right)^2$
- D.  $3 - \left(\frac{55}{2}\right)^2$

# Question ID 802549ac

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear equations in one variable and systems of equations in two variables	<div style="width: 25%; background-color: #003366; height: 10px;"></div> <div style="width: 25%; background-color: #003366; height: 10px;"></div> <div style="width: 50%; background-color: #cccccc; height: 10px;"></div>

ID: 802549ac

$$(x+2)(x+3) = (x-2)(x-3) + 10$$

Which of the following is a solution to the given equation?

- A. 1
- B. 0
- C. -2
- D. -5

# Question ID 75a32330

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear equations in one variable and systems of equations in two variables	<div style="width: 20%; background-color: #0056b3; height: 10px;"></div> <div style="width: 20%; background-color: #0056b3; height: 10px;"></div> <div style="width: 60%; background-color: #e0e0e0; height: 10px;"></div>

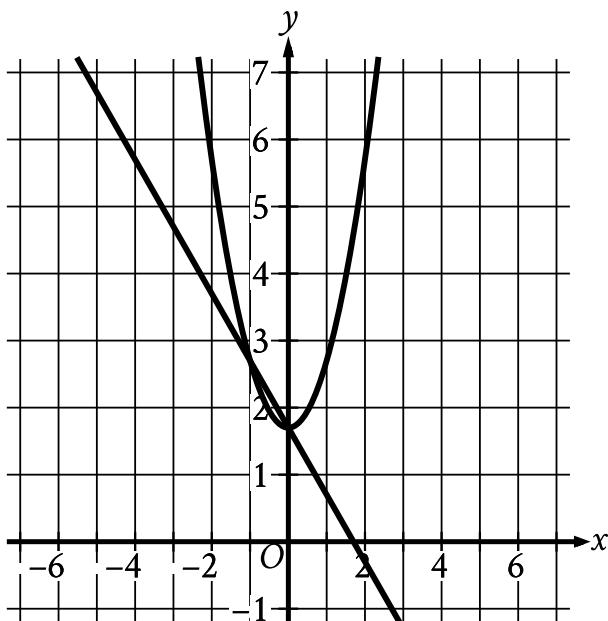
ID: 75a32330

$$y = x^2 + 1.7$$

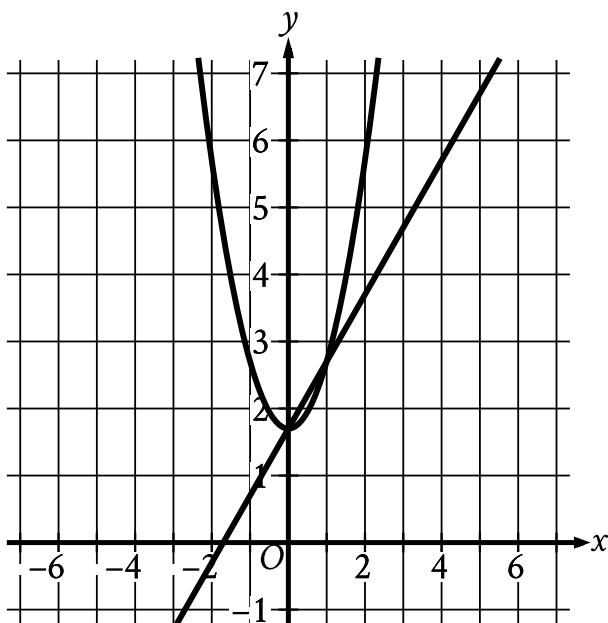
$$y = 1.7 - x$$

Which graph represents the given system of equations?

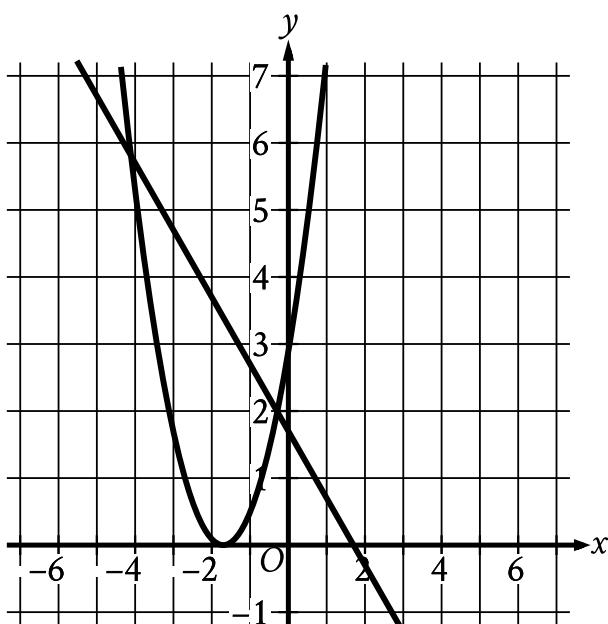
A.



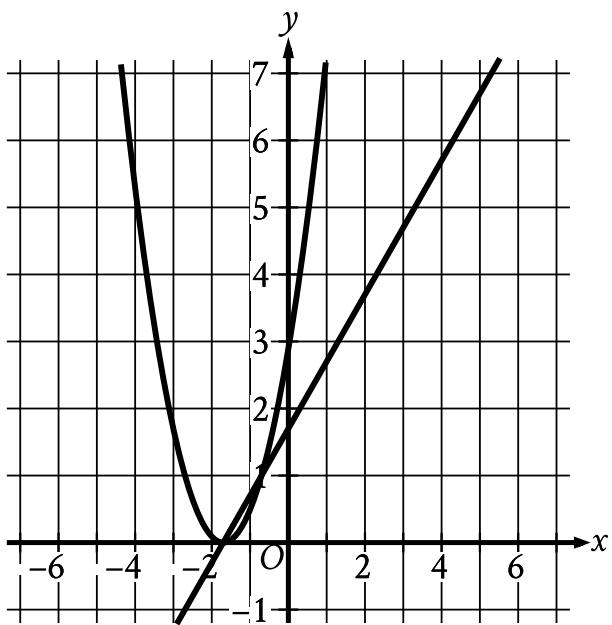
B.



C.



D.



## Question ID a4f61d75

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear equations in one variable and systems of equations in two variables	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 50%; background-color: #e0e0e0; height: 10px;"></div>

ID: a4f61d75

$$x^2 - ax + 12 = 0$$

In the equation above,  $a$  is a constant and  $a > 0$ . If the equation has two integer solutions, what is a possible value of  $a$ ?

## Question ID a31417d1

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear functions	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 50%; background-color: #e0e0e0; height: 10px;"></div>

ID: a31417d1

From 2005 through 2014, the number of music CDs sold in the United States declined each year by approximately 15% of the number sold the preceding year. In 2005, approximately 600 million CDs were sold in the United States. Of the following, which best models  $C$ , the number of millions of CDs sold in the United States,  $t$  years after 2005?

- A.  $C = 600(0.15)^t$
- B.  $C = 600(0.85)^t$
- C.  $C = 600(1.15)^t$
- D.  $C = 600(1.85)^t$

## Question ID 66bce0c1

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear equations in one variable and systems of equations in two variables	<div style="width: 75%; background-color: #0056b3; height: 10px;"></div>

ID: 66bce0c1

$$\sqrt{2x+6} + 4 = x + 3$$

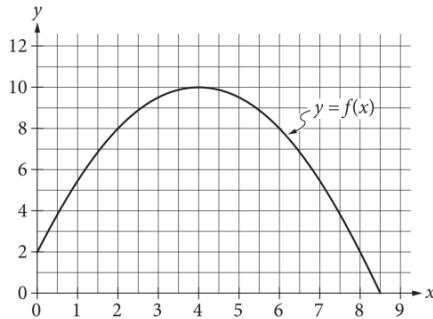
What is the solution set of the equation above?

- A.  $\{-1\}$
- B.  $\{5\}$
- C.  $\{-1, 5\}$
- D.  $\{0, -1, 5\}$

## Question ID 97e50fa2

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear equations in one variable and systems of equations in two variables	<div style="width: 100px; height: 10px; background-color: #0056b3;"></div> <div style="width: 100px; height: 10px; background-color: #0056b3;"></div> <div style="width: 100px; height: 10px; background-color: #0056b3;"></div>

ID: 97e50fa2



The graph of the function  $f$ , defined by  $f(x) = -\frac{1}{2}(x-4)^2 + 10$ , is shown in the  $xy$ -plane above. If the function  $g$  (not shown) is defined by  $g(x) = -x + 10$ , what is one possible value of  $a$  such that  $f(a) = g(a)$ ?

## Question ID 6d04c89d

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Equivalent expressions	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 50%; background-color: #e0e0e0; height: 10px;"></div>

ID: 6d04c89d

The expression  $\frac{24}{6x+42}$  is equivalent to  $\frac{4}{x+b}$ , where  $b$  is a constant and  $x > 0$ . What is the value of  $b$ ?

- A. 7
- B. 10
- C. 24
- D. 252

# Question ID 9afe2370

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear functions	<div style="width: 75%; background-color: #0056b3; height: 10px;"></div>

ID: 9afe2370

The population  $P$  of a certain city  $y$  years after the last census is modeled by the equation below, where  $r$  is a constant and  $P_0$  is the population when  $y = 0$ .

$$P = P_0(1 + r)^y$$

If during this time the population of the city decreases by a fixed percent each year, which of the following must be true?

- A.  $r < -1$
- B.  $-1 < r < 0$
- C.  $0 < r < 1$
- D.  $r > 1$

# Question ID 60fdb4d4

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Equivalent expressions	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div>

ID: 60fdb4d4

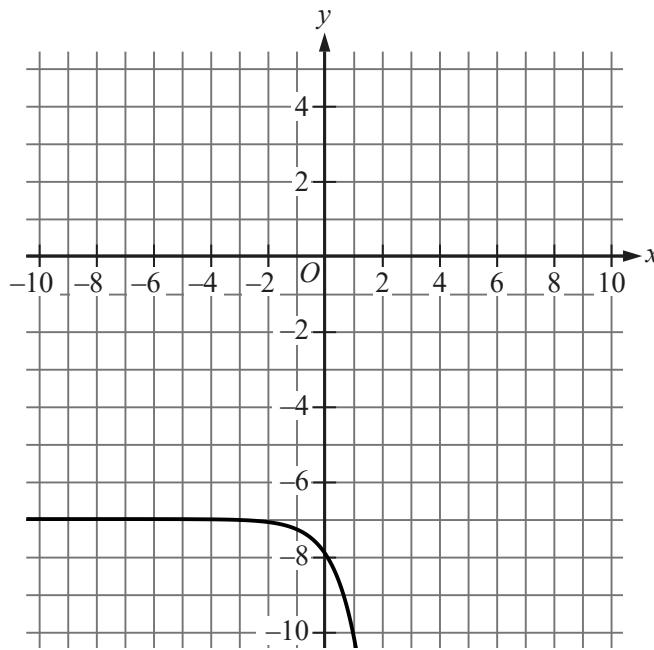
Which expression is equivalent to  $(2x^2 - 4) - (-3x^2 + 2x - 7)$ ?

- A.  $5x^2 - 2x + 3$
- B.  $5x^2 + 2x - 3$
- C.  $-x^2 - 2x - 11$
- D.  $-x^2 + 2x - 11$

# Question ID df71424b

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear functions	<div style="width: 100px; height: 10px; background-color: #0056b3;"></div> <div style="width: 100px; height: 10px; background-color: #0056b3;"></div> <div style="width: 100px; height: 10px; background-color: #0056b3;"></div>

ID: df71424b



The graph of  $y = f(x)$  is shown, where  $f(x) = ab^x + c$ , and  $a$ ,  $b$ , and  $c$  are constants. For how many values of  $x$  does  $f(x) = 0$ ?

- A. Three
- B. Two
- C. One
- D. Zero

# Question ID 203774bc

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear functions	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 50%; background-color: #e0e0e0; height: 10px;"></div>

ID: 203774bc

The product of two positive integers is **546**. If the first integer is **11** greater than twice the second integer, what is the smaller of the two integers?

- A. **7**
- B. **14**
- C. **39**
- D. **78**

## Question ID 3d12b1e0

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear equations in one variable and systems of equations in two variables	<div style="width: 75%; background-color: #0056b3; height: 10px;"></div>

ID: 3d12b1e0

$$-16x^2 - 8x + c = 0$$

In the given equation,  $c$  is a constant. The equation has exactly one solution. What is the value of  $c$ ?

## Question ID 2c88af4d

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Equivalent expressions	<div style="width: 75%; background-color: #0056b3; height: 10px;"></div>

ID: 2c88af4d

$$\frac{x^{-2}y^{\frac{1}{2}}}{x^{\frac{1}{3}}y^{-1}}$$

The expression  $\frac{x^{-2}y^{\frac{1}{2}}}{x^{\frac{1}{3}}y^{-1}}$ , where  $x > 1$  and  $y > 1$ , is equivalent to which of the following?

- A.  $\frac{\sqrt{y}}{\sqrt[3]{x^2}}$
- B.  $\frac{y\sqrt{y}}{\sqrt[3]{x^2}}$
- C.  $\frac{y\sqrt{y}}{x\sqrt{x}}$
- D.  $\frac{y\sqrt{y}}{x^2 \sqrt[3]{x}}$

## Question ID c4cd5bcc

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear functions	<div style="width: 60%; background-color: #0056b3; height: 10px;"></div> <div style="width: 60%; background-color: #0056b3; height: 10px;"></div> <div style="width: 40%; background-color: #e0e0e0; height: 10px;"></div>

ID: c4cd5bcc

In the  $xy$ -plane, the  $y$ -coordinate of the  $y$ -intercept of the graph of the function  $f$  is  $c$ .

Which of the following must be equal to  $c$ ?

- A.  $f(0)$
- B.  $f(1)$
- C.  $f(2)$
- D.  $f(3)$

# Question ID 68607eca

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear functions	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 50%; background-color: #e0e0e0; height: 10px;"></div>

ID: 68607eca

On April 1, there were 233 views of an advertisement posted on a website. Every 2 days after April 1, the number of views of the advertisement had increased by 70% of the number of views 2 days earlier. The function  $f$  gives the predicted number of views  $x$  days after April 1. Which equation defines  $f$ ?

- A.  $f(x) = 233(0.70)^{\frac{x}{2}}$
- B.  $f(x) = 233(0.70)^{2x}$
- C.  $f(x) = 233(1.70)^{\frac{x}{2}}$
- D.  $f(x) = 233(1.70)^{2x}$

## Question ID 71014fb1

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear equations in one variable and systems of equations in two variables	<div style="width: 75%; background-color: #0056b3; height: 10px;"></div>

ID: 71014fb1

$$(x - 1)^2 = -4$$

How many distinct real solutions does the given equation have?

- A. Exactly one
- B. Exactly two
- C. Infinitely many
- D. Zero

## Question ID 22fd3e1f

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Equivalent expressions	<div style="width: 75%; background-color: #0056b3; height: 10px;"></div>

ID: 22fd3e1f

$$f(x) = x^3 - 9x$$

$$g(x) = x^2 - 2x - 3$$

Which of the following expressions is

equivalent to  $\frac{f(x)}{g(x)}$ , for  $x > 3$ ?

- A.  $\frac{1}{x+1}$
- B.  $\frac{x+3}{x+1}$
- C.  $\frac{x(x-3)}{x+1}$
- D.  $\frac{x(x+3)}{x+1}$

# Question ID 78d5f91a

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear functions	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 50%; background-color: #e0e0e0; height: 10px;"></div>

ID: 78d5f91a

$$f(x) = x^3 + 3x^2 - 6x - 1$$

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

- A. -11
- B. -7
- C. 7
- D. 11

# Question ID d675744f

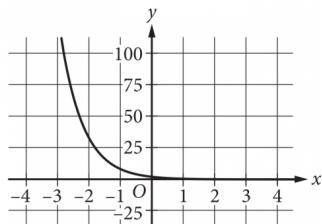
Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear functions	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 50%; background-color: #e0e0e0; height: 10px;"></div>

ID: d675744f

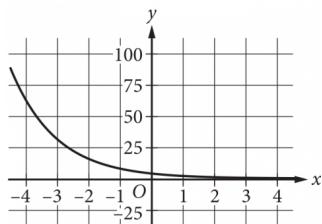
$$y = 4(2^x)$$

Which of the following is the graph in the  $xy$ -plane of the given equation?

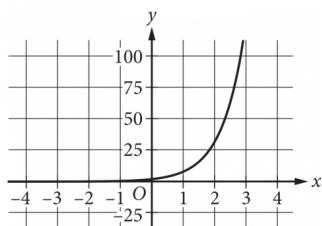
A.



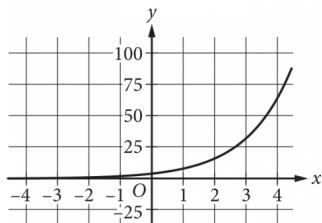
B.



C.



D.



## Question ID a0b4103e

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Equivalent expressions	<div style="width: 75%; background-color: #0056b3; height: 10px;"></div>

ID: a0b4103e

The expression  $\frac{1}{3}x^2 - 2$  can be rewritten as  $\frac{1}{3}(x - k)(x + k)$ , where  $k$  is a positive constant. What is the value of  $k$ ?

- A. 2
- B. 6
- C.  $\sqrt{2}$
- D.  $\sqrt{6}$

# Question ID 5377d9cf

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear functions	<div style="width: 25%; background-color: #0056b3;"></div> <div style="width: 75%; background-color: #e0e0e0;"></div> <div style="width: 75%; background-color: #e0e0e0;"></div>

ID: 5377d9cf

If  $f(x) = \frac{x^2 - 6x + 3}{x - 1}$ ,

what is  $f(-1)$ ?

- A. -5
- B. -2
- C. 2
- D. 5

# Question ID f880f910

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear functions	<div style="width: 25%; background-color: #0056b3;"></div> <div style="width: 25%; background-color: #0056b3;"></div> <div style="width: 50%; background-color: #e0e0e0;"></div>

ID: f880f910

The area of a triangle is **270** square centimeters. The length of the base of the triangle is **12** centimeters greater than the height of the triangle. What is the height, in centimeters, of the triangle?

- A. **15**
- B. **18**
- C. **30**
- D. **36**

# Question ID e9349667

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear equations in one variable and systems of equations in two variables	<div style="width: 75%; background-color: #0056b3; height: 10px;"></div>

ID: e9349667

$$y = x^2 + 2x + 1$$

$$x + y + 1 = 0$$

If  $(x_1, y_1)$  and  $(x_2, y_2)$  are the two solutions to the system of equations

above, what is the value of  $y_1 + y_2$ ?

A. -3

B. -2

C. -1

D. 1

# Question ID 49efde89

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Equivalent expressions	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div>

ID: 49efde89

The expression  $2x^2 + ax$  is equivalent to  $x(2x + 7)$  for some constant  $a$ . What is the value of  $a$ ?

- A. 2
- B. 3
- C. 4
- D. 7

## Question ID b03adde3

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear equations in one variable and systems of equations in two variables	<div style="width: 75%; background-color: #0056b3; height: 10px;"></div>

ID: b03adde3

If  $\frac{u-3}{t-2} = \frac{6}{u}$ , what is  $t$

in terms of  $u$ ?

A.  $t = \frac{1}{u}$

B.  $t = \frac{2u+9}{u}$

C.  $t = \frac{1}{u-3}$

D.  $t = \frac{2u}{u-3}$

# Question ID 75915e3c

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear functions	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div>

ID: 75915e3c

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

For the function  $f$  defined above, what is the value of  $f(2)$ ?

- A. 9
- B. 12
- C. 18
- D. 36

## Question ID f44a29a8

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear functions	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 50%; background-color: #e0e0e0; height: 10px;"></div>

ID: f44a29a8

An object's kinetic energy, in joules, is equal to the product of one-half the object's mass, in kilograms, and the square of the object's speed, in meters per second. What is the speed, in meters per second, of an object with a mass of 4 kilograms and kinetic energy of 18 joules?

- A. 3
- B. 6
- C. 9
- D. 36

## Question ID b8c4a1cd

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear equations in one variable and systems of equations in two variables	<div style="width: 25%; background-color: #003366; height: 10px;"></div> <div style="width: 75%; background-color: #cccccc; height: 10px;"></div> <div style="width: 75%; background-color: #cccccc; height: 10px;"></div>

ID: b8c4a1cd

$$8j = k + 15m$$

The given equation relates the distinct positive numbers  $j$ ,  $k$ , and  $m$ . Which equation correctly expresses  $j$  in terms of  $k$  and  $m$ ?

- A.  $j = \frac{k}{8} + 15m$
- B.  $j = k + \frac{15m}{8}$
- C.  $j = 8(k + 15m)$
- D.  $j = \frac{k+15m}{8}$

## Question ID 7dbd46d9

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear equations in one variable and systems of equations in two variables	<div style="width: 30%; background-color: #0056b3; height: 10px;"></div> <div style="width: 30%; background-color: #0056b3; height: 10px;"></div> <div style="width: 30%; background-color: #0056b3; height: 10px;"></div>

ID: 7dbd46d9

$$8x + y = -11$$

$$2x^2 = y + 341$$

The graphs of the equations in the given system of equations intersect at the point  $(x, y)$  in the  $xy$ -plane. What is a possible value of  $x$ ?

- A.  $-15$
- B.  $-11$
- C.  $2$
- D.  $8$

# Question ID 0121a235

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear functions	<div style="width: 75%; background-color: #0056b3; height: 10px;"></div>

ID: 0121a235

x	$p(x)$
-2	5
-1	0
0	-3
1	-1
2	0

The table above gives selected values of a polynomial function  $p$ . Based on the values in the table, which of the following must be a factor of  $p$ ?

- A.  $(x - 3)$
- B.  $(x + 3)$
- C.  $(x - 1)(x + 2)$
- D.  $(x + 1)(x - 2)$

# Question ID d71f6dbf

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear functions	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 50%; background-color: #e0e0e0; height: 10px;"></div>

ID: d71f6dbf

The height, in feet, of an object  $x$  seconds after it is thrown straight up in the air can be modeled by the function  $h(x) = -16x^2 + 20x + 5$ . Based on the model, which of the following statements best interprets the equation  $h(1.4) = 1.64$ ?

- A. The height of the object 1.4 seconds after being thrown straight up in the air is 1.64 feet.
- B. The height of the object 1.64 seconds after being thrown straight up in the air is 1.4 feet.
- C. The height of the object 1.64 seconds after being thrown straight up in the air is approximately 1.4 times as great as its initial height.
- D. The speed of the object 1.4 seconds after being thrown straight up in the air is approximately 1.64 feet per second.

## Question ID 630897df

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear equations in one variable and systems of equations in two variables	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 50%; background-color: #e0e0e0; height: 10px;"></div>

ID: 630897df

The speed of sound in dry air,  $v$ , can be modeled by the formula  $v = 331.3 + 0.606T$ ,

where  $T$  is the temperature in degrees Celsius and  $v$  is measured in meters per second.

Which of the following correctly expresses  $T$  in terms of  $v$ ?

A.  $T = \frac{v + 0.606}{331.3}$

B.  $T = \frac{v - 0.606}{331.3}$

C.  $T = \frac{v + 331.3}{0.606}$

D.  $T = \frac{v - 331.3}{0.606}$

# Question ID 20722644

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear functions	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div>

ID: 20722644

The function  $f$  is defined by  $f(x) = x^3 + 9$ . What is the value of  $f(2)$ ?

- A. 14
- B. 15
- C. 17
- D. 18

## Question ID bba18ecb

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear functions	<div style="width: 60%; background-color: #0056b3; height: 10px;"></div>

ID: bba18ecb

When the quadratic function  $f$  is graphed in the  $xy$ -plane, where  $y = f(x)$ , its vertex is  $(-3, 6)$ . One of the  $x$ -intercepts of this graph is  $(-\frac{17}{4}, 0)$ . What is the other  $x$ -intercept of the graph?

- A.  $(-\frac{29}{4}, 0)$
- B.  $(-\frac{7}{4}, 0)$
- C.  $(\frac{5}{4}, 0)$
- D.  $(\frac{17}{4}, 0)$

# Question ID 668f1863

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear functions	<div style="width: 75%; background-color: #0056b3; height: 10px;"></div>

ID: 668f1863

Function  $f$  is a quadratic function where  $f(-20) = 0$  and  $f(-4) = 0$ . The graph of  $y = f(x)$  in the  $xy$ -plane has a vertex at  $(r, -64)$ . What is the value of  $r$ ?

# Question ID 70753f99

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear functions	<div style="width: 75%; background-color: #0056b3; height: 10px;"></div>

ID: 70753f99

The function  $f$  is defined by  $f(x) = (x + 3)(x + 1)$ . The graph of  $f$  in the  $xy$ -plane is a parabola. Which of the following intervals contains the  $x$ -coordinate of the vertex of the graph of  $f$ ?

- A.  $-4 < x < -3$
- B.  $-3 < x < 1$
- C.  $1 < x < 3$
- D.  $3 < x < 4$

# Question ID 568aaf27

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear equations in one variable and systems of equations in two variables	<div style="width: 25%; background-color: #003366; height: 10px;"></div> <div style="width: 75%; background-color: #cccccc; height: 10px;"></div> <div style="width: 75%; background-color: #cccccc; height: 10px;"></div>

ID: 568aaf27

$$x + y = 12$$

$$y = x^2$$

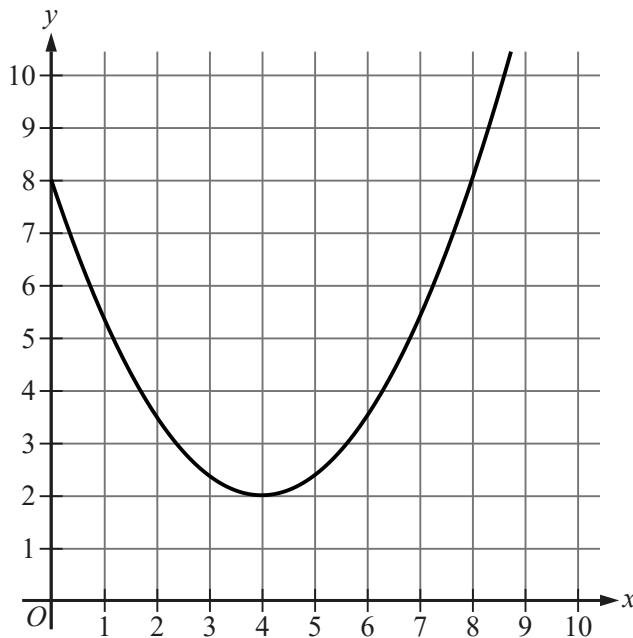
If  $(x, y)$  is a solution to the system of equations above, which of the following is a possible value of  $x$ ?

- A. 0
- B. 1
- C. 2
- D. 3

# Question ID 5e63b9cf

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear functions	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div>

ID: 5e63b9cf



The graph shows a marble's height above the ground  $y$ , in inches,  $x$  seconds after it started moving on an elevated track of a marble run. Which of the following is the best interpretation of the  $y$ -intercept of the graph?

- A. The marble's height was 0 inches above the ground 8 seconds after it started moving.
- B. The marble's height was 8 inches above the ground when it started moving.
- C. The marble's minimum height was 0 inches above the ground.
- D. The marble's minimum height was 8 inches above the ground.

# Question ID 6676f055

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear functions	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 50%; background-color: #e0e0e0; height: 10px;"></div>

ID: 6676f055

$$f(\theta) = -0.28(\theta - 27)^2 + 880$$

An engineer wanted to identify the best angle for a cooling fan in an engine in order to get the greatest airflow. The engineer discovered that the function above models the airflow  $f(\theta)$ , in cubic feet per minute, as a function of the angle of the fan  $\theta$ , in degrees. According to the model, what angle, in degrees, gives the greatest airflow?

- A. -0.28
- B. 0.28
- C. 27
- D. 880

# Question ID 29ed5d39

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear equations in one variable and systems of equations in two variables	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 50%; background-color: #e0e0e0; height: 10px;"></div>

ID: 29ed5d39

$$p = 20 + \frac{16}{n}$$

The given equation relates the numbers  $p$  and  $n$ , where  $n$  is not equal to 0 and  $p > 20$ . Which equation correctly expresses  $n$  in terms of  $p$ ?

- A.  $n = \frac{p-20}{16}$
- B.  $n = \frac{p}{16} + 20$
- C.  $n = \frac{p}{16} - 20$
- D.  $n = \frac{16}{p-20}$

# Question ID 895628b5

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear equations in one variable and systems of equations in two variables	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 50%; background-color: #e0e0e0; height: 10px;"></div>

ID: 895628b5

$$y = (x - 2)(x + 4)$$

$$y = 6x - 12$$

Which ordered pair  $(x, y)$  is the solution to the given system of equations?

- A.  $(0, 2)$
- B.  $(-4, 2)$
- C.  $(2, 0)$
- D.  $(2, -4)$

# Question ID 8f82ad81

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Equivalent expressions	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div>

ID: 8f82ad81

Which expression is equivalent to  $4(x^2 + 6)$ ?

- A.  $4x^2 + 24$
- B.  $4x^2 + 10$
- C.  $4x^2 + 6$
- D.  $4x^2 - 2$

# Question ID 26eb61c1

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Equivalent expressions	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 50%; background-color: #e0e0e0; height: 10px;"></div>

ID: 26eb61c1

Which expression is equivalent to  $6x^8y^2 + 12x^2y^2$ ?

- A.  $6x^2y^2(2x^6)$
- B.  $6x^2y^2(x^4)$
- C.  $6x^2y^2(x^6 + 2)$
- D.  $6x^2y^2(x^4 + 2)$

# Question ID dd8ac009

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear functions	<div style="width: 25%; background-color: #0056b3;"></div> <div style="width: 25%; background-color: #0056b3;"></div> <div style="width: 50%; background-color: #e0e0e0;"></div>

ID: dd8ac009

Time (years)	Total amount (dollars)
0	670.00
1	674.02
2	678.06

Sara opened a savings account at a bank. The table shows the exponential relationship between the time  $t$ , in years, since Sara opened the account and the total amount  $d$ , in dollars, in the account. If Sara made no additional deposits or withdrawals, which of the following equations best represents the relationship between  $t$  and  $d$ ?

- A.  $d = 0.006(1 + 670)^t$
- B.  $d = 670(1 + 0.006)^t$
- C.  $d = (1 + 0.006)^t$
- D.  $d = (1 + 670)^t$

## Question ID 58dcc59f

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear functions	<div style="width: 60%; background-color: #0056b3; height: 10px;"></div>

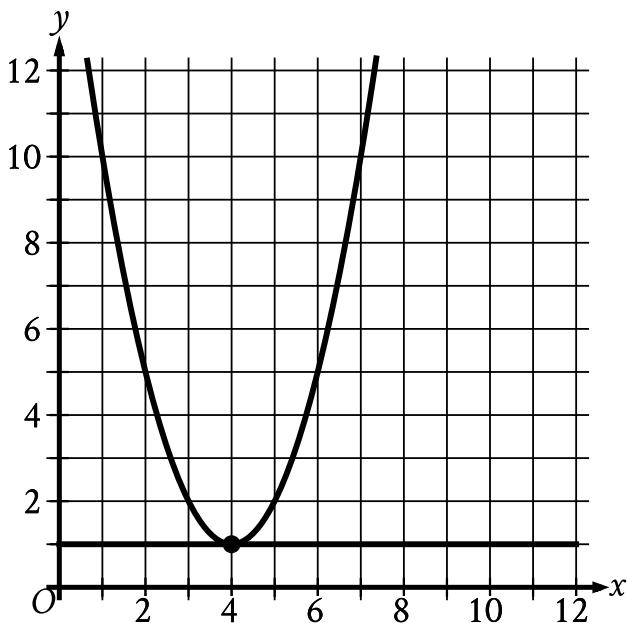
ID: 58dcc59f

A landscaper is designing a rectangular garden. The length of the garden is to be 5 feet longer than the width. If the area of the garden will be 104 square feet, what will be the length, in feet, of the garden?

# Question ID d0e8e8f5

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear equations in one variable and systems of equations in two variables	<div style="width: 25%; background-color: #003366; height: 10px;"></div> <div style="width: 75%; background-color: #cccccc; height: 10px;"></div>

ID: d0e8e8f5



The graph of a system of a linear and a quadratic equation is shown. What is the solution  $(x, y)$  to this system?

- A.  $(0, 0)$
- B.  $(-4, 1)$
- C.  $(4, -1)$
- D.  $(4, 1)$

## Question ID 9ed9f54d

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Equivalent expressions	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div>

ID: 9ed9f54d

Which of the following is equivalent to

$$2(x^2 - x) + 3(x^2 - x)$$

A.  $5x^2 - 5x$

B.  $5x^2 + 5x$

C.  $5x$

D.  $5x^2$

## Question ID 18c7c3e0

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Equivalent expressions	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div>

ID: 18c7c3e0

Which expression is equivalent to  $13x^2 - 7x^2$ ?

- A.  $-91x^2$
- B.  $6x^2$
- C.  $20x^2$
- D.  $40x^2$

# Question ID 30281058

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear equations in one variable and systems of equations in two variables	<div style="width: 75%; background-color: #0056b3; height: 10px;"></div>

ID: 30281058

In the  $xy$ -plane, the graph of  $y = x^2 - 9$  intersects line  $p$  at  $(1, a)$  and  $(5, b)$ , where  $a$  and  $b$  are constants. What is the slope of line  $p$ ?

- A. 6
- B. 2
- C. -2
- D. -6

## Question ID 294db8ec

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Equivalent expressions	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div>

ID: 294db8ec

Which of the following is equivalent to  $2x^3 + 4$ ?

- A.  $4(x^3 + 4)$
- B.  $4(x^3 + 2)$
- C.  $2(x^3 + 4)$
- D.  $2(x^3 + 2)$

# Question ID 84dd43f8

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear functions	<div style="width: 60%; background-color: #0056b3; height: 10px;"></div>

ID: 84dd43f8

For the function  $f$ ,  $f(0) = 86$ , and for each increase in  $x$  by 1, the value of  $f(x)$  decreases by 80%. What is the value of  $f(2)$ ?

## Question ID 59d1f4b5

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear functions	<div style="width: 75%; background-color: #0056b3; height: 10px;"></div>

ID: 59d1f4b5

$$M = 1,800(1.02)^t$$

The equation above models the number of members,  $M$ , of a gym  $t$  years after the gym opens. Of the following, which equation models the number of members of the gym  $q$  quarter years after the gym opens?

A.  $M = 1,800(1.02)^{\frac{q}{4}}$

B.  $M = 1,800(1.02)^{4q}$

C.  $M = 1,800(1.005)^{4q}$

D.  $M = 1,800(1.082)^q$

## Question ID 281a4f3b

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear functions	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 50%; background-color: #e0e0e0; height: 10px;"></div>

ID: 281a4f3b

A certain college had 3,000 students enrolled in 2015. The college predicts that after 2015, the number of students enrolled each year will be 2% less than the number of students enrolled the year before. Which of the following functions models the relationship between the number of students enrolled,  $f(x)$ , and the number of years after 2015,  $x$ ?

- A.  $f(x) = 0.02(3,000)^x$
- B.  $f(x) = 0.98(3,000)^x$
- C.  $f(x) = 3,000(0.02)^x$
- D.  $f(x) = 3,000(0.98)^x$

## Question ID f237ccfc

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Equivalent expressions	<div style="width: 20%; background-color: #003366; height: 10px;"></div> <div style="width: 20%; background-color: #003366; height: 10px;"></div> <div style="width: 60%; background-color: #cccccc; height: 10px;"></div>

ID: f237ccfc

The sum of  $-2x^2 + x + 31$  and  $3x^2 + 7x - 8$  can be written in the form  $ax^2 + bx + c$ , where  $a$ ,  $b$ , and  $c$  are constants. What is the value of  $a + b + c$ ?

## Question ID a391ed22

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Equivalent expressions	<div style="width: 20%; background-color: #0056b3; height: 10px;"></div> <div style="width: 20%; background-color: #0056b3; height: 10px;"></div> <div style="width: 60%; background-color: #e0e0e0; height: 10px;"></div>

ID: a391ed22

$$\left(\frac{1}{2}x + \frac{3}{2}\right)\left(\frac{3}{2}x + \frac{1}{2}\right)$$

The expression above is equivalent to  $ax^2 + bx + c$ , where  $a$ ,  $b$ , and  $c$  are constants. What is the value of  $b$ ?

# Question ID c77ef2fb

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear equations in one variable and systems of equations in two variables	<div style="width: 20%; background-color: #003366; height: 10px;"></div> <div style="width: 20%; background-color: #003366; height: 10px;"></div> <div style="width: 60%; background-color: #cccccc; height: 10px;"></div>

ID: c77ef2fb

Blood volume,  $V_B$ , in a human can be determined using the equation  $V_B = \frac{V_P}{1-H}$ , where  $V_P$  is the plasma volume and  $H$  is the hematocrit (the fraction of blood volume that is red blood cells). Which of the following correctly expresses the hematocrit in terms of the blood volume and the plasma volume?

A.  $H = 1 - \frac{V_P}{V_B}$

B.  $H = \frac{V_B}{V_P}$

C.  $H = 1 + \frac{V_B}{V_P}$

D.  $H = V_B - V_P$

## Question ID b76a2815

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear equations in one variable and systems of equations in two variables	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div>

ID: b76a2815

$$P = \frac{W}{t}$$

The power  $P$  produced by a machine is represented by the equation above, where  $W$  is the work performed during an amount of time  $t$ . Which of the following correctly expresses  $W$  in terms of  $P$  and  $t$ ?

- A.  $W = Pt$
- B.  $W = \frac{P}{t}$
- C.  $W = \frac{t}{P}$
- D.  $W = P + t$

## Question ID 364a2d25

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear equations in one variable and systems of equations in two variables	<div style="width: 20%; background-color: #003366; height: 10px;"></div> <div style="width: 20%; background-color: #003366; height: 10px;"></div> <div style="width: 60%; background-color: #cccccc; height: 10px;"></div>

ID: 364a2d25

$$x + y = 17$$

$$xy = 72$$

If one solution to the system of equations above is  $(x, y)$ ,

what is one possible value of  $x$ ?

# Question ID 100030d9

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear functions	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 50%; background-color: #e0e0e0; height: 10px;"></div>

ID: 100030d9

A rubber ball bounces upward one-half the height that it falls each time it hits the ground. If the ball was originally dropped from a distance of 20.0 feet above the ground, what was its maximum height above the ground, in feet, between the third and fourth time it hit the ground?

## Question ID d84a514a

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear functions	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div>

ID: d84a514a

The function  $f(x) = 240,000(1.22)^x$  gives a company's predicted annual revenue, in dollars,  $x$  years after the company started selling jewelry online, where  $0 < x \leq 10$ . What is the best interpretation of the statement " $f(5)$  is approximately equal to **648,650**" in this context?

- A. 5 years after the company started selling jewelry online, its predicted annual revenue is approximately **648,650** dollars.
- B. 5 years after the company started selling jewelry online, its predicted annual revenue will have increased by a total of approximately **648,650** dollars.
- C. When the company's predicted annual revenue is approximately **648,650** dollars, it is 5 times the predicted annual revenue for the previous year.
- D. When the company's predicted annual revenue is approximately **648,650** dollars, it is 5% greater than the predicted annual revenue for the previous year.

## Question ID 5910bfff

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear equations in one variable and systems of equations in two variables	<div style="width: 75%; background-color: #0056b3; height: 10px;"></div>

ID: 5910bfff

$$D = T - \frac{9}{25}(100 - H)$$

The formula above can be used to approximate the dew point  $D$ , in degrees Fahrenheit, given the temperature  $T$ , in degrees Fahrenheit, and the relative humidity of  $H$  percent, where  $H > 50$ . Which of the following expresses the relative humidity in terms of the temperature and the dew point?

A.  $H = \frac{25}{9}(D - T) + 100$

B.  $H = \frac{25}{9}(D - T) - 100$

C.  $H = \frac{25}{9}(D + T) + 100$

D.  $H = \frac{25}{9}(D + T) - 100$

## Question ID 6e06a0a7

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Equivalent expressions	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div>

ID: 6e06a0a7

Which of the following expressions is equivalent to  $2a^2(a + 3)$ ?

- A.  $5a^3$
- B.  $8a^5$
- C.  $2a^3 + 3$
- D.  $2a^3 + 6a^2$

## Question ID ad038c19

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Equivalent expressions	<div style="width: 75%; background-color: #0056b3; height: 10px;"></div>

ID: ad038c19

Which of the following is

equivalent to  $\left(a + \frac{b}{2}\right)^2$ ?

A.  $a^2 + \frac{b^2}{2}$

B.  $a^2 + \frac{b^2}{4}$

C.  $a^2 + \frac{ab}{2} + \frac{b^2}{2}$

D.  $a^2 + ab + \frac{b^2}{4}$

## Question ID c7a187a7

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear functions	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 50%; background-color: #e0e0e0; height: 10px;"></div>

ID: c7a187a7

$$f(x) = x^2 - 18x - 360$$

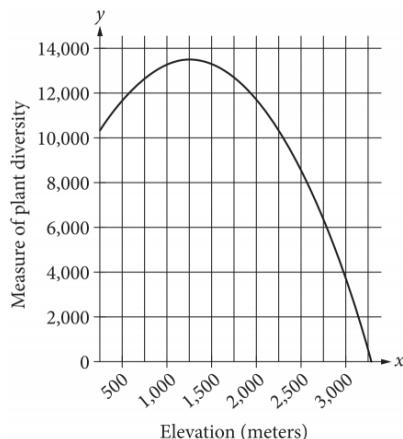
If the given function  $f$  is graphed in the  $xy$ -plane, where  $y = f(x)$ , what is an  $x$ -intercept of the graph?

- A.  $(-12, 0)$
- B.  $(-30, 0)$
- C.  $(-360, 0)$
- D.  $(12, 0)$

# Question ID ebe4bde0

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear functions	<div style="width: 25%; background-color: #003366; height: 10px;"></div> <div style="width: 75%; background-color: #cccccc; height: 10px;"></div> <div style="width: 75%; background-color: #cccccc; height: 10px;"></div>

ID: ebe4bde0



The quadratic function graphed above models a particular measure of plant diversity as a function of the elevation in a region of Switzerland. According to the model, which of the following is closest to the elevation, in meters, at which plant diversity is greatest?

- A. 13,500
- B. 3,000
- C. 1,250
- D. 250

# Question ID 635f54ee

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear functions	<div style="width: 75%; background-color: #0056b3; height: 10px;"></div>

ID: 635f54ee

The surface area of a cube is  $6\left(\frac{a}{4}\right)^2$ , where  $a$  is a positive constant. Which of the following gives the perimeter of one face of the cube?

A.  $\frac{a}{4}$

B.  $a$

C.  $4a$

D.  $6a$

# Question ID 0980fcdd

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear equations in one variable and systems of equations in two variables	<div style="width: 25%; background-color: #002B36; height: 10px;"></div> <div style="width: 25%; background-color: #002B36; height: 10px;"></div> <div style="width: 50%; background-color: #D9D9D9; height: 10px;"></div>

ID: 0980fcdd

$$x^2 = 6x + y$$

$$y = -6x + 36$$

A solution to the given system of equations is  $(x, y)$ . Which of the following is a possible value of  $xy$ ?

- A. 0
- B. 6
- C. 12
- D. 36

# Question ID e1391dd6

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear functions	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 50%; background-color: #e0e0e0; height: 10px;"></div>

ID: e1391dd6

According to Moore's law, the number of transistors included on microprocessors doubles every 2 years. In 1985, a microprocessor was introduced that had 275,000 transistors. Based on this information, in which of the following years does Moore's law estimate the number of transistors to reach 1.1 million?

- A. 1987
- B. 1989
- C. 1991
- D. 1994

## Question ID 290cdc2c

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Equivalent expressions	<div style="width: 25%; background-color: #003366; height: 10px;"></div> <div style="width: 75%; background-color: #cccccc; height: 10px;"></div>

ID: 290cdc2c

Which expression is equivalent to  $(x)^{\frac{1}{14}}$ , where  $x > 0$ ?

- A.  $\frac{1}{14} \cdot x$
- B.  $\sqrt[14]{x}$
- C.  $14 \cdot x$
- D.  $(x)^{14}$

## Question ID 87a3de81

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear equations in one variable and systems of equations in two variables	<div style="width: 20%; background-color: #0056b3; height: 10px;"></div> <div style="width: 20%; background-color: #0056b3; height: 10px;"></div> <div style="width: 60%; background-color: #e0e0e0; height: 10px;"></div>

ID: 87a3de81

$$x^2 + x - 12 = 0$$

If  $a$  is a solution of the equation above and  $a > 0$ , what is the value of  $a$ ?

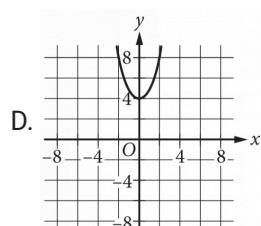
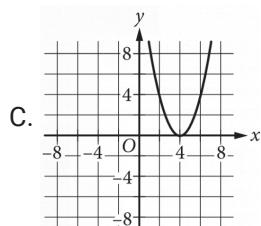
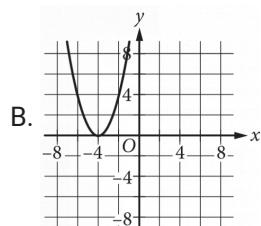
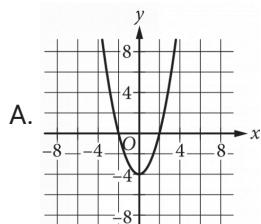
# Question ID d46da42c

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear functions	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 25%; background-color: #e0e0e0; height: 10px;"></div> <div style="width: 25%; background-color: #e0e0e0; height: 10px;"></div>

ID: d46da42c

$$f(x) = x^2 + 4$$

The function  $f$  is defined as shown. Which of the following graphs in the  $xy$ -plane could be the graph of  $y = f(x)$ ?



## Question ID 1697ffcf

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear equations in one variable and systems of equations in two variables	<div style="width: 75%; background-color: #0056b3; height: 10px;"></div>

ID: 1697ffcf

In the  $xy$ -plane, the graph of  $y = 3x^2 - 14x$  intersects the graph of  $y = x$  at the points  $(0, 0)$  and  $(a, a)$ . What is the value of  $a$ ?

# Question ID 5bf0f84a

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear functions	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 50%; background-color: #e0e0e0; height: 10px;"></div>

ID: 5bf0f84a

$$h(t) = -16t^2 + 110t + 72$$

The function above models the height  $h$ , in feet, of an object above ground  $t$  seconds after being launched straight up in the air. What does the number 72 represent in the function?

- A. The initial height, in feet, of the object
- B. The maximum height, in feet, of the object
- C. The initial speed, in feet per second, of the object
- D. The maximum speed, in feet per second, of the object

## Question ID 4b6f0a3f

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear equations in one variable and systems of equations in two variables	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 50%; background-color: #e0e0e0; height: 10px;"></div>

ID: 4b6f0a3f

$$x^2 - 5x - 24 = 0$$

What is the sum of the solutions to the given equation?

# Question ID 70ebd3d0

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear functions	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 50%; background-color: #e0e0e0; height: 10px;"></div>

ID: 70ebd3d0

$$N(d) = 115(0.90)^d$$

The function  $N$  defined above can be used to model the number of species of brachiopods at various ocean depths  $d$ , where  $d$  is in hundreds of meters. Which of the following does the model predict?

- A. For every increase in depth by 1 meter, the number of brachiopod species decreases by 115.
- B. For every increase in depth by 1 meter, the number of brachiopod species decreases by 10%.
- C. For every increase in depth by 100 meters, the number of brachiopod species decreases by 115.
- D. For every increase in depth by 100 meters, the number of brachiopod species decreases by 10%.

## Question ID 42f8e4b4

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Equivalent expressions	<div style="width: 75%; background-color: #0056b3; height: 10px;"></div>

ID: 42f8e4b4

One of the factors of  $2x^3 + 42x^2 + 208x$  is  $x + b$ , where  $b$  is a positive constant. What is the smallest possible value of  $b$ ?

## Question ID de39858a

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear functions	<div style="width: 75%; background-color: #0056b3; height: 10px;"></div>

ID: de39858a

The function  $h$  is defined by  $h(x) = a^x + b$ , where  $a$  and  $b$  are positive constants. The graph of  $y = h(x)$  in the  $xy$ -plane passes through the points  $(0, 10)$  and  $(-2, \frac{325}{36})$ . What is the value of  $ab$ ?

A.  $\frac{1}{4}$

B.  $\frac{1}{2}$

C. 54

D. 60

## Question ID 2683b5db

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear equations in one variable and systems of equations in two variables	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 50%; background-color: #e0e0e0; height: 10px;"></div>

ID: 2683b5db

$$T = 0.01(P - 40,000)$$

In a city, the property tax  $T$ , in dollars, is calculated using the formula above, where  $P$  is the value of the property, in dollars. Which of the following expresses the value of the property in terms of the property tax?

- A.  $P = 100T - 400$
- B.  $P = 100T + 400$
- C.  $P = 100T - 40,000$
- D.  $P = 100T + 40,000$

# Question ID 1178f2df

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear functions	<div style="width: 60%; background-color: #0056b3; height: 10px;"></div>

ID: 1178f2df

$x$	$y$
21	-8
23	8
25	-8

The table shows three values of  $x$  and their corresponding values of  $y$ , where  $y = f(x) + 4$  and  $f$  is a quadratic function. What is the  $y$ -coordinate of the  $y$ -intercept of the graph of  $y = f(x)$  in the  $xy$ -plane?

# Question ID 45df91ee

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear functions	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 50%; background-color: #e0e0e0; height: 10px;"></div>

ID: 45df91ee

$$g(x) = 11\left(\frac{1}{12}\right)^x$$

If the given function  $g$  is graphed in the  $xy$ -plane, where  $y = g(x)$ , what is the  $y$ -intercept of the graph?

- A.  $(0, 11)$
- B.  $(0, 132)$
- C.  $(0, 1)$
- D.  $(0, 12)$

# Question ID 67e866b5

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Equivalent expressions	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div>

ID: 67e866b5

Which expression is equivalent to  $9x^2 + 7x^2 + 9x$ ?

- A.  $63x^4 + 9x$
- B.  $9x^2 + 16x$
- C.  $25x^5$
- D.  $16x^2 + 9x$

## Question ID 97158b3a

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear functions	<div style="width: 25%; background-color: #0056b3;"></div> <div style="width: 25%; background-color: #0056b3;"></div> <div style="width: 50%; background-color: #e0e0e0;"></div>

ID: 97158b3a

The area  $A$ , in square centimeters, of a rectangular painting can be represented by the expression  $w(w + 29)$ , where  $w$  is the width, in centimeters, of the painting. Which expression represents the length, in centimeters, of the painting?

- A.  $w$
- B. 29
- C.  $(w + 29)$
- D.  $w(w + 29)$

## Question ID 84e8cc72

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear functions	<div style="width: 75%; background-color: #0056b3; height: 10px;"></div>

ID: 84e8cc72

A quadratic function models the height, in feet, of an object above the ground in terms of the time, in seconds, after the object is launched off an elevated surface. The model indicates the object has an initial height of **10** feet above the ground and reaches its maximum height of **1,034** feet above the ground **8** seconds after being launched. Based on the model, what is the height, in feet, of the object above the ground **10** seconds after being launched?

- A. **234**
- B. **778**
- C. **970**
- D. **1,014**

## Question ID 0ad5012e

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear functions	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div>

ID: 0ad5012e

$$y = -\frac{1}{4}x^2 + 2x + 29$$

The given equation models a company's scheduled deliveries over 8 months, where  $y$  is the estimated number of scheduled deliveries  $x$  months after the end of May 2012, where  $0 \leq x \leq 8$ . Which statement is the best interpretation of the  $y$ -intercept of the graph of this equation in the  $xy$ -plane?

- A. At the end of May 2012, the estimated number of scheduled deliveries was 0.
- B. At the end of May 2012, the estimated number of scheduled deliveries was 29.
- C. At the end of June 2012, the estimated number of scheduled deliveries was 0.
- D. At the end of June 2012, the estimated number of scheduled deliveries was 29.

## Question ID 12e7faf8

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Equivalent expressions	<div style="width: 75%; background-color: #0056b3; height: 10px;"></div>

ID: 12e7faf8

$$\frac{x^2+6x-7}{x+7} = ax+d$$

The equation  $\frac{x^2+6x-7}{x+7} = ax+d$  is true for all  $x \neq -7$ , where  $a$  and  $d$  are integers. What is the value of  $a+d$ ?

- A. -6
- B. -1
- C. 0
- D. 1

# Question ID 89fc23af

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Equivalent expressions	<div style="width: 75%; background-color: #0056b3; height: 10px;"></div>

ID: 89fc23af

Which of the following expressions is

$$\text{equivalent to } \frac{x^2 - 2x - 5}{x - 3} ?$$

A.  $x - 5 - \frac{20}{x-3}$

B.  $x - 5 - \frac{10}{x-3}$

C.  $x + 1 - \frac{8}{x-3}$

D.  $x + 1 - \frac{2}{x-3}$

## Question ID c3a72da5

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Equivalent expressions	<div style="width: 20%; background-color: #0056b3; height: 10px;"></div> <div style="width: 20%; background-color: #0056b3; height: 10px;"></div> <div style="width: 60%; background-color: #e0e0e0; height: 10px;"></div>

ID: c3a72da5

Which of the following is equivalent to the sum of  $3x^4 + 2x^3$  and  $4x^4 + 7x^3$ ?

- A.  $16x^{14}$
- B.  $7x^8 + 9x^6$
- C.  $12x^4 + 14x^3$
- D.  $7x^4 + 9x^3$

## Question ID 911c415b

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Equivalent expressions	<div style="width: 75%; background-color: #0056b3; height: 10px;"></div>

ID: 911c415b

$$(7532 + 100y^2) + 10(10y^2 - 110)$$

The expression above can be written in the form  $ay^2 + b$ , where  $a$  and  $b$  are constants. What is the value of  $a + b$ ?

# Question ID dba7432e

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear functions	<div style="width: 25%; background-color: #0056b3;"></div> <div style="width: 25%; background-color: #0056b3;"></div> <div style="width: 50%; background-color: #e0e0e0;"></div>

ID: dba7432e

x	f(x)
0	5
1	$\frac{5}{2}$
2	$\frac{5}{4}$
3	$\frac{5}{8}$

The table above gives the values of the function  $f$  for some values of  $x$ . Which of the following equations could define  $f$ ?

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

## Question ID 16de54c7

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Equivalent expressions	<div style="width: 20%; background-color: #0056b3; height: 10px;"></div> <div style="width: 20%; background-color: #0056b3; height: 10px;"></div> <div style="width: 60%; background-color: #e0e0e0; height: 10px;"></div>

ID: 16de54c7

$$2x^2 + 5x - 12$$

If the given expression is rewritten in the form  $(2x - 3)(x + k)$ , where  $k$  is a constant, what is the value of  $k$ ?

## Question ID 2f958af9

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear equations in one variable and systems of equations in two variables	<div style="width: 20%; background-color: #003366; height: 10px;"></div> <div style="width: 20%; background-color: #003366; height: 10px;"></div> <div style="width: 60%; background-color: #cccccc; height: 10px;"></div>

ID: 2f958af9

$$v^2 = \frac{LT}{m}$$

The formula above expresses the square of the speed  $v$  of a wave moving along a string in terms of tension  $T$ , mass  $m$ , and length  $L$  of the string. What is  $T$  in terms of  $m$ ,  $v$ , and  $L$ ?

A.  $T = \frac{mv^2}{L}$

B.  $T = \frac{m}{v^2 L}$

C.  $T = \frac{mL}{v^2}$

D.  $T = \frac{L}{mv^2}$

# Question ID c7789423

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear equations in one variable and systems of equations in two variables	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div>

ID: c7789423

$$|x - 2| = 9$$

What is one possible solution to the given equation?

# Question ID d9137a84

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Equivalent expressions	<div style="width: 25%; background-color: #005a9f;"></div> <div style="width: 25%; background-color: #005a9f;"></div> <div style="width: 50%; background-color: #e0e0e0;"></div>

ID: d9137a84

Which expression represents the product of  $(x^{-6}y^3z^5)$  and  $(x^4z^5 + y^8z^{-7})$ ?

- A.  $x^{-2}z^{10} + y^{11}z^{-2}$
- B.  $x^{-2}z^{10} + x^{-6}z^{-2}$
- C.  $x^{-2}y^3z^{10} + y^8z^{-7}$
- D.  $x^{-2}y^3z^{10} + x^{-6}y^{11}z^{-2}$

# Question ID 876a731c

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear equations in one variable and systems of equations in two variables	<div style="width: 20%; background-color: #003366; height: 10px;"></div> <div style="width: 20%; background-color: #003366; height: 10px;"></div> <div style="width: 60%; background-color: #cccccc; height: 10px;"></div>

ID: 876a731c

$$\begin{aligned}y &= x^2 \\2y + 6 &= 2(x + 3)\end{aligned}$$

If  $(x, y)$  is a solution of the system of equations above and  $x > 0$ , what is the value of  $xy$ ?

- A. 1
- B. 2
- C. 3
- D. 9

## Question ID f89e1d6f

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Equivalent expressions	<div style="width: 75%; background-color: #0056b3; height: 10px;"></div>

ID: f89e1d6f

If  $a = c + d$ , which of the following is equivalent to the expression  $x^2 - c^2 - 2cd - d^2$ ?

- A.  $(x + a)^2$
- B.  $(x - a)^2$
- C.  $(x + a)(x - a)$
- D.  $x^2 - ax - a^2$

# Question ID df0ef054

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Equivalent expressions	<div style="width: 25%; background-color: #002B36; height: 10px;"></div> <div style="width: 75%; background-color: #D9D9D9; height: 10px;"></div> <div style="width: 75%; background-color: #D9D9D9; height: 10px;"></div>

ID: df0ef054

$$(2x^3 + 3x)(x^3 - 2x)$$

Which of the following is equivalent to the expression above?

A.  $x^3 + 5x$

B.  $3x^3 + x$

C.  $2x^6 - x^4 - 6x^2$

D.  $3x^6 - x^4 - 6x^2$

## Question ID bef4b1c6

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear equations in one variable and systems of equations in two variables	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 50%; background-color: #e0e0e0; height: 10px;"></div>

ID: bef4b1c6

$$\frac{55}{x+6} = x$$

What is the positive solution to the given equation?

## Question ID 3e9cc0c2

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Equivalent expressions	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 50%; background-color: #e0e0e0; height: 10px;"></div>

ID: 3e9cc0c2

Which of the following is equivalent to  $(1-p)(1+p+p^2+p^3+p^4+p^5+p^6)$ ?

- A.  $1-p^8$
- B.  $1-p^7$
- C.  $1-p^6$
- D.  $1-p^5$

## Question ID 2c5c22d0

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear equations in one variable and systems of equations in two variables	<div style="width: 75%; background-color: #0056b3; height: 10px;"></div>

ID: 2c5c22d0

$$y = x^2 + 3x - 7$$

$$y - 5x + 8 = 0$$

How many solutions are there to the system of equations above?

- A. There are exactly 4 solutions.
- B. There are exactly 2 solutions.
- C. There is exactly 1 solution.
- D. There are no solutions.

# Question ID 7348f046

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Equivalent expressions	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 50%; background-color: #e0e0e0; height: 10px;"></div>

ID: 7348f046

$$(2x + 3) - (x - 7)$$

Which of the following is equivalent to the given expression?

- A.  $x - 4$
- B.  $3x - 4$
- C.  $x + 10$
- D.  $2x^2 + 21$

# Question ID 0aaef7aa

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear functions	<div style="width: 60%; background-color: #0056b3; height: 10px;"></div> <div style="width: 60%; background-color: #0056b3; height: 10px;"></div> <div style="width: 40%; background-color: #e0e0e0; height: 10px;"></div>

ID: 0aaef7aa

The function  $p$  is defined by  $p(n) = 7n^3$ . What is the value of  $n$  when  $p(n)$  is equal to 56?

- A. 2
- B.  $\frac{8}{3}$
- C. 7
- D. 8

# Question ID 928498f3

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear equations in one variable and systems of equations in two variables	<div style="width: 25%; background-color: #003366; height: 10px;"></div> <div style="width: 25%; background-color: #003366; height: 10px;"></div> <div style="width: 50%; background-color: #cccccc; height: 10px;"></div>

ID: 928498f3

$$6x^2 + 5x - 7 = 0$$

What are the solutions to the given equation?

A.  $\frac{-5 \pm \sqrt{25 + 168}}{12}$

B.  $\frac{-6 \pm \sqrt{25 + 168}}{12}$

C.  $\frac{-5 \pm \sqrt{36 - 168}}{12}$

D.  $\frac{-6 \pm \sqrt{36 - 168}}{12}$

# Question ID b7cd6ca6

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear functions	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 50%; background-color: #e0e0e0; height: 10px;"></div>

ID: b7cd6ca6

The equation  $E(t) = 5(1.8)^t$  gives the estimated number of employees at a restaurant, where  $t$  is the number of years since the restaurant opened. Which of the following is the best interpretation of the number 5 in this context?

- A. The estimated number of employees when the restaurant opened
- B. The increase in the estimated number of employees each year
- C. The number of years the restaurant has been open
- D. The percent increase in the estimated number of employees each year

# Question ID b47419f4

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Equivalent expressions	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 50%; background-color: #e0e0e0; height: 10px;"></div>

ID: b47419f4

$$\left(\frac{1}{2}x + 3\right) - \left(\frac{2}{3}x - 5\right)$$

Which of the following is equivalent to the expression above?

A.  $-\frac{1}{6}x + 8$

B.  $-\frac{1}{6}x - 2$

C.  $-\frac{1}{3}x^2 + \frac{1}{2}x + 15$

D.  $-\frac{1}{3}x^2 - \frac{9}{2}x - 15$

## Question ID fc3dfa26

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear equations in one variable and systems of equations in two variables	<div style="width: 75%; background-color: #0056b3; height: 10px;"></div>

ID: fc3dfa26

$$\frac{4x^2}{x^2-9} - \frac{2x}{x+3} = \frac{1}{x-3}$$

What value of  $x$  satisfies the equation above?

A.  $-3$

B.  $-\frac{1}{2}$

C.  $\frac{1}{2}$

D.  $3$

# Question ID 8838a672

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Equivalent expressions	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 50%; background-color: #e0e0e0; height: 10px;"></div>

ID: 8838a672

$$(4x^3 - 5x^2 + 3) - (6x^3 + 2x^2 - x)$$

Which of the following expressions is equivalent to the expression above?

- A.  $-10x^3 - 3x^2 + x + 3$
- B.  $-2x^3 - 7x^2 + x + 3$
- C.  $-2x^3 - 3x^2 + x + 3$
- D.  $10x^3 - 7x^2 - x + 3$

# Question ID eb268057

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear equations in one variable and systems of equations in two variables	<div style="width: 25%; background-color: #002B36; height: 10px;"></div> <div style="width: 75%; background-color: #D9D9D9; height: 10px;"></div> <div style="width: 75%; background-color: #D9D9D9; height: 10px;"></div>

ID: eb268057

$$x^2 = 64$$

Which of the following values of  $x$  satisfies the given equation?

- A. -8
- B. 4
- C. 32
- D. 128

## Question ID 6d9e01a2

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear functions	<div style="width: 75%; background-color: #0056b3; height: 10px;"></div>

ID: 6d9e01a2

$$f(x) = 4x^2 - 50x + 126$$

The given equation defines the function  $f$ . For what value of  $x$  does  $f(x)$  reach its minimum?

# Question ID 9f2ecade

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear functions	<div style="width: 60%; background-color: #0056b3; height: 10px;"></div>

ID: 9f2ecade

$$h(x) = x^3 + ax^2 + bx + c$$

The function  $h$  is defined above, where  $a$ ,  $b$ , and  $c$  are integer constants. If the zeros of the function are  $-5$ ,  $6$ , and  $7$ , what is the value of  $c$ ?

# Question ID 0b3d25c5

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Equivalent expressions	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 50%; background-color: #e0e0e0; height: 10px;"></div>

ID: 0b3d25c5

Which of the following is equivalent to

$$\sqrt[4]{x^2 + 8x + 16}, \text{ where } x > 0?$$

A.  $(x+4)^4$

B.  $(x+4)^2$

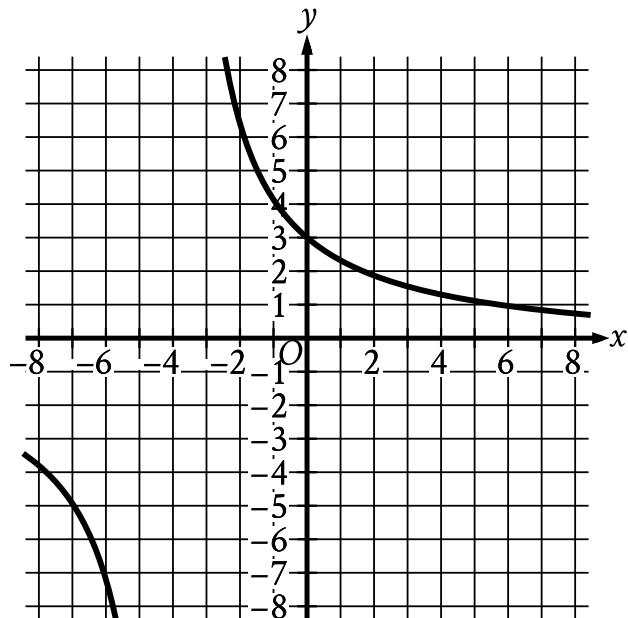
C.  $(x+4)$

D.  $(x+4)^{\frac{1}{2}}$

# Question ID d45572cc

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear functions	<div style="width: 25%; background-color: #0056b3;"></div> <div style="width: 25%; background-color: #e0e0e0;"></div> <div style="width: 25%; background-color: #e0e0e0;"></div>

ID: d45572cc



The graph of  $y = f(x)$  is shown in the  $xy$ -plane. The value of  $f(0)$  is an integer. What is the value of  $f(0)$ ?

## Question ID 6011a3f8

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear equations in one variable and systems of equations in two variables	<div style="width: 75%; background-color: #0056b3; height: 10px;"></div>

ID: 6011a3f8

$$64x^2 + bx + 25 = 0$$

In the given equation,  $b$  is a constant. For which of the following values of  $b$  will the equation have more than one real solution?

- A. -91
- B. -80
- C. 5
- D. 40

## Question ID e117d3b8

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Equivalent expressions	<div style="width: 75%; background-color: #0056b3; height: 10px;"></div>

ID: e117d3b8

If  $a$  and  $c$  are positive numbers, which of the following is equivalent to  $\sqrt{(a+c)^3} \cdot \sqrt{a+c}$ ?

- A.  $a+c$
- B.  $a^2+c^2$
- C.  $a^2+2ac+c^2$
- D.  $a^2c^2$

## Question ID 50338a48

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Equivalent expressions	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div>

ID: 50338a48

Which expression is equivalent to  $15w^2 + 8w$ ?

- A.  $w(15w + 8)$
- B.  $8w(15w + 1)$
- C.  $15w^2(8w + 1)$
- D.  $23(w^2 + w)$

## Question ID 98f735f2

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear equations in one variable and systems of equations in two variables	<div style="width: 25%; background-color: #003366; height: 10px;"></div> <div style="width: 75%; background-color: #cccccc; height: 10px;"></div>

ID: 98f735f2

The total revenue from sales of a product can be calculated using the formula  $T = PQ$

, where  $T$  is the total revenue,  $P$  is the price of the product, and  $Q$  is the quantity of the product sold. Which of the following equations gives the quantity of product sold in terms of  $P$  and  $T$ ?

A.  $Q = \frac{P}{T}$

B.  $Q = \frac{T}{P}$

C.  $Q = PT$

D.  $Q = T - P$

## Question ID 79ba511a

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear functions	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div>

ID: 79ba511a

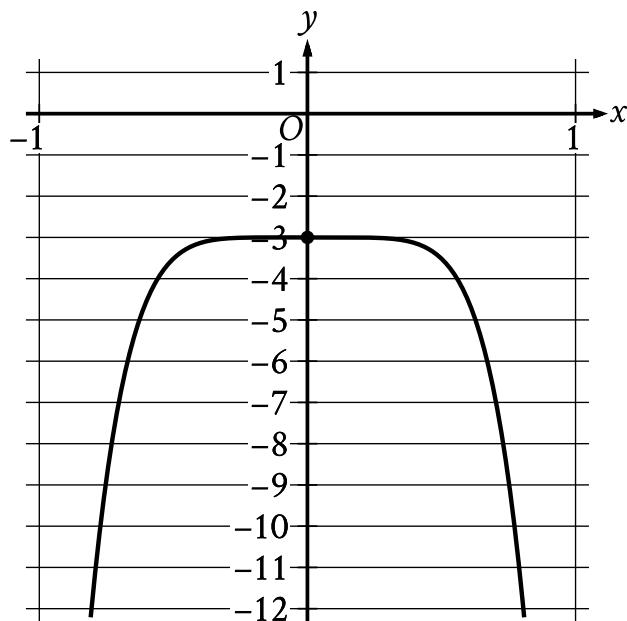
The function  $f$  is defined by  $f(x) = x^3 + 15$ . What is the value of  $f(2)$ ?

- A. 20
- B. 21
- C. 23
- D. 24

# Question ID 50418728

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear functions	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div>

ID: 50418728



The graph of the polynomial function  $f$ , where  $y = f(x)$ , is shown. The  $y$ -intercept of the graph is  $(0, y)$ . What is the value of  $y$ ?

# Question ID f5e8ccf1

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear functions	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 50%; background-color: #e0e0e0; height: 10px;"></div>

ID: f5e8ccf1

$$f(x) = (x + 4)(x - 1)(2x - 3)$$

The function  $f$  is defined above. Which of the following is NOT an  $x$ -intercept of the graph of the function in the  $xy$ -plane?

- A.  $(-4, 0)$
- B.  $\left(-\frac{2}{3}, 0\right)$
- C.  $(1, 0)$
- D.  $\left(\frac{3}{2}, 0\right)$

## Question ID fb96a5b3

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Equivalent expressions	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div>

ID: fb96a5b3

Which of the following expressions is equivalent to  $2(ab - 3) + 2$ ?

- A.  $2ab - 1$
- B.  $2ab - 4$
- C.  $2ab - 5$
- D.  $2ab - 8$

## Question ID 09e5e4d3

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear equations in one variable and systems of equations in two variables	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 50%; background-color: #e0e0e0; height: 10px;"></div>

ID: 09e5e4d3

If  $\frac{42}{x} = 7x$ , what is the value of  $7x^2$ ?

- A. 6
- B. 7
- C. 42
- D. 294

## Question ID 1fe10d97

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear functions	<div style="width: 75%; background-color: #0056b3; height: 10px;"></div>

ID: 1fe10d97

$$p(t) = 90,000(1.06)^t$$

The given function  $p$  models the population of Lowell  $t$  years after a census. Which of the following functions best models the population of Lowell  $m$  months after the census?

- A.  $r(m) = \frac{90,000}{12}(1.06)^m$
- B.  $r(m) = 90,000\left(\frac{1.06}{12}\right)^m$
- C.  $r(m) = 90,000\left(\frac{1.06}{12}\right)^{\frac{m}{12}}$
- D.  $r(m) = 90,000(1.06)^{\frac{m}{12}}$

## Question ID 6acdcece

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear equations in one variable and systems of equations in two variables	<div style="width: 25%; background-color: #003366; height: 10px;"></div> <div style="width: 25%; background-color: #003366; height: 10px;"></div> <div style="width: 50%; background-color: #cccccc; height: 10px;"></div>

ID: 6acdcece

$$b - 72 = \frac{x}{y}$$

The given equation relates the positive numbers  $b$ ,  $x$ , and  $y$ . Which equation correctly expresses  $x$  in terms of  $b$  and  $y$ ?

- A.  $x = \frac{b-72}{y}$
- B.  $x = by - 72$
- C.  $x = \frac{by-72}{y}$
- D.  $x = by - 72y$

# Question ID b73ee6cf

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear functions	<div style="width: 75%; background-color: #0056b3; height: 10px;"></div>

ID: b73ee6cf

The population of a town is currently 50,000, and the population is estimated to increase each year by 3% from the previous year. Which of the following equations can be used to estimate the number of years,  $t$ , it will take for the population of the town to reach 60,000?

- A.  $50,000 = 60,000(0.03)^t$
- B.  $50,000 = 60,000(3)^t$
- C.  $60,000 = 50,000(0.03)^t$
- D.  $60,000 = 50,000(1.03)^t$

## Question ID 3918e8bc

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear functions	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 50%; background-color: #e0e0e0; height: 10px;"></div>

ID: 3918e8bc

An object is kicked from a platform. The equation  $h = -4.9t^2 + 7t + 9$  represents this situation, where  $h$  is the height of the object above the ground, in meters,  $t$  seconds after it is kicked. Which number represents the height, in meters, from which the object was kicked?

- A. 0
- B. 4.9
- C. 7
- D. 9

## Question ID e597050f

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Equivalent expressions	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div>

ID: e597050f

Which expression is equivalent to  $9x + 6x + 2y + 3y$ ?

- A.  $3x + 5y$
- B.  $6x + 8y$
- C.  $12x + 8y$
- D.  $15x + 5y$

# Question ID 7eed640d

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear functions	<div style="width: 75%; background-color: #0056b3; height: 10px;"></div>

ID: 7eed640d

$$h(x) = -16x^2 + 100x + 10$$

The quadratic function above models the height above the ground  $h$ , in feet, of a projectile  $x$  seconds after it had been launched vertically. If  $y = h(x)$  is graphed in the  $xy$ -plane, which of the following represents the real-life meaning of the positive  $x$ -intercept of the graph?

- A. The initial height of the projectile
- B. The maximum height of the projectile
- C. The time at which the projectile reaches its maximum height
- D. The time at which the projectile hits the ground

## Question ID 2d2ab76b

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear equations in one variable and systems of equations in two variables	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 50%; background-color: #e0e0e0; height: 10px;"></div>

ID: 2d2ab76b

$$y = x^2 - 1$$

$$y = 3$$

When the equations above are graphed in the  $xy$ -plane, what are the coordinates  $(x, y)$  of the points of intersection of the two graphs?

- A.  $(2, 3)$   
and  $(-2, 3)$
- B.  $(2, 4)$   
and  $(-2, 4)$
- C.  $(3, 8)$   
and  $(-3, 8)$
- D.  $(\sqrt{2}, 3)$   
and  $(-\sqrt{2}, 3)$

# Question ID 43926bd9

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear functions	<div style="width: 75%; background-color: #0056b3; height: 10px;"></div>

ID: 43926bd9

$x$	$f(x)$
1	$a$
2	$a^5$
3	$a^9$

For the exponential function  $f$ , the table above shows several values of  $x$  and their corresponding values of  $f(x)$ , where  $a$  is a constant greater than 1. If  $k$  is a constant and  $f(k) = a^{29}$ , what is the value of  $k$ ?

## Question ID 0354c7de

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Equivalent expressions	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div>

ID: 0354c7de

$$5x + 15$$

Which of the following is equivalent to the given expression?

- A.  $5(x + 3)$
- B.  $5(x + 10)$
- C.  $5(x + 15)$
- D.  $5(x + 20)$

## Question ID f25a34aa

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear functions	<div style="width: 60%; background-color: #0056b3; height: 10px;"></div>

ID: f25a34aa

The area of a triangle is equal to  $x^2$  square centimeters. The length of the base of the triangle is  $2x + 22$  centimeters, and the height of the triangle is  $x - 10$  centimeters. What is the value of  $x$ ?

# Question ID a58232b7

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear functions	<div style="width: 75%; background-color: #0056b3; height: 10px;"></div>

ID: a58232b7

The functions  $g$  and  $h$  are defined by the given equations, where  $x \geq 0$ . Which of the following equations displays, as a constant or coefficient, the minimum value of the function it defines, where  $x \geq 0$ ?

- I.  $g(x) = 18(1.16)(1.4)^{x+2}$
- II.  $h(x) = 18(1.4)^{x+4}$

- A. I only
- B. II only
- C. I and II
- D. Neither I nor II

# Question ID c602140f

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Equivalent expressions	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 50%; background-color: #e0e0e0; height: 10px;"></div>

ID: c602140f

$$(x - 11y)(2x - 3y) - 12y(-2x + 3y)$$

Which of the following is equivalent to the expression above?

- A.  $x - 23y$
- B.  $2x^2 - xy - 3y^2$
- C.  $2x^2 + 24xy + 36y^2$
- D.  $2x^2 - 49xy + 69y^2$

# Question ID 4236c5a3

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear equations in one variable and systems of equations in two variables	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div>

ID: 4236c5a3

If  $(x + 5)^2 = 4$ , which of the following is a possible value of  $x$ ?

- A. 1
- B. -1
- C. -2
- D. -3

# Question ID a7711fe8

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear functions	<div style="width: 75%; background-color: #0056b3; height: 10px;"></div>

ID: a7711fe8

What is the minimum value of the function  $f$  defined by  $f(x) = (x - 2)^2 - 4$ ?

A. -4

B. -2

C. 2

D. 4

## Question ID 3b4b8831

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear equations in one variable and systems of equations in two variables	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 50%; background-color: #e0e0e0; height: 10px;"></div>

ID: 3b4b8831

$$38x^2 = 38(9)$$

What is the negative solution to the given equation?

# Question ID f5247e52

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear equations in one variable and systems of equations in two variables	<div style="width: 20%; background-color: #0056b3; height: 10px;"></div> <div style="width: 20%; background-color: #0056b3; height: 10px;"></div> <div style="width: 60%; background-color: #e0e0e0; height: 10px;"></div>

ID: f5247e52

$$y = ax^2 - c$$

In the equation above,  $a$  and  $c$  are positive constants. How many times does the graph of the equation above intersect the graph of the equation  $y = a + c$  in the  $xy$ -plane?

- A. Zero
- B. One
- C. Two
- D. More than two

## Question ID 1a722d7d

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear functions	<div style="width: 75%; background-color: #0056b3; height: 10px;"></div>

ID: 1a722d7d

$$p(x) = \frac{(x-c)^2 + 160}{2c}$$

Let the function  $p$  be defined as  $p(x) = \frac{(x-c)^2 + 160}{2c}$ , where  $c$  is a constant. If

$p(c) = 10$ , what is the value of  $p(12)$  ?

- A. 10.00
- B. 10.25
- C. 10.75
- D. 11.00

## Question ID f11ffa93

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear equations in one variable and systems of equations in two variables	<div style="width: 25%; background-color: #002B36; height: 10px;"></div> <div style="width: 75%; background-color: #D9D9D9; height: 10px;"></div> <div style="width: 75%; background-color: #D9D9D9; height: 10px;"></div>

ID: f11ffa93

$$\sqrt{x+4} = 11$$

What value of  $x$  satisfies the equation above?

## Question ID ee05c84e

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear functions	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div>

ID: ee05c84e

$$f(x) = (x + 0.25x)(50 - x)$$

The function  $f$  is defined above. What is the value of  $f(20)$ ?

- A. 250
- B. 500
- C. 750
- D. 2,000

# Question ID 5d93c782

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Equivalent expressions	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div>

ID: 5d93c782

Which expression is equivalent to  $x^2 + 3x - 40$ ?

- A.  $(x - 4)(x + 10)$
- B.  $(x - 5)(x + 8)$
- C.  $(x - 8)(x + 5)$
- D.  $(x - 10)(x + 4)$

## Question ID 5c00c2c1

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear functions	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 50%; background-color: #e0e0e0; height: 10px;"></div>

ID: 5c00c2c1

There were no jackrabbits in Australia before 1788 when 24 jackrabbits were introduced. By 1920 the population of jackrabbits had reached 10 billion. If the population had grown exponentially, this would correspond to a 16.2% increase, on average, in the population each year. Which of the following functions best models the population  $p(t)$  of jackrabbits  $t$  years after 1788?

- A.  $p(t) = 1.162(24)^t$
- B.  $p(t) = 24(2)^{1.162t}$
- C.  $p(t) = 24(1.162)^t$
- D.  $p(t) = (24 \cdot 1.162)^t$

# Question ID 974d33dc

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Equivalent expressions	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div>

ID: 974d33dc

Which of the following expressions is equivalent to the sum of  $(r^3 + 5r^2 + 7)$  and  $(r^2 + 8r + 12)$ ?

- A.  $r^5 + 13r^3 + 19$
- B.  $2r^3 + 13r^2 + 19$
- C.  $r^3 + 5r^2 + 7r + 12$
- D.  $r^3 + 6r^2 + 8r + 19$

## Question ID d4d513ff

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Equivalent expressions	<div style="width: 25%; background-color: #002B36; height: 10px;"></div> <div style="width: 75%; background-color: #D9D9D9; height: 10px;"></div> <div style="width: 75%; background-color: #D9D9D9; height: 10px;"></div>

ID: d4d513ff

Which expression is equivalent to  $12x + 27$ ?

- A.  $12(9x + 1)$
- B.  $27(12x + 1)$
- C.  $3(4x + 9)$
- D.  $3(9x + 24)$

## Question ID 58b109d4

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear equations in one variable and systems of equations in two variables	<div style="width: 75%; background-color: #0056b3; height: 10px;"></div>

ID: 58b109d4

$$x^2 + y + 7 = 7$$

$$20x + 100 - y = 0$$

The solution to the given system of equations is  $(x, y)$ . What is the value of  $x$ ?

# Question ID 85939da5

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Inference from sample statistics and margin of error	<div style="width: 30%; background-color: #0056b3; height: 10px;"></div> <div style="width: 30%; background-color: #0056b3; height: 10px;"></div> <div style="width: 30%; background-color: #0056b3; height: 10px;"></div>

ID: 85939da5

Texting behavior	Talks on cell phone daily	Does not talk on cell phone daily	Total
Light	110	146	256
Medium	139	164	303
Heavy	166	74	240
<b>Total</b>	<b>415</b>	<b>384</b>	<b>799</b>

In a study of cell phone use, 799 randomly selected US teens were asked how often they talked on a cell phone and about their texting behavior. The data are summarized in the table above. Based on the data from the study, an estimate of the percent of US teens who are heavy texters is 30% and the associated margin of error is 3%. Which of the following is a correct statement based on the given margin of error?

- A. Approximately 3% of the teens in the study who are classified as heavy texters are not really heavy texters.
- B. It is not possible that the percent of all US teens who are heavy texters is less than 27%.
- C. The percent of all US teens who are heavy texters is 33%.
- D. It is doubtful that the percent of all US teens who are heavy texters is 35%.

# Question ID 954943a4

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Percentages	<div style="width: 75%; background-color: #0056b3; height: 10px;"></div>

ID: 954943a4

Jennifer bought a box of Crunchy Grain cereal. The nutrition facts on the box state that

a serving size of the cereal is  $\frac{3}{4}$  cup and provides 210 calories, 50 of which are calories from fat. In addition, each serving of the cereal provides 180 milligrams of potassium, which is 5% of the daily allowance for adults. If  $p$  percent of an adult's daily allowance of potassium is provided by  $x$  servings of Crunchy Grain cereal per day, which of the following expresses  $p$  in terms of  $x$ ?

- A.  $p = 0.5x$
- B.  $p = 5x$
- C.  $p = (0.05)^x$
- D.  $p = (1.05)^x$

# Question ID b1b5300b

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Probability and conditional probability	<div style="width: 25%; background-color: #003366; height: 10px;"></div> <div style="width: 25%; background-color: #005599; height: 10px;"></div> <div style="width: 50%; background-color: #CCCCCC; height: 10px;"></div>

ID: b1b5300b

Prices of 14 Different Cars

Type of car	Priced at no more than \$25,000	Priced greater than \$25,000	Total
Nonhybrid	5	3	8
Hybrid	2	4	6
Total	7	7	14

The table above shows information about 14 cars listed for sale on an auto dealership's website. If one of the cars listed for sale is selected at random, what is the probability that the car selected will be a hybrid car priced at no more than \$25,000 ?

A.  $\frac{1}{7}$

B.  $\frac{2}{7}$

C.  $\frac{1}{3}$

D.  $\frac{4}{7}$

## Question ID d28c29e1

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Ratios, rates, proportional relationships, and units	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 50%; background-color: #e0e0e0; height: 10px;"></div>

ID: d28c29e1

The International Space Station orbits Earth at an average speed of 4.76 miles per second. What is the space station's average speed in miles per hour?

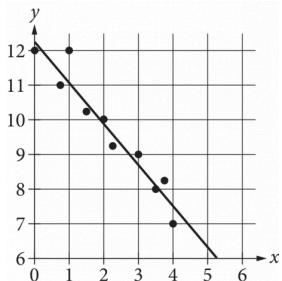
- A. 285.6
- B. 571.2
- C. 856.8
- D. 17,136.0

# Question ID 1adb39f0

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Two-variable data: Models and scatterplots	<div style="width: 25%; background-color: #003366; height: 10px;"></div> <div style="width: 25%; background-color: #003366; height: 10px;"></div> <div style="width: 50%; background-color: #cccccc; height: 10px;"></div>

ID: 1adb39f0

The scatterplot shows the relationship between two variables,  $x$  and  $y$ . A line of best fit for the data is also shown. Which of the following is closest to the difference between the  $y$ -coordinate of the data point with  $x = 1$  and the  $y$ -value predicted by the line of best fit at  $x = 1$ ?



- A. 1
- B. 2
- C. 5
- D. 12

## Question ID 3f5398a6

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Ratios, rates, proportional relationships, and units	<div style="width: 25%; background-color: #002B36; height: 10px;"></div> <div style="width: 75%; background-color: #D9D9D9; height: 10px;"></div> <div style="width: 75%; background-color: #D9D9D9; height: 10px;"></div>

ID: 3f5398a6

For a person  $m$  miles from a flash of lightning, the length of the time interval from the moment the person sees the lightning to the moment the person hears the thunder is  $k$  seconds. The ratio of  $m$  to  $k$  can be estimated to be 1 to 5. According to this estimate, the person is how many miles from a flash of lightning if the time interval is 25 seconds?

- A. 10
- B. 9
- C. 6
- D. 5

## Question ID b4912cc5

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Ratios, rates, proportional relationships, and units	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 50%; background-color: #e0e0e0; height: 10px;"></div>

ID: b4912cc5

The population density of Iceland, in people per square kilometer of land area, increased from 2.5 in 1990 to 3.3 in 2014. During this time period, the land area of Iceland was 100,250 square kilometers. By how many people did Iceland's population increase from 1990 to 2014?

- A. 330,825
- B. 132,330
- C. 125,312
- D. 80,200

# Question ID f890dc20

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	One-variable data: Distributions and measures of center and spread	<div style="width: 25%; background-color: #002B36; height: 10px;"></div> <div style="width: 75%; background-color: #D9D9D9; height: 10px;"></div> <div style="width: 75%; background-color: #D9D9D9; height: 10px;"></div>

ID: f890dc20

2, 2, 2, 3, 4, 4, 11

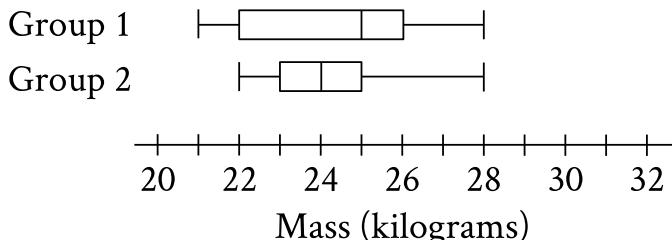
What is the median of the seven data values shown?

- A. 2
- B. 3
- C. 4
- D. 9

## Question ID d3b9c8d8

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	One-variable data: Distributions and measures of center and spread	<div style="width: 100px; height: 10px; background-color: #0056b3;"></div> <div style="width: 100px; height: 10px; background-color: #0056b3;"></div> <div style="width: 100px; height: 10px; background-color: #0056b3;"></div>

ID: d3b9c8d8



The box plots summarize the masses, in kilograms, of two groups of gazelles. Based on the box plots, which of the following statements must be true?

- A. The mean mass of group 1 is greater than the mean mass of group 2.
- B. The mean mass of group 1 is less than the mean mass of group 2.
- C. The median mass of group 1 is greater than the median mass of group 2.
- D. The median mass of group 1 is less than the median mass of group 2.

## Question ID 65c49824

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Percentages	<div style="width: 30%; background-color: #005a9f; height: 10px;"></div> <div style="width: 30%; background-color: #005a9f; height: 10px;"></div> <div style="width: 30%; background-color: #005a9f; height: 10px;"></div>

ID: 65c49824

A school district is forming a committee to discuss plans for the construction of a new high school. Of those invited to join the committee, 15% are parents of students, 45% are teachers from the current high school, 25% are school and district administrators, and the remaining 6 individuals are students. How many more teachers were invited to join the committee than school and district administrators?

# Question ID 1ea09200

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Evaluating statistical claims: Observational studies and experiments	<div style="width: 75%; background-color: #005a9f; height: 10px;"></div>

ID: 1ea09200

A sample of 40 fourth-grade students was selected at random from a certain school.

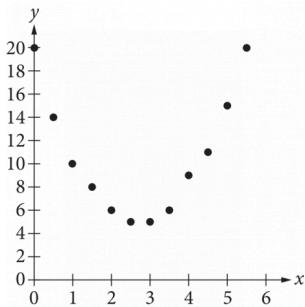
The 40 students completed a survey about the morning announcements, and 32 thought the announcements were helpful. Which of the following is the largest population to which the results of the survey can be applied?

- A. The 40 students who were surveyed
- B. All fourth-grade students at the school
- C. All students at the school
- D. All fourth-grade students in the county in which the school is located

# Question ID 82aaa0a1

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Two-variable data: Models and scatterplots	<div style="width: 25%; background-color: #003366; height: 10px;"></div> <div style="width: 75%; background-color: #cccccc; height: 10px;"></div>

ID: 82aaa0a1



Of the following, which is the best model for the data in the scatterplot?

- A.  $y = 2x^2 - 11x - 20$
- B.  $y = 2x^2 - 11x + 20$
- C.  $y = 2x^2 - 5x - 3$
- D.  $y = 2x^2 - 5x + 3$

## Question ID 37930b2a

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Evaluating statistical claims: Observational studies and experiments	<div style="width: 25%; background-color: #005a9f; height: 10px;"></div> <div style="width: 25%; background-color: #005a9f; height: 10px;"></div> <div style="width: 50%; background-color: #e0e0e0; height: 10px;"></div>

ID: 37930b2a

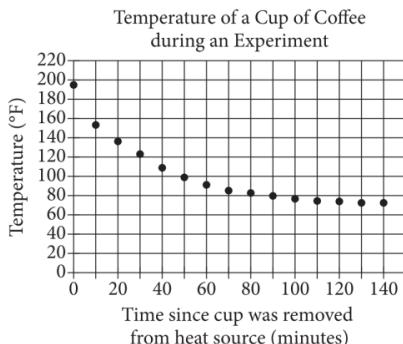
Residents of a town were surveyed to determine whether they are satisfied with the concession stand at the local park. A random sample of 200 residents was selected. All 200 responded, and 87% said they are satisfied. Based on this information, which of the following statements must be true?

- I. Of all the town residents, 87% would say they are satisfied with the concession stand at the local park.
  - II. If another random sample of 200 residents were surveyed, 87% would say they are satisfied.
- A. Neither
- B. I only
- C. II only
- D. I and II

# Question ID 83272c51

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Two-variable data: Models and scatterplots	<div style="width: 25%; background-color: #003366; height: 10px;"></div> <div style="width: 75%; background-color: #cccccc; height: 10px;"></div>

ID: 83272c51



In an experiment, a heated cup of coffee is removed from a heat source, and the cup of coffee is then left in a room that is kept at a constant temperature. The graph above shows the temperature, in degrees Fahrenheit (°F), of the coffee immediately after being removed from the heat source and at 10-minute intervals thereafter. During which of the following 10-minute intervals does the temperature of the coffee decrease at the greatest average rate?

- A. Between 0 and 10 minutes
- B. Between 30 and 40 minutes
- C. Between 50 and 60 minutes
- D. Between 90 and 100 minutes

# Question ID 4c774b00

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	One-variable data: Distributions and measures of center and spread	<div style="width: 25%; background-color: #003366; height: 10px;"></div> <div style="width: 25%; background-color: #005599; height: 10px;"></div> <div style="width: 50%; background-color: #CCCCCC; height: 10px;"></div>

ID: 4c774b00

Ages of 20 Students Enrolled in a College Class

Age	Frequency
18	6
19	5
20	4
21	2
22	1
23	1
30	1

The table above shows the distribution of ages of the 20 students enrolled in a college class. Which of the following gives the correct order of the mean, median, and mode of the ages?

- A. mode < median < mean
- B. mode < mean < median
- C. median < mode < mean
- D. mean < mode < median

# Question ID 1353b86e

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Probability and conditional probability	<div style="width: 25%; background-color: #002B36; height: 10px;"></div> <div style="width: 75%; background-color: #D9D9D9; height: 10px;"></div>

ID: 1353b86e

Colors of  
Marbles in a  
Bag

Color	Number
Red	8
Blue	10
Green	22
Total	40

The table shows the number of different colors of marbles in a bag. If a marble is chosen at random from the bag, what is the probability that the marble will be blue?

A.  $\frac{30}{40}$

B.  $\frac{22}{40}$

C.  $\frac{18}{40}$

D.  $\frac{10}{40}$

# Question ID d89c1513

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Probability and conditional probability	<div style="width: 25%; background-color: #002B36; height: 10px;"></div> <div style="width: 75%; background-color: #D9D9D9; height: 10px;"></div>

ID: d89c1513

Customer Purchases at a Gas Station

	Beverage purchased	Beverage not purchased	Total
Gasoline purchased	60	25	85
Gasoline not purchased	35	15	50
Total	90	40	135

On Tuesday, a local gas station had 135 customers. The table above summarizes whether or not the customers on Tuesday purchased gasoline, a beverage, both, or neither. Based on the data in the table, what is the probability that a gas station customer selected at random on that day did not purchase gasoline?

A.  $\frac{15}{50}$

B.  $\frac{15}{40}$

C.  $\frac{35}{50}$

D.  $\frac{50}{135}$

# Question ID 52f9a246

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	One-variable data: Distributions and measures of center and spread	<div style="width: 25%; background-color: #003366; height: 10px;"></div> <div style="width: 75%; background-color: #cccccc; height: 10px;"></div>

ID: 52f9a246

4, 4, 4, 4, 8, 8, 8, 13, 13

Which frequency table correctly represents the data listed?

A.

Number	Frequency
4	4
8	3
13	2

B.

Number	Frequency
4	4
3	8
2	13

C.

Number	Frequency
4	16
8	24
13	26

D.

Number	Frequency
16	4
24	8
26	13

# Question ID 000259aa

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Ratios, rates, proportional relationships, and units	<div style="width: 25%; background-color: #002B36; height: 10px;"></div> <div style="width: 75%; background-color: #D9D9D9; height: 10px;"></div> <div style="width: 75%; background-color: #D9D9D9; height: 10px;"></div>

ID: 000259aa

A group of monarch butterflies migrated from Chicago, Illinois, to Michoacán, Mexico, flying a total of 2,100 miles. It took a single butterfly in the group 120 days to travel this route one way. On average, how many miles did the butterfly travel per day?

- A. 0.057
- B. 0.729
- C. 17.5
- D. 24

# Question ID e1ad3d41

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Probability and conditional probability	<div style="width: 25%; background-color: #003366; height: 10px;"></div> <div style="width: 25%; background-color: #003366; height: 10px;"></div> <div style="width: 50%; background-color: #cccccc; height: 10px;"></div>

ID: e1ad3d41

Coat color	Eye color		
	Deep blue	Light brown	Total
Cream-tortoiseshell	16	16	32
Chocolate	12	4	16
Total	28	20	48

The data on the coat color and eye color for 48 Himalayan kittens available for adoption were collected and summarized in the table above. What fraction of the chocolate-colored kittens has deep blue eyes?

A.  $\frac{12}{48}$

B.  $\frac{12}{28}$

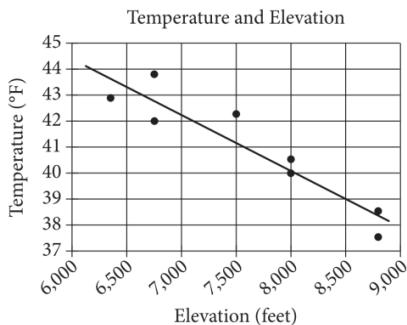
C.  $\frac{16}{32}$

D.  $\frac{12}{16}$

# Question ID ac5b6558

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Two-variable data: Models and scatterplots	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div>

ID: ac5b6558



The scatterplot above shows the high temperature on a certain day and the elevation of 8 different locations in the Lake Tahoe Basin. A line of best fit for the data is also shown. What temperature is predicted by the line of best fit for a location in the Lake Tahoe Basin with an elevation of 8,500 feet?

- A. 37°F
- B. 39°F
- C. 41°F
- D. 43°F

# Question ID 46545dd6

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Probability and conditional probability	<div style="width: 25%; background-color: #003366; height: 10px;"></div> <div style="width: 75%; background-color: #cccccc; height: 10px;"></div>

ID: 46545dd6

Number of High School Students Who Completed Summer Internships

High school	Year				
	2008	2009	2010	2011	2012
Foothill	87	80	75	76	70
Valley	44	54	65	76	82
Total	131	134	140	152	152

The table above shows the number of students from two different high schools who completed summer internships in each of five years. No student attended both schools. Of the students who completed a summer internship in 2010, which of the following represents the fraction of students who were from Valley High School?

A.  $\frac{10}{140}$

B.  $\frac{65}{140}$

C.  $\frac{75}{140}$

D.  $\frac{65}{75}$

## Question ID 16cea46c

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Probability and conditional probability	<div style="width: 25%; background-color: #002B36; height: 10px;"></div> <div style="width: 75%; background-color: #D9D9D9; height: 10px;"></div> <div style="width: 75%; background-color: #D9D9D9; height: 10px;"></div>

ID: 16cea46c

Voice type	Number of singers
Countertenor	4
Tenor	6
Baritone	10
Bass	5

A total of 25 men registered for singing lessons. The frequency table shows how many of these singers have certain voice types. If one of these singers is selected at random, what is the probability he is a baritone?

- A. 0.10
- B. 0.40
- C. 0.60
- D. 0.67

# Question ID bd90f87e

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Percentages	<div style="width: 25%; background-color: #0056b3;"></div> <div style="width: 75%; background-color: #e0e0e0;"></div> <div style="width: 75%; background-color: #e0e0e0;"></div>

ID: bd90f87e

A table of the US minimum wage for 6 different years is shown below.

Year	US minimum wage (dollars per hour)
1960	1.00
1970	1.60
1980	3.10
1990	3.80
2000	5.15
2010	7.25

What was the percent increase of the minimum wage from 1960 to 1970?

- A. 30%
- B. 60%
- C. 62.5%
- D. 120%

## Question ID 0ea56bb2

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Percentages	<div style="width: 75%; background-color: #0056b3; height: 10px;"></div>

ID: 0ea56bb2

Year	Subscriptions sold
2012	5,600
2013	5,880

The manager of an online news service received the report above on the number of subscriptions sold by the service. The manager estimated that the percent increase from 2012 to 2013 would be double the percent increase from 2013 to 2014. How many subscriptions did the manager expect would be sold in 2014?

- A. 6,020
- B. 6,027
- C. 6,440
- D. 6,468

## Question ID 90eed2e5

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Inference from sample statistics and margin of error	<div style="width: 25%; background-color: #003366; height: 10px;"></div> <div style="width: 75%; background-color: #cccccc; height: 10px;"></div>

ID: 90eed2e5

A city has 50 city council members. A reporter polled a random sample of 20 city council members and found that 6 of those polled supported a specific bill. Based on the sample, which of the following is the best estimate of the number of city council members in the city who support the bill?

- A. 6
- B. 9
- C. 15
- D. 30

## Question ID 8e528129

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Ratios, rates, proportional relationships, and units	<div style="width: 25%; background-color: #003366; height: 10px;"></div> <div style="width: 25%; background-color: #003366; height: 10px;"></div> <div style="width: 50%; background-color: #cccccc; height: 10px;"></div>

ID: 8e528129

Pure beeswax has a density of 0.555 ounce per cubic inch. An online company sells pure beeswax at a price of \$8.00 per ounce. What is the selling price, in dollars per cubic inch, for pure beeswax purchased from this company?

# Question ID 8736334b

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	One-variable data: Distributions and measures of center and spread	<div style="width: 25%; background-color: #002B36; height: 10px;"></div> <div style="width: 75%; background-color: #D9D9D9; height: 10px;"></div> <div style="width: 75%; background-color: #D9D9D9; height: 10px;"></div>

ID: 8736334b

Data set A: 72,73,73,76,76

Data set B: 61,64,74,85,x

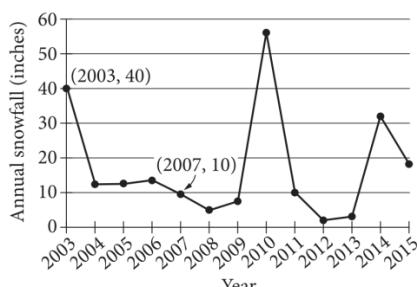
Data set A and data set B each contain 5 numbers. If the mean of data set A is equal to the mean of data set B, what is the value of x ?

- A. 77
- B. 85
- C. 86
- D. 95

# Question ID 0231050d

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Percentages	<div style="width: 100px; height: 10px; background-color: #0056b3;"></div>

ID: 0231050d



The line graph shows the total amount of snow, in inches, recorded each year in Washington, DC, from 2003 to 2015. If  $p\%$  is the percent decrease in the annual snowfall from 2003 to 2007, what is the value of  $p$ ?

# Question ID be35c117

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Ratios, rates, proportional relationships, and units	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div>

ID: be35c117

A wind turbine completes **900** revolutions in **50** minutes. At this rate, how many revolutions per minute does this turbine complete?

- A. **18**
- B. **850**
- C. **950**
- D. **1,400**

## Question ID b680e76d

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Probability and conditional probability	<div style="width: 25%; background-color: #003366; height: 10px;"></div> <div style="width: 75%; background-color: #cccccc; height: 10px;"></div>

ID: b680e76d

A survey taken by 1,000 students at a school asked whether they played school sports. The table below summarizes all 1,000 responses from the students surveyed.

	Males	Females
Play a school sport	312	220
Do not play a school sport	?	216

How many of the males surveyed responded that they do not play a school sport?

- A. 109
- B. 252
- C. 468
- D. 688

## Question ID 53d97af5

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Inference from sample statistics and margin of error	<div style="width: 25%; background-color: #003366; height: 10px;"></div> <div style="width: 25%; background-color: #005599; height: 10px;"></div> <div style="width: 50%; background-color: #CCCCCC; height: 10px;"></div>

ID: 53d97af5

A study was done on the weights of different types of fish in a pond. A random sample of fish were caught and marked in order to ensure that none were weighed more than once. The sample contained 150 largemouth bass, of which 30% weighed more than 2 pounds. Which of the following conclusions is best supported by the sample data?

- A. The majority of all fish in the pond weigh less than 2 pounds.
- B. The average weight of all fish in the pond is approximately 2 pounds.
- C. Approximately 30% of all fish in the pond weigh more than 2 pounds.
- D. Approximately 30% of all largemouth bass in the pond weigh more than 2 pounds.

# Question ID d4413871

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Probability and conditional probability	<div style="width: 75%; background-color: #0056b3; height: 10px;"></div>

ID: d4413871

	Blood type			
Rhesus factor	A	B	AB	O
+	33	9	3	37
-	7	2	1	x

Human blood can be classified into four common blood types—A, B, AB, and O. It is also characterized by the presence (+) or absence (−) of the rhesus factor. The table above shows the distribution of blood type and rhesus factor for a group of people. If one of these people who is rhesus negative (−) is chosen at random, the probability

that the person has blood type B is  $\frac{1}{9}$ . What is the value of x ?

# Question ID 0301c5dc

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Probability and conditional probability	<div style="width: 25%; background-color: #003366; height: 10px;"></div> <div style="width: 25%; background-color: #003366; height: 10px;"></div> <div style="width: 50%; background-color: #cccccc; height: 10px;"></div>

ID: 0301c5dc

The table below shows the number of state parks in a certain state that contain camping facilities and bicycle paths.

	Has bicycle paths	Does not have bicycle paths
Has camping facilities	20	5
Does not have camping facilities	8	4

If one of these state parks is selected at random, what is the probability that it has camping facilities but does not have bicycle paths?

A.  $\frac{5}{37}$

B.  $\frac{5}{25}$

C.  $\frac{8}{28}$

D.  $\frac{5}{9}$

## Question ID c88e0663

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	One-variable data: Distributions and measures of center and spread	<div style="width: 25%; background-color: #005a9f; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div>

ID: c88e0663

For a school fund-raiser, 10 students sold a total of 90 boxes of cookies. Which of the following can be calculated from this information?

- A. The average number of boxes sold per student
- B. The median number of boxes sold per student
- C. The greatest number of boxes sold by one student
- D. The least number of boxes sold by one student

## Question ID 3f2ee20a

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	One-variable data: Distributions and measures of center and spread	<div style="width: 25%; background-color: #003366; height: 10px;"></div> <div style="width: 25%; background-color: #005599; height: 10px;"></div> <div style="width: 50%; background-color: #CCCCCC; height: 10px;"></div>

ID: 3f2ee20a

The results of two independent surveys are shown in the table below.

Men's Height

Group	Sample size	Mean (centimeters)	Standard deviation (centimeters)
A	2,500	186	12.5
B	2,500	186	19.1

Which statement is true based on the table?

- A. The Group A data set was identical to the Group B data set.
- B. Group B contained the tallest participant.
- C. The heights of the men in Group B had a larger spread than the heights of the men in Group A.
- D. The median height of Group B is larger than the median height of Group A.

# Question ID d0efc1dd

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	One-variable data: Distributions and measures of center and spread	<div style="width: 25%; background-color: #003366; height: 10px;"></div> <div style="width: 25%; background-color: #005599; height: 10px;"></div> <div style="width: 50%; background-color: #cccccc; height: 10px;"></div>

ID: d0efc1dd

15, 14, 18, 17, x

The mean and the median of the five numbers above are equal. Which of the following is NOT a possible value of x ?

- A. 6
- B. 11
- C. 16
- D. 21

## Question ID 190be2fc

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	One-variable data: Distributions and measures of center and spread	<div style="width: 60%; background-color: #0056b3; height: 10px;"></div>

ID: 190be2fc

Data set A consists of **10** positive integers less than **60**. The list shown gives **9** of the integers from data set A.

**43, 45, 44, 43, 38, 39, 40, 46, 40**

The mean of these **9** integers is **42**. If the mean of data set A is an integer that is greater than **42**, what is the value of the largest integer from data set A?

# Question ID 3f236a64

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Ratios, rates, proportional relationships, and units	<div style="width: 25%; background-color: #002B36; height: 10px;"></div> <div style="width: 75%; background-color: #D9D9D9; height: 10px;"></div> <div style="width: 75%; background-color: #D9D9D9; height: 10px;"></div>

ID: 3f236a64

$x$	$y$
1	4
3	12
5	20
40	$k$

In the table above, the ratio of  $y$  to  $x$  for each ordered pair is constant. What is the value of  $k$ ?

- A. 28
- B. 36
- C. 80
- D. 160

## Question ID 8705ecba

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Percentages	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div>

ID: 8705ecba

The cost of a certain shirt is \$20 before a 5% sales tax is added. What is the total cost, including sales tax, to purchase the shirt?

- A. \$20.05
- B. \$20.50
- C. \$21.00
- D. \$25.00

## Question ID f8f79e11

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Inference from sample statistics and margin of error	<div style="width: 25%; background-color: #003366; height: 10px;"></div> <div style="width: 25%; background-color: #003366; height: 10px;"></div> <div style="width: 50%; background-color: #cccccc; height: 10px;"></div>

ID: f8f79e11

A park ranger asked a random sample of visitors how far they hiked during their visit.

Based on the responses, the estimated mean was found to be 4.5 miles, with an associated margin of error of 0.5 miles. Which of the following is the best conclusion from these data?

- A. It is likely that all visitors hiked between 4 and 5 miles.
- B. It is likely that most visitors hiked exactly 4.5 miles.
- C. It is not possible that any visitor hiked less than 3 miles.
- D. It is plausible that the mean distance hiked for all visitors is between 4 and 5 miles.

# Question ID c178d4da

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	One-variable data: Distributions and measures of center and spread	<div style="width: 75%;"><div style="width: 100px; height: 10px; background-color: #005a9f;"></div><div style="width: 100px; height: 10px; background-color: #005a9f;"></div><div style="width: 100px; height: 10px; background-color: #005a9f;"></div></div>

ID: c178d4da

Value	Data set A frequency	Data set B frequency
30	2	9
34	4	7
38	5	5
42	7	4
46	9	2

Data set A and data set B each consist of **27** values. The table shows the frequencies of the values for each data set. Which of the following statements best compares the means of the two data sets?

- A. The mean of data set A is greater than the mean of data set B.
- B. The mean of data set A is less than the mean of data set B.
- C. The mean of data set A is equal to the mean of data set B.
- D. There is not enough information to compare the means of the data sets.

## Question ID 2c76bcce

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Inference from sample statistics and margin of error	<div style="width: 25%; background-color: #003366; height: 10px;"></div> <div style="width: 75%; background-color: #cccccc; height: 10px;"></div>

ID: 2c76bcce

A company designs and makes handbags. To estimate the mean weight of the handbags made by the company on a particular day, a sample of the handbags made by the company on that day was selected at random. Based on the sample, it is estimated that the mean weight of all handbags made by the company on that day is **27.8 ounces (oz)**, with an associated margin of error of **0.02 oz**. Based on this estimate and associated margin of error, which of the following is the most plausible conclusion?

- A. The mean weight of all handbags made by the company on that day is between **27.78 oz** and **27.82 oz**.
- B. The actual weights of all handbags made by the company on that day are between **27.78 oz** and **27.82 oz**.
- C. The actual weights of all handbags from the sample are between **27.78 oz** and **27.82 oz**.
- D. The mean weight of all handbags made by the company on that day is **27.8 oz**.

# Question ID 9a144a01

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Two-variable data: Models and scatterplots	<div style="width: 20%; background-color: #003366; height: 10px;"></div> <div style="width: 20%; background-color: #005599; height: 10px;"></div> <div style="width: 60%; background-color: #cccccc; height: 10px;"></div>

ID: 9a144a01

Which of the following is true about the values of  $2^x$  and

$2x + 2$  for  $x > 0$ ?

- A. For all  $x > 0$ , it is true that  $2^x < 2x + 2$ .
- B. For all  $x > 0$ , it is true that  $2^x > 2x + 2$ .
- C. There is a constant  $c$  such that if  $0 < x < c$ , then  $2^x < 2x + 2$ , but if  $x > c$ , then  $2^x > 2x + 2$ .
- D. There is a constant  $c$  such that if  $0 < x < c$ , then  $2^x > 2x + 2$ , but if  $x > c$ , then  $2^x < 2x + 2$ .

# Question ID 022e9894

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Percentages	<div style="width: 20%; background-color: #003366; height: 10px;"></div> <div style="width: 20%; background-color: #003366; height: 10px;"></div> <div style="width: 60%; background-color: #cccccc; height: 10px;"></div>

ID: 022e9894

An insurance company offers a series of three information sessions. **1,250** people attended the first information session. **72%** of the people who attended the first information session attended the second information session, and **36%** of the people who attended the first and second information sessions attended the third information session. How many people attended all three information sessions?

# Question ID 457d2f2c

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	One-variable data: Distributions and measures of center and spread	<div style="width: 60%; background-color: #0056b3; height: 10px;"></div> <div style="width: 65%; background-color: #0056b3; height: 10px;"></div> <div style="width: 70%; background-color: #0056b3; height: 10px;"></div>

ID: 457d2f2c

A data set of 27 different numbers has a mean of 33 and a median of 33. A new data set is created by adding 7 to each number in the original data set that is greater than the median and subtracting 7 from each number in the original data set that is less than the median. Which of the following measures does NOT have the same value in both the original and new data sets?

- A. Median
- B. Mean
- C. Sum of the numbers
- D. Standard deviation

# Question ID 6310adbc

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Ratios, rates, proportional relationships, and units	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div>

ID: 6310adbc

The ratio of  $t$  to  $u$  is 1 to 2, and  $t = 10$ .

What is the value of  $u$ ?

- A. 2
- B. 5
- C. 10
- D. 20

# Question ID 63573fea

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Percentages	<div style="width: 25%; background-color: #0056b3;"></div> <div style="width: 25%; background-color: #0056b3;"></div> <div style="width: 50%; background-color: #e0e0e0;"></div>

ID: 63573fea

During the first month of sales, a company sold 1,300,000 units of a certain type of smartphone. During the same month, 15% of the units sold were returned. If sales and the return rate remain the same for each of the next 5 months, about how many units of this smartphone will be returned to the company during this 6-month period?

- A. 195,000
- B. 975,000
- C. 1,170,000
- D. 6,630,000

## Question ID 191d167b

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Percentages	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div>

ID: 191d167b

Last year, **200** students enrolled in an interior design program. This year, the number of students enrolled is **147%** of last year's number. How many students are enrolled in the interior design program this year?

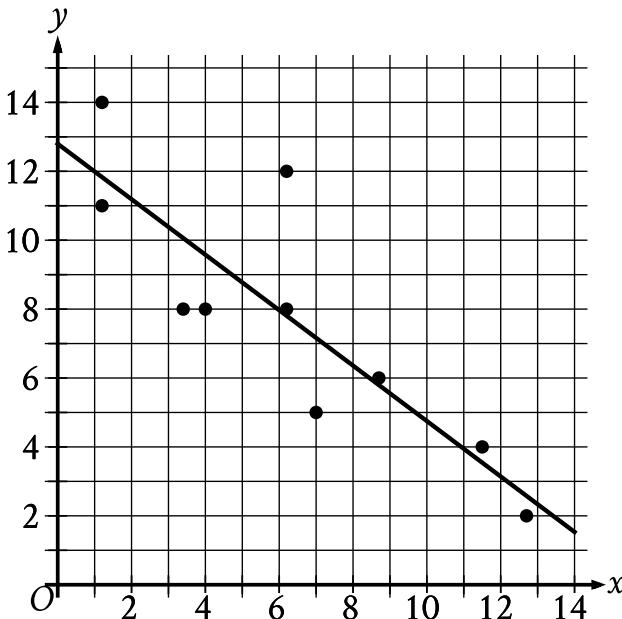
- A. **247**
- B. **294**
- C. **347**
- D. **394**

# Question ID 03a16790

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Two-variable data: Models and scatterplots	<div style="width: 25%; background-color: #003366; height: 10px;"></div> <div style="width: 25%; background-color: #005599; height: 10px;"></div> <div style="width: 50%; background-color: #CCCCCC; height: 10px;"></div>

ID: 03a16790

The scatterplot shows the relationship between two variables,  $x$  and  $y$ . A line of best fit is also shown.



Which of the following is closest to the slope of the line of best fit shown?

- A.  $-2.4$
- B.  $-0.8$
- C.  $0.8$
- D.  $2.4$

# Question ID 60caadfd

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Probability and conditional probability	<div style="width: 25%; background-color: #003366; height: 10px;"></div> <div style="width: 75%; background-color: #cccccc; height: 10px;"></div>

ID: 60caadfd

Each rock in a collection of **70** rocks was classified as either igneous, metamorphic, or sedimentary, as shown in the frequency table.

Classification	Frequency
igneous	10
metamorphic	33
sedimentary	27

If one of these rocks is selected at random, what is the probability of selecting a rock that is igneous?

- A.  $\frac{10}{27}$
- B.  $\frac{10}{33}$
- C.  $\frac{10}{60}$
- D.  $\frac{10}{70}$

## Question ID b4f5a7ca

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Evaluating statistical claims: Observational studies and experiments	<div style="width: 25%; background-color: #003366; height: 10px;"></div> <div style="width: 25%; background-color: #005599; height: 10px;"></div> <div style="width: 50%; background-color: #CCCCCC; height: 10px;"></div>

ID: b4f5a7ca

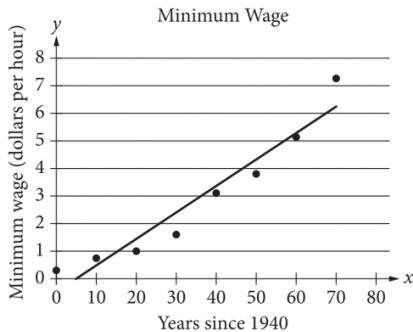
A survey was conducted using a sample of history professors selected at random from the California State Universities. The professors surveyed were asked to name the publishers of their current texts. What is the largest population to which the results of the survey can be generalized?

- A. All professors in the United States
- B. All history professors in the United States
- C. All history professors at all California State Universities
- D. All professors at all California State Universities

# Question ID d6af3572

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Two-variable data: Models and scatterplots	<div style="width: 100px; height: 10px; background-color: #0056b3;"></div> <div style="width: 150px; height: 10px; background-color: #0056b3;"></div> <div style="width: 150px; height: 10px; background-color: #0056b3;"></div>

ID: d6af3572



The scatterplot above shows the federal-mandated minimum wage every 10 years between 1940 and 2010. A line of best fit is shown, and its equation is

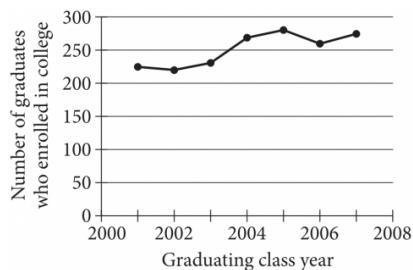
$y = 0.096x - 0.488$ . What does the line of best fit predict about the increase in the minimum wage over the 70-year period?

- A. Each year between 1940 and 2010, the average increase in minimum wage was 0.096 dollars.
- B. Each year between 1940 and 2010, the average increase in minimum wage was 0.49 dollars.
- C. Every 10 years between 1940 and 2010, the average increase in minimum wage was 0.096 dollars.
- D. Every 10 years between 1940 and 2010, the average increase in minimum wage was 0.488 dollars.

# Question ID 74dee52b

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Two-variable data: Models and scatterplots	<div style="width: 25%; background-color: #003366; height: 10px;"></div> <div style="width: 75%; background-color: #cccccc; height: 10px;"></div> <div style="width: 75%; background-color: #cccccc; height: 10px;"></div>

ID: 74dee52b



The line graph shows the number of graduates from the classes of 2001 through 2007 at a certain school who enrolled in college within 24 months of graduation. Of the following, which class had the fewest graduates who enrolled in college within 24 months of graduation?

- A. 2002
- B. 2004
- C. 2005
- D. 2007

# Question ID fea831fc

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Ratios, rates, proportional relationships, and units	<div style="width: 25%; background-color: #003366; height: 10px;"></div> <div style="width: 25%; background-color: #003366; height: 10px;"></div> <div style="width: 50%; background-color: #cccccc; height: 10px;"></div>

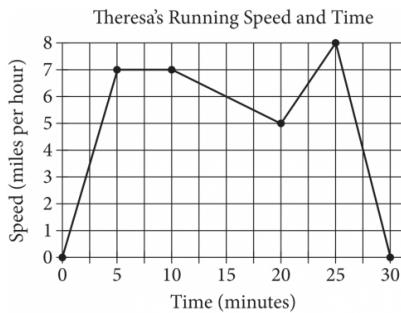
ID: fea831fc

On April 18, 1775, Paul Revere set off on his midnight ride from Charlestown to Lexington. If he had ridden straight to Lexington without stopping, he would have traveled 11 miles in 26 minutes. In such a ride, what would the average speed of his horse have been, to the nearest tenth of a mile per hour?

# Question ID 9d88a3e3

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Two-variable data: Models and scatterplots	<div style="width: 25%; background-color: #003366; height: 10px;"></div> <div style="width: 75%; background-color: #cccccc; height: 10px;"></div> <div style="width: 75%; background-color: #cccccc; height: 10px;"></div>

ID: 9d88a3e3



Theresa ran on a treadmill for thirty minutes, and her time and speed are shown on the graph above. According to the graph, which of the following statements is NOT true concerning Theresa's run?

- A. Theresa ran at a constant speed for five minutes.
- B. Theresa's speed was increasing for a longer period of time than it was decreasing.
- C. Theresa's speed decreased at a constant rate during the last five minutes.
- D. Theresa's speed reached its maximum during the last ten minutes.

# Question ID e03f3477

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Inference from sample statistics and margin of error	<div style="width: 25%; background-color: #003366; height: 10px;"></div> <div style="width: 25%; background-color: #003366; height: 10px;"></div> <div style="width: 50%; background-color: #cccccc; height: 10px;"></div>

ID: e03f3477

A sample consisting of **720** adults who own televisions was selected at random for a study. Based on the sample, it is estimated that **32%** of all adults who own televisions use their televisions to watch nature shows, with an associated margin of error of **3.41%**. Which of the following is the most plausible conclusion about all adults who own televisions?

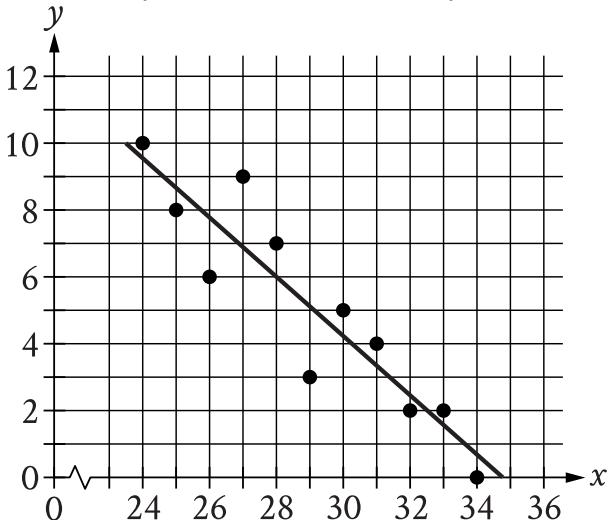
- A. More than **35.41%** of all adults who own televisions use their televisions to watch nature shows.
- B. Between **28.59%** and **35.41%** of all adults who own televisions use their televisions to watch nature shows.
- C. Since the sample included adults who own televisions and not just those who use their televisions to watch nature shows, no conclusion can be made.
- D. Since the sample did not include all the people who watch nature shows, no conclusion can be made.

# Question ID f46139df

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Two-variable data: Models and scatterplots	<div style="width: 20%; background-color: #003366; height: 10px;"></div> <div style="width: 20%; background-color: #003366; height: 10px;"></div> <div style="width: 60%; background-color: #cccccc; height: 10px;"></div>

ID: f46139df

The scatterplot shows the relationship between two variables,  $x$  and  $y$ . A line of best fit for the data is also shown.



At  $x = 25.5$ , which of the following is closest to the  $y$ -value predicted by the line of best fit?

- A. 6.2
- B. 7.3
- C. 8.2
- D. 9.1

# Question ID 07f2829b

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	One-variable data: Distributions and measures of center and spread	<div style="width: 25%; background-color: #003366; height: 10px;"></div> <div style="width: 25%; background-color: #005599; height: 10px;"></div> <div style="width: 50%; background-color: #CCCCCC; height: 10px;"></div>

ID: 07f2829b

## International Tourist

Arrivals, in millions

Country	2012	2013
France	83.0	84.7
United States	66.7	69.8
Spain	57.5	60.7
China	57.7	55.7
Italy	46.4	47.7
Turkey	35.7	37.8
Germany	30.4	31.5
United Kingdom	26.3	32.2
Russia	24.7	28.4

The table above shows the number of international tourist arrivals, rounded to the nearest tenth of a million, to the top nine tourist destinations in both 2012 and 2013. Based on the information given in the table, how much greater, in millions, was the median number of international tourist arrivals to the top nine tourist destinations in 2013 than the median number in 2012, to the nearest tenth of a million?

## Question ID e5b5fbdd

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Probability and conditional probability	<div style="width: 25%; background-color: #003366; height: 10px;"></div> <div style="width: 75%; background-color: #cccccc; height: 10px;"></div>

ID: e5b5fbdd

Of the 8 planets in our solar system, 4 are considered rocky. If a student randomly selects 1 of those 8 planets as a topic for a report, what is the probability that the selected planet will be rocky?

A.  $\frac{1}{8}$

B.  $\frac{1}{4}$

C.  $\frac{1}{2}$

D. 2

# Question ID 7ac5d686

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Two-variable data: Models and scatterplots	<div style="width: 25%; background-color: #003366; height: 10px;"></div> <div style="width: 25%; background-color: #003366; height: 10px;"></div> <div style="width: 50%; background-color: #cccccc; height: 10px;"></div>

ID: 7ac5d686

An inspector begins a day of work with a large sample of shirts that need to be checked for defects. The inspector works at a constant rate throughout the morning. What type of model is best to model the number of shirts remaining to be checked for defects at any given time throughout the morning?

- A. A linear model with a positive slope
- B. A linear model with a negative slope
- C. An exponential growth model
- D. An exponential decay model

## Question ID 181cc4d6

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Ratios, rates, proportional relationships, and units	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 50%; background-color: #e0e0e0; height: 10px;"></div>

ID: 181cc4d6

Rectangle A has length 15 and width  $w$ . Rectangle B has length 20 and the same length-to-width ratio as rectangle A. What is the width of rectangle B in terms of  $w$ ?

A.  $\frac{4}{3}w$

B.  $w + 5$

C.  $\frac{3}{4}w$

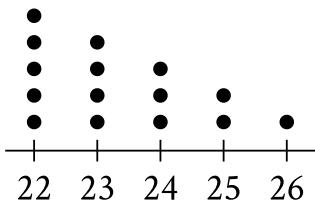
D.  $w - 5$

# Question ID 578e26ae

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	One-variable data: Distributions and measures of center and spread	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 50%; background-color: #e0e0e0; height: 10px;"></div>

ID: 578e26ae

Data Set A



Data set A has 15 values and is represented by the dot plot shown. Data set B is created by adding 46 to each of the values in data set A. Which of the following correctly compares the medians and the ranges of data sets A and B?

- A. The median of data set B is greater than the median of data set A, and the range of data set B is equal to the range of data set A.
- B. The median of data set B is greater than the median of data set A, and the range of data set B is greater than the range of data set A.
- C. The median of data set B is equal to the median of data set A, and the range of data set B is greater than the range of data set A.
- D. The median of data set B is equal to the median of data set A, and the range of data set B is equal to the range of data set A.

# Question ID e9841407

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Ratios, rates, proportional relationships, and units	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div>

ID: e9841407

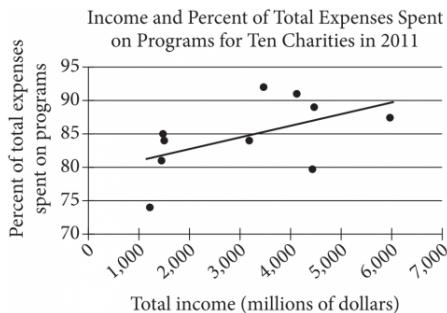
Shaquan has 7 red cards and 28 blue cards. What is the ratio of red cards to blue cards that Shaquan has?

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

# Question ID 7fd284ac

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Two-variable data: Models and scatterplots	<div style="width: 25%; background-color: #003366; height: 10px;"></div> <div style="width: 25%; background-color: #005599; height: 10px;"></div> <div style="width: 50%; background-color: #CCCCCC; height: 10px;"></div>

ID: 7fd284ac



The scatterplot above shows data for ten charities along with the line of best fit. For the charity with the greatest percent of total expenses spent on programs, which of the following is closest to the difference of the actual percent and the percent predicted by the line of best fit?

- A. 10%
- B. 7%
- C. 4%
- D. 1%

## Question ID e7d9649f

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Inference from sample statistics and margin of error	<div style="width: 25%; background-color: #002B36; height: 10px;"></div> <div style="width: 75%; background-color: #D9D9D9; height: 10px;"></div> <div style="width: 75%; background-color: #D9D9D9; height: 10px;"></div>

ID: e7d9649f

A random sample of 50 people from a town with a population of 14,878 were asked to name their favorite flavor of ice cream. If 7 people in the sample named chocolate as their favorite ice-cream flavor, about how many people in the town would be expected to name chocolate?

- A. 350
- B. 2,100
- C. 7,500
- D. 10,500

# Question ID 2df8f293

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Probability and conditional probability	<div style="width: 25%; background-color: #003366; height: 10px;"></div> <div style="width: 25%; background-color: #003366; height: 10px;"></div> <div style="width: 50%; background-color: #cccccc; height: 10px;"></div>

ID: 2df8f293

Each vertex of a **14**-sided polygon is labeled with one of the **14** letters **A** through **N**, with a different letter at each vertex. If one vertex is selected at random, what is the probability that the letter **D** will be at the selected vertex? (Express your answer as a decimal or fraction, not as a percent.)

# Question ID ec7b0eb8

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Probability and conditional probability	<div style="width: 25%; background-color: #003366; height: 10px;"></div> <div style="width: 75%; background-color: #cccccc; height: 10px;"></div>

ID: ec7b0eb8

Texting behavior	Talks on cell phone daily	Does not talk on cell phone daily	Total
Light	110	146	256
Medium	139	164	303
Heavy	166	74	240
<b>Total</b>	<b>415</b>	<b>384</b>	<b>799</b>

In a study of cell phone use, 799 randomly selected US teens were asked how often they talked on a cell phone and about their texting behavior. The data are summarized in the table above. If one of the 799 teens surveyed is selected at random, what is the probability that the teen talks on a cell phone daily?

A.  $\frac{1}{799}$

B.  $\frac{415}{799}$

C.  $\frac{384}{415}$

D.  $\frac{384}{799}$

## Question ID 3638f413

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Ratios, rates, proportional relationships, and units	<div style="width: 75%; background-color: #0056b3; height: 10px;"></div>

ID: 3638f413

Jeremy deposited  $x$  dollars in his investment account on January 1, 2001. The amount of money in the account doubled each year until Jeremy had 480 dollars in his investment account on January 1, 2005. What is the value of  $x$ ?

# Question ID 1142af44

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	One-variable data: Distributions and measures of center and spread	<div style="width: 60%; background-color: #0056b3; height: 10px;"></div> <div style="width: 65%; background-color: #0056b3; height: 10px;"></div> <div style="width: 70%; background-color: #0056b3; height: 10px;"></div>

ID: 1142af44

Value	Frequency
1	$a$
2	$2a$
3	$3a$
4	$2a$
5	$a$

The frequency distribution above summarizes a set of data, where  $a$  is a positive integer. How much greater is the mean of the set of data than the median?

- A. 0
- B. 1
- C. 2
- D. 3

# Question ID 445dd032

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Ratios, rates, proportional relationships, and units	<div style="width: 25%; background-color: #003366; height: 10px;"></div> <div style="width: 25%; background-color: #003366; height: 10px;"></div> <div style="width: 50%; background-color: #cccccc; height: 10px;"></div>

ID: 445dd032

Tanya earns \$13.50 per hour at her part-time job. When she works  $z$  hours, she earns  $13.50z$  dollars. Which of the following expressions gives the amount, in dollars, Tanya will earn if she works  $3z$  hours?

- A.  $3(13.50z)$
- B.  $3 + 13.50z$
- C.  $3z + 13.50z$
- D.  $13.50(z + 3)$

## Question ID 1e8ccffd

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	One-variable data: Distributions and measures of center and spread	<div style="width: 60%; background-color: #0056b3; height: 10px;"></div> <div style="width: 65%; background-color: #0056b3; height: 10px;"></div> <div style="width: 70%; background-color: #0056b3; height: 10px;"></div>

ID: 1e8ccffd

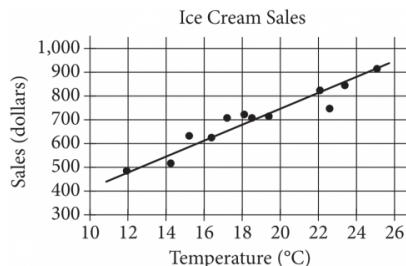
The mean score of 8 players in a basketball game was 14.5 points. If the highest individual score is removed, the mean score of the remaining 7 players becomes 12 points. What was the highest score?

- A. 20
- B. 24
- C. 32
- D. 36

# Question ID 1e1027a7

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Two-variable data: Models and scatterplots	<div style="width: 100px; height: 10px; background-color: #0056b3;"></div> <div style="width: 100px; height: 10px; background-color: #0056b3;"></div> <div style="width: 100px; height: 10px; background-color: #0056b3;"></div>

ID: 1e1027a7



The scatterplot above shows a company's ice cream sales  $d$ , in dollars, and the high temperature  $t$ , in degrees Celsius ( $^{\circ}\text{C}$ ), on 12 different days. A line of best fit for the data is also shown. Which of the following could be an equation of the line of best fit?

- A.  $d = 0.03t + 402$
- B.  $d = 10t + 402$
- C.  $d = 33t + 300$
- D.  $d = 33t + 84$

## Question ID ba62b0b0

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Ratios, rates, proportional relationships, and units	<div style="width: 25%; background-color: #002B36; height: 10px;"></div> <div style="width: 75%; background-color: #D9D9D9; height: 10px;"></div> <div style="width: 75%; background-color: #D9D9D9; height: 10px;"></div>

ID: ba62b0b0

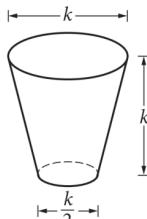
A kangaroo has a mass of **28** kilograms. What is the kangaroo's mass, in grams? (**1 kilogram = 1,000 grams**)

- A. **28,000**
- B. **1,028**
- C. **972**
- D. **784**

# Question ID 939c46d1

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Ratios, rates, proportional relationships, and units	<div style="width: 20%; background-color: #003366; height: 10px;"></div> <div style="width: 20%; background-color: #003366; height: 10px;"></div> <div style="width: 60%; background-color: #cccccc; height: 10px;"></div>

ID: 939c46d1



$$\text{Volume} = \frac{7\pi k^3}{48}$$

The glass pictured above can hold a maximum volume of 473 cubic centimeters, which is approximately 16 fluid ounces. Jenny has a pitcher that contains 1 gallon of water. How many times could Jenny completely fill the glass with 1 gallon of water?

(1 gallon = 128 fluid ounces)

- A. 16
- B. 8
- C. 4
- D. 3

# Question ID 29c177e6

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Percentages	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div>

ID: 29c177e6

What is 10% of 470?

- A. 37
- B. 47
- C. 423
- D. 460

# Question ID fc46af57

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Inference from sample statistics and margin of error	<div style="width: 25%; background-color: #003366; height: 10px;"></div> <div style="width: 25%; background-color: #003366; height: 10px;"></div> <div style="width: 50%; background-color: #cccccc; height: 10px;"></div>

ID: fc46af57

A bag containing 10,000 beads of assorted colors is purchased from a craft store. To estimate the percent of red beads in the bag, a sample of beads is selected at random. The percent of red beads in the bag was estimated to be 15%, with an associated margin of error of 2%. If  $r$  is the actual number of red beads in the bag, which of the following is most plausible?

- A.  $r > 1,700$
- B.  $1,300 < r < 1,700$
- C.  $200 < r < 1,500$
- D.  $r < 1,300$

## Question ID 7b65bb28

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	One-variable data: Distributions and measures of center and spread	<div style="width: 25%; background-color: #003366; height: 10px;"></div> <div style="width: 25%; background-color: #005599; height: 10px;"></div> <div style="width: 50%; background-color: #CCCCCC; height: 10px;"></div>

ID: 7b65bb28

Station 1	Station 2	Station 3	Station 4	Station 5
\$3.699	\$3.609	\$3.729	\$3.679	\$3.729

In the table above, Melissa recorded the price of one gallon of regular gas from five different local gas stations on the same day. What is the median of the gas prices Melissa recorded?

- A. \$3.679
- B. \$3.689
- C. \$3.699
- D. \$3.729

## Question ID 8a714fa1

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Percentages	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 50%; background-color: #e0e0e0; height: 10px;"></div>

ID: 8a714fa1

Which of the following represents the result of increasing the quantity  $x$  by 9%, where  $x > 0$ ?

- A.  $1.09x$
- B.  $0.09x$
- C.  $x + 9$
- D.  $x + 0.09$

## Question ID 7cd1c6db

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Ratios, rates, proportional relationships, and units	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div>

ID: 7cd1c6db

An object travels at a constant speed of **12** centimeters per second. At this speed, what is the time, in seconds, that it would take for the object to travel **108** centimeters?

- A. **9**
- B. **96**
- C. **120**
- D. **972**

# Question ID 8637294f

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Ratios, rates, proportional relationships, and units	<div style="width: 75%; background-color: #0056b3; height: 10px;"></div>

ID: 8637294f

If  $\frac{4a}{b} = 6.7$  and  $\frac{a}{bn} = 26.8$ , what is the value of  $n$ ?

## Question ID 8e2e424e

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Percentages	<div style="width: 20%; background-color: #0056b3; height: 10px;"></div> <div style="width: 20%; background-color: #0056b3; height: 10px;"></div> <div style="width: 60%; background-color: #e0e0e0; height: 10px;"></div>

ID: 8e2e424e

The number  $k$  is 36% greater than 50. If  $k$  is the product of 50 and  $r$ , what is the value of  $r$ ?

- A. 36
- B. 3.6
- C. 1.36
- D. 0.36

## Question ID 24ad9dcb

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Ratios, rates, proportional relationships, and units	<div style="width: 25%; background-color: #002B36; height: 10px;"></div> <div style="width: 75%; background-color: #D9D9D9; height: 10px;"></div> <div style="width: 75%; background-color: #D9D9D9; height: 10px;"></div>

ID: 24ad9dcb

The weight of an object on Venus is approximately  $\frac{9}{10}$  of its weight on Earth. The weight of an object on Jupiter is approximately  $\frac{23}{10}$  of its weight on Earth. If an object weighs 100 pounds on Earth, approximately how many more pounds does it weigh on Jupiter than it weighs on Venus?

- A. 90
- B. 111
- C. 140
- D. 230

# Question ID be00d896

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	One-variable data: Distributions and measures of center and spread	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 50%; background-color: #e0e0e0; height: 10px;"></div>

ID: be00d896

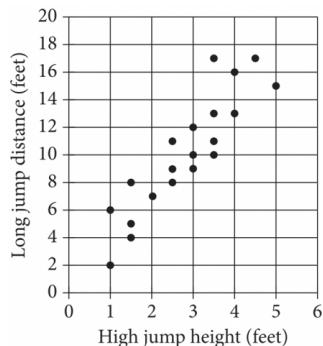
For which of the following data sets is the mean greater than the median?

- A. 5, 5, 5, 5, 5, 5, 5, 5, 5
- B. 0, 10, 20, 30, 40, 50, 60, 70, 80
- C. 2, 4, 8, 16, 32, 64, 128, 256, 512
- D. 7, 107, 107, 207, 207, 207, 307, 307, 307

# Question ID 3d985614

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Two-variable data: Models and scatterplots	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 50%; background-color: #e0e0e0; height: 10px;"></div>

ID: 3d985614



Each dot in the scatterplot above represents the height  $x$ , in feet, in the high jump, and the distance  $y$ , in feet, in the long jump, made by each student in a group of twenty students. The graph of which of the following equations is a line that most closely fits the data?

- A.  $y = 0.82x + 3.30$
- B.  $y = 0.82x - 0.82$
- C.  $y = 3.30x + 0.82$
- D.  $y = 3.30x - 3.30$

# Question ID 308084c5

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Inference from sample statistics and margin of error	<div style="width: 75%; background-color: #005a9f; height: 10px;"></div>

ID: 308084c5

Sample	Percent in favor	Margin of error
A	52%	4.2%
B	48%	1.6%

The results of two random samples of votes for a proposition are shown above. The samples were selected from the same population, and the margins of error were calculated using the same method. Which of the following is the most appropriate reason that the margin of error for sample A is greater than the margin of error for sample B?

- A. Sample A had a smaller number of votes that could not be recorded.
- B. Sample A had a higher percent of favorable responses.
- C. Sample A had a larger sample size.
- D. Sample A had a smaller sample size.

# Question ID 7d721177

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Ratios, rates, proportional relationships, and units	<div style="width: 75%; background-color: #0056b3; height: 10px;"></div>

ID: 7d721177

The density of a certain type of wood is **353** kilograms per cubic meter. A sample of this type of wood is in the shape of a cube and has a mass of **345** kilograms. To the nearest hundredth of a meter, what is the length of one edge of this sample?

- A. 0.98
- B. 0.99
- C. 1.01
- D. 1.02

# Question ID 1d945139

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Ratios, rates, proportional relationships, and units	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 50%; background-color: #e0e0e0; height: 10px;"></div>

ID: 1d945139

The total mass, in kilograms, of  $r$  identical objects is  $t$ . Which expression represents the total mass, in kilograms, of  $146r$  of these objects?

- A.  $146 - t$
- B.  $146 + t$
- C.  $\frac{t}{146}$
- D.  $146t$

# Question ID 4b09f783

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	One-variable data: Distributions and measures of center and spread	<div style="width: 25%; background-color: #003366; height: 10px;"></div> <div style="width: 75%; background-color: #cccccc; height: 10px;"></div>

ID: 4b09f783

A list of **10** data values is shown.

**6, 8, 16, 4, 17, 26, 8, 5, 5, 5**

What is the mean of these data?

## Question ID 67c0200a

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Percentages	<div style="width: 75%; background-color: #0056b3; height: 10px;"></div>

ID: 67c0200a

The number  $a$  is 70% less than the positive number  $b$ . The number  $c$  is 80% greater than  $a$ . The number  $c$  is how many times  $b$ ?

## Question ID f04d40b2

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Inference from sample statistics and margin of error	<div style="width: 25%; background-color: #003366; height: 10px;"></div> <div style="width: 25%; background-color: #003366; height: 10px;"></div> <div style="width: 50%; background-color: #cccccc; height: 10px;"></div>

ID: f04d40b2

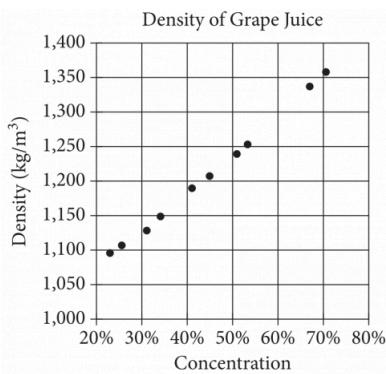
From a population of **50,000** people, **1,000** were chosen at random and surveyed about a proposed piece of legislation. Based on the survey, it is estimated that **35%** of people in the population support the legislation, with an associated margin of error of **3%**. Based on these results, which of the following is a plausible value for the total number of people in the population who support the proposed legislation?

- A. 350
- B. 650
- C. 16,750
- D. 31,750

# Question ID c9dd92b1

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Two-variable data: Models and scatterplots	<div style="width: 25%; background-color: #003366; height: 10px;"></div> <div style="width: 75%; background-color: #cccccc; height: 10px;"></div>

ID: c9dd92b1



The densities of different concentrations of grape juice are shown in the scatterplot above. According to the trend shown by the data, which of the following is closest to the predicted density, in kilograms per cubic meter ( $\text{kg}/\text{m}^3$ ), for grape juice with a concentration of 60%?

- A. 1,200
- B. 1,250
- C. 1,300
- D. 1,350

# Question ID 9bf4c545

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Evaluating statistical claims: Observational studies and experiments	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div>

ID: 9bf4c545

The members of a city council wanted to assess the opinions of all city residents about converting an open field into a dog park. The council surveyed a sample of 500 city residents who own dogs. The survey showed that the majority of those sampled were in favor of the dog park. Which of the following is true about the city council's survey?

- A. It shows that the majority of city residents are in favor of the dog park.
- B. The survey sample should have included more residents who are dog owners.
- C. The survey sample should have consisted entirely of residents who do not own dogs.
- D. The survey sample is biased because it is not representative of all city residents.

# Question ID fa7a0164

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	One-variable data: Distributions and measures of center and spread	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div>

ID: fa7a0164

The table below shows the high and low temperatures in Houston, Texas, during a five-day period.

Temperatures in Houston, Texas  
(degrees Fahrenheit)

	Monday	Tuesday	Wednesday	Thursday	Friday
High temperature	73	56	62	75	81
Low temperature	49	37	41	54	63

What was the mean low temperature, in degrees Fahrenheit, during the five-day period?

- A. 48.8
- B. 49
- C. 59
- D. 59.1

# Question ID 708590d7

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	One-variable data: Distributions and measures of center and spread	<div style="width: 25%; background-color: #002B36; height: 10px;"></div> <div style="width: 75%; background-color: #D9D9D9; height: 10px;"></div> <div style="width: 75%; background-color: #D9D9D9; height: 10px;"></div>

ID: 708590d7

Data set A: 1, 2, 3, 4, 5, 6, 7

Data set B: 1, 1, 2, 2, 3, 3, 4

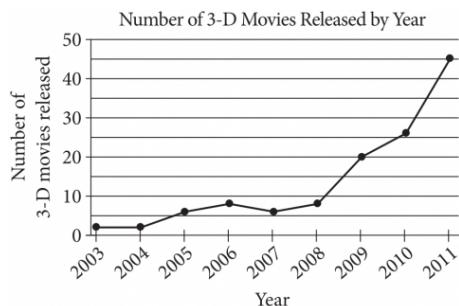
Which of the following statements correctly compares the means of data set A and data set B?

- A. The mean of each data set is 2.
- B. The mean of each data set is 4.
- C. The mean of data set A is less than the mean of data set B.
- D. The mean of data set A is greater than the mean of data set B.

# Question ID a6b2fcce

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Two-variable data: Models and scatterplots	<div style="width: 25%; background-color: #002060; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div>

ID: a6b2fcce



According to the line graph above, between which two consecutive years was there the greatest change in the number of 3-D movies released?

- A. 2003–2004
- B. 2008–2009
- C. 2009–2010
- D. 2010–2011

## Question ID 06a152cd

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Ratios, rates, proportional relationships, and units	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div>

ID: 06a152cd

To make a bakery's signature chocolate muffins, a baker needs 2.5 ounces of chocolate for each muffin. How many pounds of chocolate are needed to make 48 signature chocolate muffins? (1 pound = 16 ounces)

- A. 7.5
- B. 10
- C. 50.5
- D. 120

# Question ID 7d68096f

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Evaluating statistical claims: Observational studies and experiments	<div style="width: 75%; background-color: #005a99; height: 10px;"></div>

ID: 7d68096f

A trivia tournament organizer wanted to study the relationship between the number of points a team scores in a trivia round and the number of hours that a team practices each week. For the study, the organizer selected **55** teams at random from all trivia teams in a certain tournament. The table displays the information for the **40** teams in the sample that practiced for at least **3** hours per week.

Hours practiced	Number of points per round		
	6 to 13 points	14 or more points	Total
<b>3 to 5 hours</b>	<b>6</b>	<b>4</b>	<b>10</b>
<b>More than 5 hours</b>	<b>4</b>	<b>26</b>	<b>30</b>
<b>Total</b>	<b>10</b>	<b>30</b>	<b>40</b>

Which of the following is the largest population to which the results of the study can be generalized?

- A. All trivia teams in the tournament that scored **14** or more points in the round
- B. The **55** trivia teams in the sample
- C. The **40** trivia teams in the sample that practiced for at least **3** hours per week
- D. All trivia teams in the tournament

# Question ID 8917ce38

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Ratios, rates, proportional relationships, and units	<div style="width: 25%; background-color: #003366; height: 10px;"></div> <div style="width: 25%; background-color: #003366; height: 10px;"></div> <div style="width: 50%; background-color: #cccccc; height: 10px;"></div>

ID: 8917ce38

Which of the following speeds is equivalent to 90 kilometers per hour? (1 kilometer = 1,000 meters)

- A. 25 meters per second
- B. 32 meters per second
- C. 250 meters per second
- D. 324 meters per second

## Question ID f4b3672a

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Inference from sample statistics and margin of error	<div style="width: 25%; background-color: #002B36; height: 10px;"></div> <div style="width: 75%; background-color: #D9D9D9; height: 10px;"></div> <div style="width: 75%; background-color: #D9D9D9; height: 10px;"></div>

ID: f4b3672a

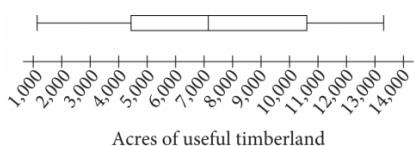
A certain forest is 253 acres. To estimate the number of trees in the forest, a ranger randomly selects 5 different 1-acre parcels in the forest and determines the number of trees in each parcel. The numbers of trees in the sample acres are 51, 59, 45, 52, and 73. Based on the mean of the sample, which of the following ranges contains the best estimate for the number of trees in the entire forest?

- A. 11,000 to 12,000
- B. 12,500 to 13,500
- C. 13,500 to 14,500
- D. 18,000 to 19,000

# Question ID 374b18f9

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	One-variable data: Distributions and measures of center and spread	<div style="width: 25%; background-color: #002B36; height: 10px;"></div> <div style="width: 75%; background-color: #D9D9D9; height: 10px;"></div> <div style="width: 10%; background-color: #D9D9D9; height: 10px;"></div>

ID: 374b18f9



The number of acres of useful timberland in 13 counties in California is summarized in the box plot above. Which of the following is closest to the median number of acres?

- A. 4,399
- B. 7,067
- C. 8,831
- D. 10,595

## Question ID 585de39a

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Probability and conditional probability	<div style="width: 75%; background-color: #0056b3; height: 10px;"></div>

ID: 585de39a

On May 10, 2015, there were 83 million Internet subscribers in Nigeria. The major Internet providers were MTN, Globacom, Airtel, Etisalat, and Visafone. By September 30, 2015, the number of Internet subscribers in Nigeria had increased to 97 million. If an Internet subscriber in Nigeria on September 30, 2015, is selected at random, the probability that the person selected was an MTN subscriber is 0.43. There were  $p$  million MTN subscribers in Nigeria on September 30, 2015. To the nearest integer, what is the value of  $p$  ?

# Question ID 4ff597db

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	One-variable data: Distributions and measures of center and spread	<div style="width: 75%; background-color: #0056b3; height: 10px;"></div>

ID: 4ff597db

The mean amount of time that the 20 employees of a construction company have worked for the company is 6.7 years. After one of the employees leaves the company, the mean amount of time that the remaining employees have worked for the company is reduced to 6.25 years. How many years did the employee who left the company work for the company?

- A. 0.45
- B. 2.30
- C. 9.00
- D. 15.25

# Question ID ec787383

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Ratios, rates, proportional relationships, and units	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 50%; background-color: #e0e0e0; height: 10px;"></div>

ID: ec787383

A distance of **61** furlongs is equivalent to how many feet? (**1 furlong = 220 yards and 1 yard = 3 feet**)

# Question ID 7e6c745f

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Ratios, rates, proportional relationships, and units	<div style="width: 25%; background-color: #0056b3;"></div> <div style="width: 25%; background-color: #0056b3;"></div> <div style="width: 50%; background-color: #cccccc;"></div>

ID: 7e6c745f

Food	Protein	Cost
1 large egg	6 grams	\$0.36
1 cup of milk	8 grams	\$0.24

The table above shows the amount of protein in two foods and the cost of each food.

Based on the table, what is the ratio of the cost per gram of protein in a large egg to the cost per gram of protein in a cup of milk?

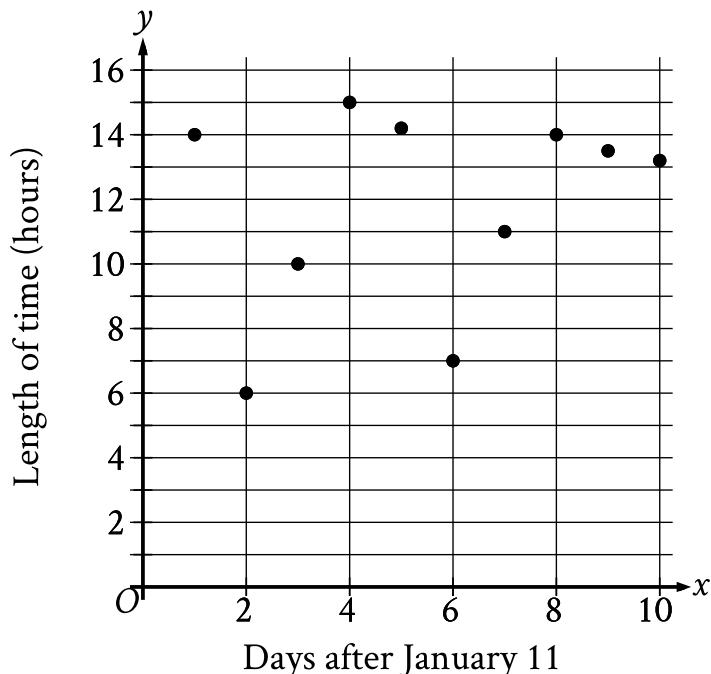
- A. 1 : 2
- B. 2 : 3
- C. 3 : 4
- D. 2 : 1

# Question ID 7b52985c

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Two-variable data: Models and scatterplots	<div style="width: 100px; height: 10px; background-color: #0056b3;"></div> <div style="width: 100px; height: 10px; background-color: #0056b3;"></div> <div style="width: 100px; height: 10px; background-color: #0056b3;"></div>

ID: 7b52985c

The scatterplot shows the relationship between the length of time  $y$ , in hours, a certain bird spent in flight and the number of days after January 11,  $x$ .



What is the average rate of change, in hours per day, of the length of time the bird spent in flight on January 13 to the length of time the bird spent in flight on January 15?

## Question ID 7ce2830a

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Evaluating statistical claims: Observational studies and experiments	<div style="width: 75%; background-color: #005a9f; height: 10px;"></div>

ID: 7ce2830a

A psychologist designed and conducted a study to determine whether playing a certain educational game increases middle school students' accuracy in adding fractions. For the study, the psychologist chose a random sample of 35 students from all of the students at one of the middle schools in a large city. The psychologist found that students who played the game showed significant improvement in accuracy when adding fractions. What is the largest group to which the results of the study can be generalized?

- A. The 35 students in the sample
- B. All students at the school
- C. All middle school students in the city
- D. All students in the city

## Question ID 12dbe3de

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Probability and conditional probability	<div style="width: 25%; background-color: #003366; height: 10px;"></div> <div style="width: 75%; background-color: #cccccc; height: 10px;"></div>

ID: 12dbe3de

A store received a shipment of 1,000 MP3 players, 4 of which were defective. If an MP3 player is randomly selected from this shipment, what is the probability that it is defective?

- A. 0.004
- B. 0.04
- C. 0.4
- D. 4

# Question ID 642519d7

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Evaluating statistical claims: Observational studies and experiments	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 50%; background-color: #e0e0e0; height: 10px;"></div>

ID: 642519d7

A polling agency recently surveyed 1,000 adults who were selected at random from a large city and asked each of the adults, "Are you satisfied with the quality of air in the city?" Of those surveyed, 78 percent responded that they were satisfied with the quality of air in the city. Based on the results of the survey, which of the following statements must be true?

1. Of all adults in the city, 78 percent are satisfied with the quality of air in the city.
  2. If another 1,000 adults selected at random from the city were surveyed, 78 percent of them would report they are satisfied with the quality of air in the city.
  3. If 1,000 adults selected at random from a different city were surveyed, 78 percent of them would report they are satisfied with the quality of air in the city.
- A. None
- B. II only
- C. I and II only
- D. I and III only

# Question ID 0108ac2d

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Inference from sample statistics and margin of error	<div style="width: 25%; background-color: #003366; height: 10px;"></div> <div style="width: 75%; background-color: #cccccc; height: 10px;"></div>

ID: 0108ac2d

At a large high school, 300 students were selected at random and were asked in a survey about a menu change in the school cafeteria. All 300 students completed the survey. It was estimated that 38% of the students were in support of a menu change, with a margin of error of 5.5%. Which of the following is the best interpretation of the survey results?

- A. The percent of the students at the school who support a menu change is 38%.
- B. The percent of the students at the school who support a menu change is greater than 38%.
- C. Plausible values of the percent of the students at the school who support a menu change are between 32.5% and 43.5%.
- D. Plausible values of the number of the students at the school who support a menu change are between 295 and 305.

# Question ID 28c6bd8c

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Percentages	<div style="width: 25%; background-color: #0056b3;"></div> <div style="width: 75%; background-color: #e0e0e0;"></div> <div style="width: 75%; background-color: #e0e0e0;"></div>

ID: 28c6bd8c

Where Do People Get Most of Their Medical Information?

Source	Percent of those surveyed
Doctor	63%
Internet	13%
Magazines/brochures	9%
Pharmacy	6%
Television	2%
Other/none of the above	7%

The table above shows a summary of 1,200 responses to a survey question. Based on the table, how many of those surveyed get most of their medical information from either a doctor or the Internet?

- A. 865
- B. 887
- C. 912
- D. 926

# Question ID 912cd125

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Probability and conditional probability	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 50%; background-color: #e0e0e0; height: 10px;"></div>

ID: 912cd125

For a science project, Anka recorded whether it rained each weekday and weekend day for 12 weeks. Her results are summarized in the table below.

Weekday and Weekend Day Rain for 12 Weeks

	Rain	No rain	Total
Number of weekdays	12	48	60
Number of weekend days	8	16	24
Total	20	64	84

If one of the days on which there was no rain is selected at random, what is the probability the day was a weekend day?

A.  $\frac{4}{21}$

B.  $\frac{1}{4}$

C.  $\frac{2}{3}$

D.  $\frac{3}{4}$

## Question ID 3a6ed720

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Percentages	<div style="width: 20%; background-color: #0056b3; height: 10px;"></div> <div style="width: 30%; background-color: #e0e0e0; height: 10px;"></div> <div style="width: 50%; background-color: #e0e0e0; height: 10px;"></div>

ID: 3a6ed720

Of 900,000 beads, 828,000 are silver. What percentage of the beads are silver?

- A. 8%
- B. 36%
- C. 72%
- D. 92%

# Question ID 6a715bed

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Probability and conditional probability	<div style="width: 75%; background-color: #0056b3; height: 10px;"></div>

ID: 6a715bed

The table summarizes the distribution of age and assigned group for **90** participants in a study.

	0–9 years	10–19 years	20+ years	Total
Group A	7	14	9	30
Group B	6	4	20	30
Group C	17	12	1	30
Total	30	30	30	90

One of these participants will be selected at random. What is the probability of selecting a participant from group A, given that the participant is at least **10** years of age? (Express your answer as a decimal or fraction, not as a percent.)

# Question ID 8cbf1415

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Percentages	<div style="width: 20%; background-color: #0056b3; height: 10px;"></div> <div style="width: 20%; background-color: #0056b3; height: 10px;"></div> <div style="width: 60%; background-color: #e0e0e0; height: 10px;"></div>

ID: 8cbf1415

In a group, **40%** of the items are red. Of all the red items in the group, **30%** also have stripes. What percentage of the items in the group are red with stripes?

- A. **10%**
- B. **12%**
- C. **70%**
- D. **75%**

# Question ID c54b92a2

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	One-variable data: Distributions and measures of center and spread	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div>

ID: c54b92a2

A study was conducted on the production rates for a company that produces tractor wheels. The table below shows the number of wheels made during 11 consecutive one-hour production periods.

One-hour period	Number of wheels made
A	24
B	24
C	21
D	21
E	21
F	19
G	24
H	24
I	19
J	22
K	23

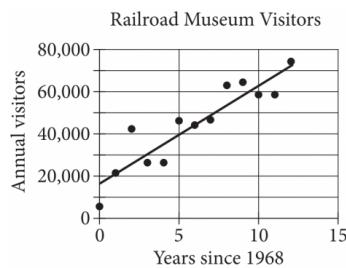
What is the range of the number of wheels made for the 11 one-hour periods?

- A. 5.5
- B. 5.0
- C. 4.5
- D. 4.0

# Question ID 3c5b19ef

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Two-variable data: Models and scatterplots	<div style="width: 25%; background-color: #003366; height: 10px;"></div> <div style="width: 25%; background-color: #003366; height: 10px;"></div> <div style="width: 50%; background-color: #cccccc; height: 10px;"></div>

ID: 3c5b19ef



The scatterplot above shows the number of visitors to a railroad museum in Pennsylvania each year from 1968 to 1980, where  $t$  is the number of years since 1968 and  $n$  is the number of visitors. A line of best fit is also shown. Which of the following could be an equation of the line of best fit shown?

- A.  $n = 16,090 + 4,680t$
- B.  $n = 4,690 + 16,090t$
- C.  $n = 16,090 + 9,060t$
- D.  $n = 9,060 + 16,090t$

# Question ID 96a45430

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Percentages	<div style="width: 20%; background-color: #0056b3; height: 10px;"></div> <div style="width: 20%; background-color: #0056b3; height: 10px;"></div> <div style="width: 60%; background-color: #e0e0e0; height: 10px;"></div>

ID: 96a45430

A number  $n$  is increased 6%. If the result is 318, what is the value of  $n$ ?

- A. 199
- B. 299
- C. 300
- D. 337

# Question ID 82dfb646

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Evaluating statistical claims: Observational studies and experiments	<div style="width: 25%; background-color: #002B36; height: 10px;"></div> <div style="width: 75%; background-color: #D9D9D9; height: 10px;"></div> <div style="width: 75%; background-color: #D9D9D9; height: 10px;"></div>

ID: 82dfb646

A market researcher selected 200 people at random from a group of people who indicated that they liked a certain book. The 200 people were shown a movie based on the book and then asked whether they liked or disliked the movie. Of those surveyed, 95% said they disliked the movie. Which of the following inferences can appropriately be drawn from this survey result?

- A. At least 95% of people who go see movies will dislike this movie.
- B. At least 95% of people who read books will dislike this movie.
- C. Most people who dislike this book will like this movie.
- D. Most people who like this book will dislike this movie.

## Question ID 5c3c2e3c

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	One-variable data: Distributions and measures of center and spread	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 50%; background-color: #e0e0e0; height: 10px;"></div>

ID: 5c3c2e3c

The weights, in pounds, for 15 horses in a stable were reported, and the mean, median, range, and standard deviation for the data were found. The horse with the lowest reported weight was found to actually weigh 10 pounds less than its reported weight. What value remains unchanged if the four values are reported using the corrected weight?

- A. Mean
- B. Median
- C. Range
- D. Standard deviation

## Question ID 30db8f77

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Probability and conditional probability	<div style="width: 20%; background-color: #003366; height: 10px;"></div> <div style="width: 20%; background-color: #003366; height: 10px;"></div> <div style="width: 60%; background-color: #cccccc; height: 10px;"></div>

ID: 30db8f77

At a conference, there are a total of **275** attendees. Each attendee is assigned to either group A, group B, or group C. If one of these attendees is selected at random, the probability of selecting an attendee who is assigned to group A is **0.44** and the probability of selecting an attendee who is assigned to group B is **0.24**. How many attendees are assigned to group C?

# Question ID 3ac09984

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Ratios, rates, proportional relationships, and units	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div>

ID: 3ac09984

Marta has 7,500 pesos she will convert to US dollars using a currency exchange service. At this time, the currency exchange rate is 1 peso = 0.075 US dollars. The exchange service will charge Marta a 2% fee on the converted US dollar amount. How many US dollars will Marta receive from the currency exchange after the 2% fee is applied?

- A. \$551.25
- B. \$562.50
- C. \$5,625.00
- D. \$98,000.00

# Question ID 66f03086

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	One-variable data: Distributions and measures of center and spread	<div style="width: 25%; background-color: #002B36; height: 10px;"></div> <div style="width: 75%; background-color: #D9D9D9; height: 10px;"></div> <div style="width: 75%; background-color: #D9D9D9; height: 10px;"></div>

ID: 66f03086

71, 72, 73, 76, 77, 79, 83, 87, 93

What is the median of the data shown?

- A. 71
- B. 77
- C. 78
- D. 79

# Question ID 61f61789

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Ratios, rates, proportional relationships, and units	<div style="width: 30%; background-color: #0056b3; height: 10px;"></div> <div style="width: 30%; background-color: #0056b3; height: 10px;"></div> <div style="width: 30%; background-color: #0056b3; height: 10px;"></div>

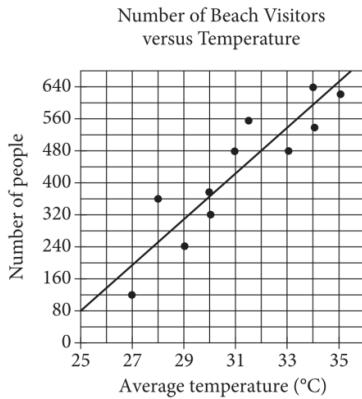
ID: 61f61789

To study the moisture content in a group of trees, samples from the trunk of each tree were taken from **25** trees and cut in the shape of a cube. The length of the edge of one of these cubes is **2.00** centimeters. If this cube has a mass of **2.56** grams, what is the density of this cube, in grams per cubic centimeter?

# Question ID d0430601

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Two-variable data: Models and scatterplots	<div style="width: 100px; height: 10px; background-color: #0056b3;"></div> <div style="width: 100px; height: 10px; background-color: #0056b3;"></div> <div style="width: 100px; height: 10px; background-color: #0056b3;"></div>

ID: d0430601



Each dot in the scatterplot above represents the temperature and the number of people who visited a beach in Lagos, Nigeria, on one of eleven different days. The line of best fit for the data is also shown. The line of best fit for the data has a slope of approximately 57. According to this estimate, how many additional people per day are predicted to visit the beach for each 5°C increase in average temperature?

# Question ID 9110c120

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	One-variable data: Distributions and measures of center and spread	<div style="width: 25%; background-color: #003366; height: 10px;"></div> <div style="width: 25%; background-color: #005599; height: 10px;"></div> <div style="width: 50%; background-color: #cccccc; height: 10px;"></div>

ID: 9110c120

Data set A: 5, 5, 5, 5, 5, 5, 5, 5, 5, 5

Data set B: 5, 5, 5, 5, 5, 5, 5, 5, 5, 100

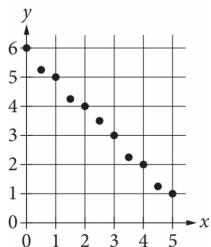
Which of the following statements about the means and medians of data set A and data set B is true?

- A. Only the means are different.
- B. Only the medians are different.
- C. Both the means and the medians are different.
- D. Neither the means nor the medians are different.

# Question ID 9296553d

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Two-variable data: Models and scatterplots	<div style="width: 25%; background-color: #003366; height: 10px;"></div> <div style="width: 75%; background-color: #cccccc; height: 10px;"></div>

ID: 9296553d



Which of the following could be an equation for a line of best fit for the data in the scatterplot?

- A.  $y = -x + 6$
- B.  $y = -x - 6$
- C.  $y = 6x + 1$
- D.  $y = 6x - 1$

## Question ID b2f6f17d

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Percentages	<div style="width: 20%; background-color: #0056b3; height: 10px;"></div> <div style="width: 20%; background-color: #0056b3; height: 10px;"></div> <div style="width: 60%; background-color: #e0e0e0; height: 10px;"></div>

ID: b2f6f17d

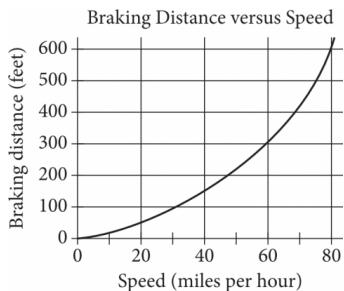
A customer's monthly water bill was \$75.74. Due to a rate increase, her monthly bill is now \$79.86. To the nearest tenth of a percent, by what percent did the amount of the customer's water bill increase?

- A. 4.1%
- B. 5.1%
- C. 5.2%
- D. 5.4%

# Question ID d6121490

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Two-variable data: Models and scatterplots	<div style="width: 25%; background-color: #003366; height: 10px;"></div> <div style="width: 75%; background-color: #cccccc; height: 10px;"></div>

ID: d6121490



The graph above shows the relationship between the speed of a particular car, in miles per hour, and its corresponding braking distance, in feet. Approximately how many feet greater will the car's braking distance be when the car is traveling at 50 miles per hour than when the car is traveling at 30 miles per hour?

- A. 75
- B. 125
- C. 175
- D. 250

# Question ID ab7740a8

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Two-variable data: Models and scatterplots	<div style="width: 25%; background-color: #003366; height: 10px;"></div> <div style="width: 25%; background-color: #003366; height: 10px;"></div> <div style="width: 50%; background-color: #cccccc; height: 10px;"></div>

ID: ab7740a8

In which of the following tables is the relationship between the values of  $x$  and their corresponding  $y$ -values nonlinear?

A.

$x$	1	2	3	4
$y$	8	11	14	17

B.

$x$	1	2	3	4
$y$	4	8	12	16

C.

$x$	1	2	3	4
$y$	8	13	18	23

D.

$x$	1	2	3	4
$y$	6	12	24	48

## Question ID 2a08d878

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Probability and conditional probability	<div style="width: 25%; background-color: #003366; height: 10px;"></div> <div style="width: 75%; background-color: #cccccc; height: 10px;"></div>

ID: 2a08d878

There are  $n$  nonfiction books and 12 fiction books on a bookshelf. If one of these books is selected at random, what is the probability of selecting a nonfiction book, in terms of  $n$ ?

- A.  $\frac{n}{12}$
- B.  $\frac{n}{n+12}$
- C.  $\frac{12}{n}$
- D.  $\frac{12}{n+12}$

# Question ID 38a9ac45

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Probability and conditional probability	<div style="width: 25%; background-color: #003366; height: 10px;"></div> <div style="width: 25%; background-color: #003366; height: 10px;"></div> <div style="width: 50%; background-color: #cccccc; height: 10px;"></div>

ID: 38a9ac45

If 1,200 customers register for new accounts at a social media website every day, what fraction of the first 60,000 new accounts are registered in the first 5 days?

A.  $\frac{1}{5}$

B.  $\frac{1}{10}$

C.  $\frac{1}{12}$

D.  $\frac{1}{50}$

# Question ID eb672707

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Ratios, rates, proportional relationships, and units	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 50%; background-color: #e0e0e0; height: 10px;"></div>

ID: eb672707

How many tablespoons are equivalent to **14** teaspoons? (**3 teaspoons = 1 tablespoon**)

# Question ID 881ef5f5

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	One-variable data: Distributions and measures of center and spread	<div style="width: 25%; background-color: #003366; height: 10px;"></div> <div style="width: 25%; background-color: #005599; height: 10px;"></div> <div style="width: 50%; background-color: #CCCCCC; height: 10px;"></div>

ID: 881ef5f5

If  $a$  is the mean and  $b$  is the median of nine consecutive integers, what is the value of  $|a - b|$ ?

# Question ID 7ed0d098

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Percentages	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div>

ID: 7ed0d098

Lani spent 15% of her 8-hour workday in meetings. How many minutes of her workday did she spend in meetings?

- A. 1.2
- B. 15
- C. 48
- D. 72

# Question ID dae79de4

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Probability and conditional probability	<div style="width: 25%; background-color: #0056b3;"></div> <div style="width: 75%; background-color: #e0e0e0;"></div> <div style="width: 75%; background-color: #e0e0e0;"></div>

ID: dae79de4

	1 visit	2 or more visits	Total
Less than 40 years old	15	15	30
At least 40 years old	20	85	105
<b>Total</b>	<b>35</b>	<b>100</b>	<b>135</b>

The table summarizes customers who visited a car dealership in the last month by age and number of visits they made to the dealership. If a customer from the last month is selected at random, what is the probability that the selected customer is at least 40 years old?

- A.  $\frac{30}{135}$
- B.  $\frac{35}{135}$
- C.  $\frac{100}{135}$
- D.  $\frac{105}{135}$

# Question ID 4bb25495

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	One-variable data: Distributions and measures of center and spread	<div style="width: 25%; background-color: #003366; height: 10px;"></div> <div style="width: 75%; background-color: #cccccc; height: 10px;"></div>

ID: 4bb25495

Five Smallest Countries in 2016

Country	Land area (square kilometers)
Monaco	2.0
Nauru	21
San Marino	61
Tuvalu	26
Vatican City	0.44

The table above shows the land area, in square kilometers, of the five smallest countries of the world in 2016. Based on the table, what is the mean land area of the 5 smallest countries in 2016, to the nearest square kilometer?

- A. 20
- B. 22
- C. 61
- D. 110

## Question ID aa43b41f

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Evaluating statistical claims: Observational studies and experiments	<div style="width: 75%; background-color: #0056b3; height: 10px;"></div>

ID: aa43b41f

Near the end of a US cable news show, the host invited viewers to respond to a poll on the show's website that asked, "Do you support the new federal policy discussed during the show?" At the end of the show, the host reported that 28% responded "Yes," and 70% responded "No." Which of the following best explains why the results are unlikely to represent the sentiments of the population of the United States?

- A. The percentages do not add up to 100%, so any possible conclusions from the poll are invalid.
- B. Those who responded to the poll were not a random sample of the population of the United States.
- C. There were not 50% "Yes" responses and 50% "No" responses.
- D. The show did not allow viewers enough time to respond to the poll.

# Question ID b6569d0e

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Probability and conditional probability	<div style="width: 25%; background-color: #003366; height: 10px;"></div> <div style="width: 25%; background-color: #005599; height: 10px;"></div> <div style="width: 50%; background-color: #CCCCCC; height: 10px;"></div>

ID: b6569d0e

United States  
Presidents  
from 1789 to  
2015

Ages	Number
40–44	2
45–49	7
50–54	13
55–59	11
60–64	7
65–69	3

The table above gives the number of United States presidents from 1789 to 2015 whose age at the time they first took office is within the interval listed. Of those presidents who were at least 50 years old when they first took office, what fraction were at least 60 years old?

A.  $\frac{10}{43}$

B.  $\frac{10}{34}$

C.  $\frac{10}{24}$

D.  $\frac{25}{34}$

# Question ID 5dc386fb

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Probability and conditional probability	<div style="width: 75%; background-color: #0056b3; height: 10px;"></div>

ID: 5dc386fb

The table below shows the distribution of US states according to whether they have a state-level sales tax and a state-level income tax.

2013 State-Level Taxes

	State sales tax	No state sales tax
State income tax	39	4
No state income tax	6	1

To the nearest tenth of a percent, what percent of states with a state-level sales tax do not have a state-level income tax?

- A. 6.0%
- B. 12.0%
- C. 13.3%
- D. 14.0%

## Question ID 551c52b9

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Ratios, rates, proportional relationships, and units	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div>

ID: 551c52b9

Tilly earns  $p$  dollars for every  $w$  hours of work. Which expression represents the amount of money, in dollars, Tilly earns for  $39w$  hours of work?

- A.  $39p$
- B.  $\frac{p}{39}$
- C.  $p + 39$
- D.  $p - 39$

## Question ID 014c47ab

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Probability and conditional probability	<div style="width: 75%; background-color: #0056b3; height: 10px;"></div>

ID: 014c47ab

	Site A	Site B	Total
Tulip	35	15	50
Daffodil	31	21	52
<b>Total</b>	<b>66</b>	<b>36</b>	<b>102</b>

The table shows the distribution of two types of flowers at two different sites. If a flower represented in the table is selected at random, what is the probability of selecting a flower from site A, given that the flower is a tulip? (Express your answer as a decimal or fraction, not as a percent.)

## Question ID 1180401d

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Ratios, rates, proportional relationships, and units	<div style="width: 25%; background-color: #003366; height: 10px;"></div> <div style="width: 25%; background-color: #005599; height: 10px;"></div> <div style="width: 50%; background-color: #CCCCCC; height: 10px;"></div>

ID: 1180401d

The total area of a coastal city is 92.1 square miles, of which 11.3 square miles is water. If the city had a population of 621,000 people in the year 2010, which of the following is closest to the population density, in people per square mile of land area, of the city at that time?

- A. 6,740
- B. 7,690
- C. 55,000
- D. 76,000

## Question ID f6cbb04a

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Ratios, rates, proportional relationships, and units	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 50%; background-color: #e0e0e0; height: 10px;"></div>

ID: f6cbb04a

$$d = 55t$$

The equation above can be used to calculate the distance  $d$ , in miles, traveled by a car moving at a speed of 55 miles per hour over a period of  $t$  hours. For any positive constant  $k$ , the distance the car would have traveled after  $9k$  hours is how many times the distance the car would have traveled after  $3k$  hours?

- A. 3
- B. 6
- C.  $3k$
- D.  $6k$

# Question ID 98958ae8

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	One-variable data: Distributions and measures of center and spread	<div style="width: 75%; background-color: #005a9f; height: 10px;"></div>

ID: 98958ae8

Data set A consists of the heights of **75** objects and has a mean of **25** meters. Data set B consists of the heights of **50** objects and has a mean of **65** meters. Data set C consists of the heights of the **125** objects from data sets A and B. What is the mean, in meters, of data set C?

## Question ID 623dbebb

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Percentages	<div style="width: 75%; background-color: #0056b3; height: 10px;"></div>

ID: 623dbebb

A reseller buys certain books for a purchase price of **5.00** dollars each and then marks them each for sale at a consumer price that is **270%** of the purchase price. After **4** months, any remaining books not yet sold are marked at a discounted price that is **70%** off the consumer price. What is the discounted price of each of the remaining books, in dollars?

## Question ID 2e92cc21

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Percentages	<div style="width: 30%; background-color: #0056b3; height: 10px;"></div> <div style="width: 30%; background-color: #0056b3; height: 10px;"></div> <div style="width: 30%; background-color: #0056b3; height: 10px;"></div>

ID: 2e92cc21

The number  $a$  is 110% greater than the number  $b$ . The number  $b$  is 90% less than 47. What is the value of  $a$ ?

# Question ID 7f84b136

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Percentages	<div style="width: 25%; background-color: #0056b3;"></div> <div style="width: 25%; background-color: #0056b3;"></div> <div style="width: 50%; background-color: #e0e0e0;"></div>

ID: 7f84b136

The table summarizes the number of objects in each group.

Group	Number of objects
A	375
B	54
C	690
D	81
Total	1,200

The number of objects in group C is  $p\%$  of the number of objects in group A. What is the value of  $p$ ?

# Question ID 2d31caae

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Percentages	<div style="width: 20%; background-color: #0056b3;"></div> <div style="width: 10%; background-color: #e0e0e0;"></div> <div style="width: 10%; background-color: #e0e0e0;"></div>

ID: 2d31caae

Call Ratings

	1 Star	2 Stars	3 Stars	4 Stars	Total
Employee A	16	49	72	8	145
Employee B	4	10	22	34	70
Employee C	8	56	45	16	125
Employee D	22	42	84	12	160
Total	50	157	223	70	500

A supervisor at a call center reviewed 500 calls taken by four employees and rated the employees' performance on each call on a scale from 1 star to 4 stars. The ratings for each employee are shown in the table above. According to the table, to the nearest whole percent, what percent of Employee A's calls received a rating of 1 star?

- A. 3%
- B. 11%
- C. 16%
- D. 32%

## Question ID 4a422e3e

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Evaluating statistical claims: Observational studies and experiments	<div style="width: 75%; background-color: #005a9f; height: 10px;"></div>

ID: 4a422e3e

To determine the mean number of children per household in a community, Tabitha surveyed 20 families at a playground. For the 20 families surveyed, the mean number of children per household was 2.4. Which of the following statements must be true?

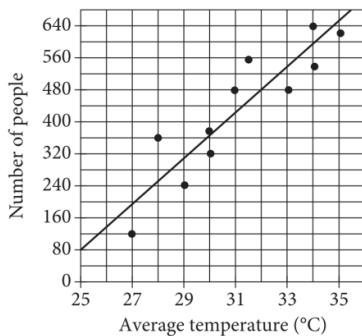
- A. The mean number of children per household in the community is 2.4.
- B. A determination about the mean number of children per household in the community should not be made because the sample size is too small.
- C. The sampling method is flawed and may produce a biased estimate of the mean number of children per household in the community.
- D. The sampling method is not flawed and is likely to produce an unbiased estimate of the mean number of children per household in the community.

# Question ID 8156d446

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Two-variable data: Models and scatterplots	<div style="width: 25%; background-color: #002060; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div>

ID: 8156d446

Number of Beach Visitors versus Temperature



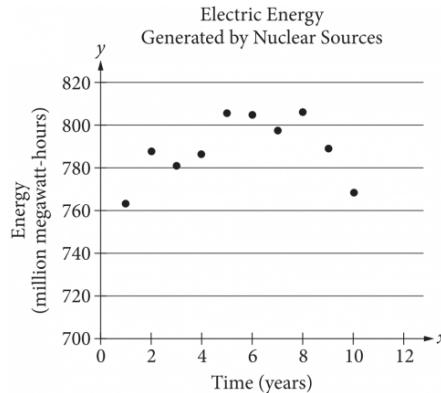
Each dot in the scatterplot above represents the temperature and the number of people who visited a beach in Lagos, Nigeria, on one of eleven different days. The line of best fit for the data is also shown. According to the line of best fit, what is the number of people, rounded to the nearest 10, predicted to visit this beach on a day with an average temperature of 32°C?

# Question ID e821a26d

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Two-variable data: Models and scatterplots	<div style="width: 100px; height: 10px; background-color: #0056b3;"></div> <div style="width: 100px; height: 10px; background-color: #0056b3;"></div> <div style="width: 100px; height: 10px; background-color: #0056b3;"></div>

ID: e821a26d

The scatterplot below shows the amount of electric energy generated, in millions of megawatt-hours, by nuclear sources over a 10-year period.



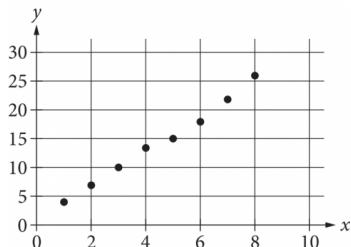
Of the following equations, which best models the data in the scatterplot?

- A.  $y = 1.674x^2 + 19.76x - 745.73$
- B.  $y = -1.674x^2 - 19.76x - 745.73$
- C.  $y = 1.674x^2 + 19.76x + 745.73$
- D.  $y = -1.674x^2 + 19.76x + 745.73$

# Question ID 9eb896c5

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Two-variable data: Models and scatterplots	<div style="width: 20%; background-color: #003366; height: 10px;"></div> <div style="width: 20%; background-color: #003366; height: 10px;"></div> <div style="width: 60%; background-color: #cccccc; height: 10px;"></div>

ID: 9eb896c5



Which of the following could be the equation for a line of best fit for the data shown in the scatterplot above?

- A.  $y = 3x + 0.8$
- B.  $y = 0.8x + 3$
- C.  $y = -0.8x + 3$
- D.  $y = -3x + 0.8$

## Question ID 194ae3b1

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Percentages	<div style="width: 25%; background-color: #003366; height: 10px;"></div> <div style="width: 75%; background-color: #cccccc; height: 10px;"></div>

ID: 194ae3b1

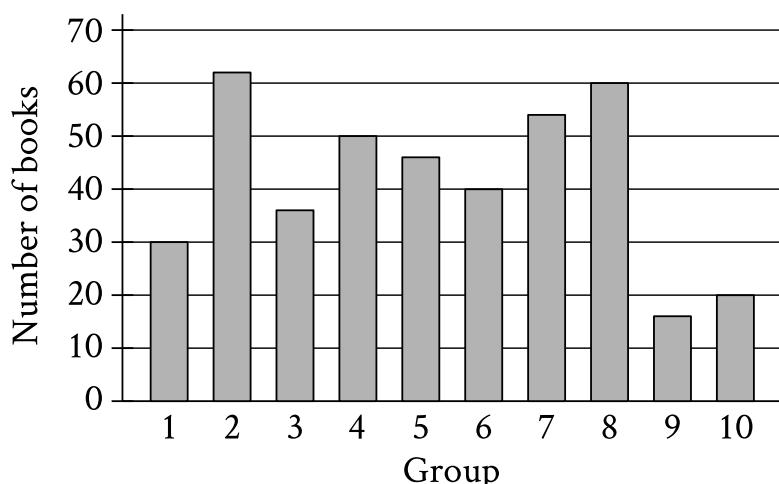
There were approximately 113,000 occupational therapy jobs in the United States in 2012. The Bureau of Labor Statistics has projected that this number will increase by 29% from 2012 to 2022. Of the following, which is closest to the number of occupational therapy jobs the bureau has projected for the United States in 2022?

- A. 115,900
- B. 116,300
- C. 142,000
- D. 145,800

# Question ID 79340403

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	One-variable data: Distributions and measures of center and spread	<div style="width: 25%; background-color: #002B36; height: 10px;"></div> <div style="width: 25%; background-color: #D9D9D9; height: 10px;"></div> <div style="width: 25%; background-color: #D9D9D9; height: 10px;"></div>

ID: 79340403



The bar graph shows the distribution of 414 books collected by 10 different groups for a book drive. How many books were collected by group 1?

# Question ID a8fabad0

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Percentages	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div>

ID: a8fabad0

A waiter receives tips from each customer. On average, the tip is 15% of the customer's bill. At this rate, which of the following is closest to the tip the waiter can expect when a customer has a bill that is \$78.20?

- A. \$8.00
- B. \$10.00
- C. \$12.00
- D. \$14.00

# Question ID 99550621

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Ratios, rates, proportional relationships, and units	<div style="width: 25%; background-color: #002B36; height: 10px;"></div> <div style="width: 75%; background-color: #D9D9D9; height: 10px;"></div>

ID: 99550621

Makayla is planning an event in a 5,400-square-foot room. If there should be at least 8 square feet per person, what is the maximum number of people that could attend this event?

- A. 588
- B. 675
- C. 15,274
- D. 43,200

# Question ID 9d935bd8

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	One-variable data: Distributions and measures of center and spread	<div style="width: 75%; background-color: #0056b3; height: 10px;"></div>

ID: 9d935bd8

Percent of Residents Who Earned a Bachelor's Degree or Higher

State	Percent of residents
State A	21.9%
State B	27.9%
State C	25.9%
State D	19.5%
State E	30.1%
State F	36.4%
State G	35.5%

A survey was given to residents of all 50 states asking if they had earned a bachelor's degree or higher. The results from 7 of the states are given in the table above. The median percent of residents who earned a bachelor's degree or higher for all 50 states was 26.95%. What is the difference between the median percent of residents who earned a bachelor's degree or higher for these 7 states and the median for all 50 states?

- A. 0.05%
- B. 0.95%
- C. 1.22%
- D. 7.45%

## Question ID 8c5dbd3e

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Percentages	<div style="width: 75%; background-color: #0056b3; height: 10px;"></div>

ID: 8c5dbd3e

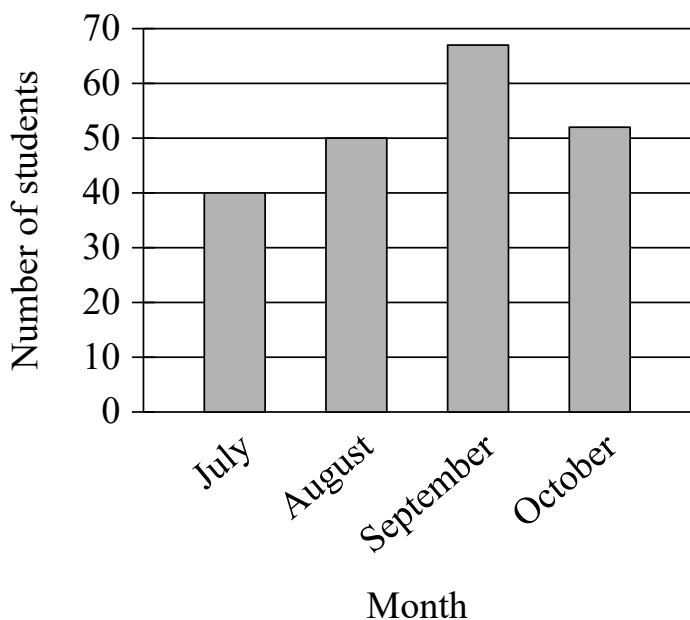
The number  $w$  is 110% greater than the number  $z$ . The number  $z$  is 55% less than 50. What is the value of  $w$ ?

# Question ID a067c926

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	One-variable data: Distributions and measures of center and spread	<div style="width: 25%; background-color: #003366; height: 10px;"></div> <div style="width: 75%; background-color: #cccccc; height: 10px;"></div> <div style="width: 75%; background-color: #cccccc; height: 10px;"></div>

ID: a067c926

The bar graph shows the distribution of the number of students from one school who were born in one of four months.



How many more students were born in August than were born in July?

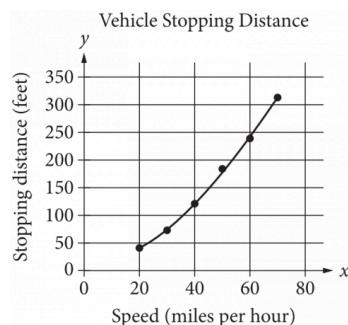
- A. 90
- B. 50
- C. 40
- D. 10

# Question ID 5c24c861

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Two-variable data: Models and scatterplots	<div style="width: 25%; background-color: #002B36; height: 10px;"></div> <div style="width: 75%; background-color: #D9D9D9; height: 10px;"></div> <div style="width: 75%; background-color: #D9D9D9; height: 10px;"></div>

ID: 5c24c861

A study was done to determine a new car's stopping distance when it was traveling at different speeds. The study was done on a dry road with good surface conditions. The results are shown below, along with the graph of a quadratic function that models the data.



According to the model, which of the following is the best estimate for the stopping distance, in feet, if the vehicle was traveling 55 miles per hour?

- A. 25
- B. 30
- C. 210
- D. 250

## Question ID 9e2bf782

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	One-variable data: Distributions and measures of center and spread	<div style="width: 25%; background-color: #003366; height: 10px;"></div> <div style="width: 25%; background-color: #005599; height: 10px;"></div> <div style="width: 50%; background-color: #CCCCCC; height: 10px;"></div>

ID: 9e2bf782

A fish hatchery has three tanks for holding fish before they are introduced into the wild. Ten fish weighing less than 5 ounces are placed in tank A. Eleven fish weighing at least 5 ounces but no more than 13 ounces are placed in tank B. Twelve fish weighing more than 13 ounces are placed in tank C. Which of the following could be the median of the weights, in ounces, of these 33 fish?

- A. 4.5
- B. 8
- C. 13.5
- D. 15

## Question ID 9ba3e283

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Inference from sample statistics and margin of error	<div style="width: 75%; background-color: #0056b3; height: 10px;"></div>

ID: 9ba3e283

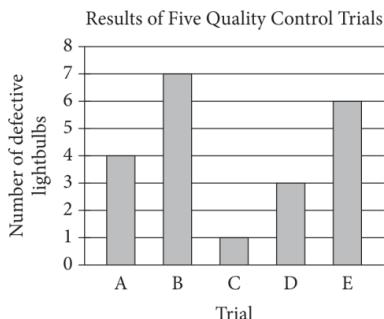
In State X, Mr. Camp's eighth-grade class consisting of 26 students was surveyed and 34.6 percent of the students reported that they had at least two siblings. The average eighth-grade class size in the state is 26. If the students in Mr. Camp's class are representative of students in the state's eighth-grade classes and there are 1,800 eighth-grade classes in the state, which of the following best estimates the number of eighth-grade students in the state who have fewer than two siblings?

- A. 16,200
- B. 23,400
- C. 30,600
- D. 46,800

# Question ID a9647302

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	One-variable data: Distributions and measures of center and spread	<div style="width: 25%; background-color: #003366; height: 10px;"></div> <div style="width: 75%; background-color: #cccccc; height: 10px;"></div> <div style="width: 75%; background-color: #cccccc; height: 10px;"></div>

ID: a9647302



For quality control, a company that manufactures lightbulbs conducted five different trials. In each trial, 500 different lightbulbs were tested. The bar graph above shows the number of defective lightbulbs found in each trial. What is the mean number of defective lightbulbs for the five trials?

- A. 4.0
- B. 4.2
- C. 4.6
- D. 5.0

## Question ID 1c2f50a6

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Percentages	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div>

ID: 1c2f50a6

During a sale, the original prices of all the items in a clothing store have been reduced by 20%. What is the sale price of a jacket with an original price of \$50 ?

- A. \$12
- B. \$30
- C. \$36
- D. \$40

## Question ID 89c39d77

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Ratios, rates, proportional relationships, and units	<div style="width: 25%; background-color: #005a7a; height: 10px;"></div> <div style="width: 25%; background-color: #005a7a; height: 10px;"></div> <div style="width: 50%; background-color: #e0e0e0; height: 10px;"></div>

ID: 89c39d77

A competition consisted of four different events. One participant completed the first event with an average speed of **20.300** miles per hour. What was this average speed, in yards per hour? (**1 mile = 1,760 yards**)

## Question ID 8193e8cd

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	One-variable data: Distributions and measures of center and spread	<div style="width: 25%; background-color: #003366; height: 10px;"></div> <div style="width: 25%; background-color: #005599; height: 10px;"></div> <div style="width: 50%; background-color: #cccccc; height: 10px;"></div>

ID: 8193e8cd

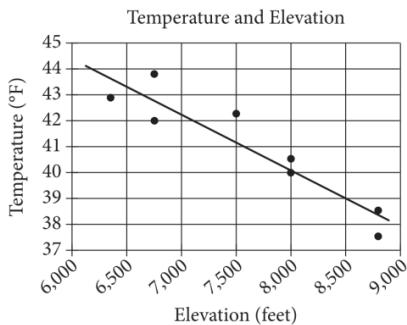
2, 10, 3, 7, 6

The mean of the list of numbers above is what fraction of the sum of the five numbers?

# Question ID 661dfddd

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Two-variable data: Models and scatterplots	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div>

ID: 661dfddd



The scatterplot above shows the high temperature on a certain day and the elevation of 8 different locations in the Lake Tahoe Basin. A line of best fit for the data is also shown. Which of the following statements best describes the association between the elevation and the temperature of locations in the Lake Tahoe Basin?

- A. As the elevation increases, the temperature tends to increase.
- B. As the elevation increases, the temperature tends to decrease.
- C. As the elevation decreases, the temperature tends to decrease.
- D. There is no association between the elevation and the temperature.

# Question ID 89f20d9e

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Probability and conditional probability	<div style="width: 75%; background-color: #0056b3; height: 10px;"></div>

ID: 89f20d9e

The table summarizes the distribution of age and assigned group for **90** participants in a study.

	0–9 years	10–19 years	20+ years	Total
Group A	5	17	8	30
Group B	6	8	16	30
Group C	19	5	6	30
Total	30	30	30	90

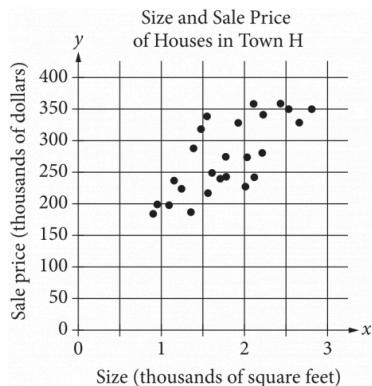
One of these participants will be selected at random. What is the probability of selecting a participant from group A, given that the participant is at least 10 years of age?

- A.  $\frac{5}{18}$
- B.  $\frac{5}{12}$
- C.  $\frac{17}{30}$
- D.  $\frac{5}{6}$

# Question ID 79137c1b

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Two-variable data: Models and scatterplots	<div style="width: 100px; height: 10px; background-color: #0056b3;"></div> <div style="width: 150px; height: 10px; background-color: #0056b3;"></div> <div style="width: 150px; height: 10px; background-color: #0056b3;"></div>

ID: 79137c1b



The scatterplot above shows the size  $x$  and the sale price  $y$  of 25 houses for sale in Town H. Which of the following could be an equation for a line of best fit for the data?

- A.  $y = 200x + 100$
- B.  $y = 100x + 100$
- C.  $y = 50x + 100$
- D.  $y = 100x$

# Question ID 1dcea480

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Probability and conditional probability	<div style="width: 25%; background-color: #002B36; height: 10px;"></div> <div style="width: 75%; background-color: #D9D9D9; height: 10px;"></div> <div style="width: 75%; background-color: #D9D9D9; height: 10px;"></div>

ID: 1dcea480

A bag contains a total of 60 marbles. A marble is to be chosen at random from the bag. If the probability that a blue marble will be chosen is 0.35, how many marbles in the bag are blue?

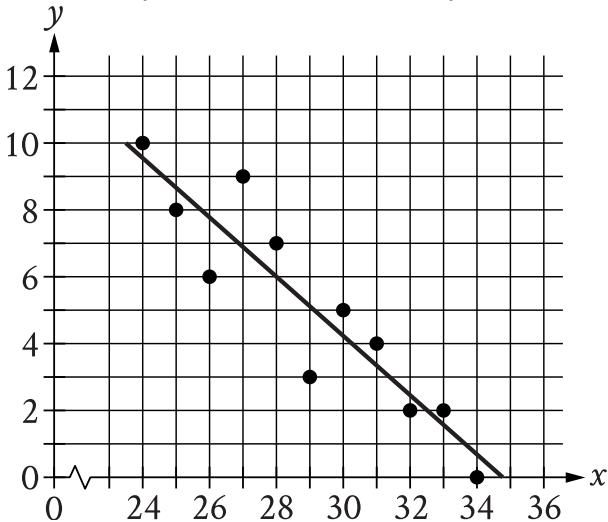
- A. 21
- B. 25
- C. 35
- D. 39

# Question ID fdfc90e4

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Two-variable data: Models and scatterplots	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 50%; background-color: #e0e0e0; height: 10px;"></div>

ID: fdfc90e4

The scatterplot shows the relationship between two variables,  $x$  and  $y$ . A line of best fit for the data is also shown.



At  $x = 32$ , which of the following is closest to the  $y$ -value predicted by the line of best fit?

- A. 0.4
- B. 1.5
- C. 2.4
- D. 3.3

## Question ID 34e18ce4

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Percentages	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div>

ID: 34e18ce4

There are **350** objects in a box. Of these objects, **4%** are balls. How many balls are in the box?

- A. **4**
- B. **14**
- C. **70**
- D. **346**

# Question ID 89f8d08a

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Inference from sample statistics and margin of error	<div style="width: 25%; background-color: #003366; height: 10px;"></div> <div style="width: 25%; background-color: #005599; height: 10px;"></div> <div style="width: 50%; background-color: #CCCCCC; height: 10px;"></div>

ID: 89f8d08a

A store manager reviewed the receipts from 80 customers who were selected at random from all the customers who made purchases last Thursday. Of those selected, 20 receipts showed that the customer had purchased fruit. If 1,500 customers made purchases last Thursday, which of the following is the most appropriate conclusion?

- A. Exactly 75 customers must have purchased fruit last Thursday.
- B. Exactly 375 customers must have purchased fruit last Thursday.
- C. The best estimate for the number of customers who purchased fruit last Thursday is 75.
- D. The best estimate for the number of customers who purchased fruit last Thursday is 375.

# Question ID 54d93874

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	One-variable data: Distributions and measures of center and spread	<div style="width: 75%; background-color: #005a9f; height: 10px;"></div>

ID: 54d93874

	Masses (kilograms)					
Andrew	2.4	2.5	3.6	3.1	2.5	2.7
Maria	x	3.1	2.7	2.9	3.3	2.8

Andrew and Maria each collected six rocks, and the masses of the rocks are shown in the table above. The mean of the masses of the rocks Maria collected is 0.1 kilogram greater than the mean of the masses of the rocks Andrew collected. What is the value of  $x$ ?

## Question ID 6a305cd0

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Inference from sample statistics and margin of error	<div style="width: 25%; background-color: #002B36; height: 10px;"></div> <div style="width: 75%; background-color: #D9D9D9; height: 10px;"></div> <div style="width: 75%; background-color: #D9D9D9; height: 10px;"></div>

ID: 6a305cd0

In a study, the data from a random sample of a population had a mean of 37, with an associated margin of error of 3. Which of the following is the most appropriate conclusion that can be made about the population mean?

- A. It is less than 37.
- B. It is greater than 37.
- C. It is between 34 and 40.
- D. It is less than 34 or greater than 40.

## Question ID 048811bd

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Percentages	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div>

ID: 048811bd

What is 10% of 370?

- A. 27
- B. 37
- C. 333
- D. 360

# Question ID 869a32f1

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	One-variable data: Distributions and measures of center and spread	<div style="width: 25%; background-color: #003366; height: 10px;"></div> <div style="width: 75%; background-color: #cccccc; height: 10px;"></div>

ID: 869a32f1

The high temperature, in degrees Fahrenheit ( $^{\circ}\text{F}$ ), in a certain city was recorded for each of 5 days. The data are shown below.

Day	1	2	3	4	5
High temperature ( $^{\circ}\text{F}$ )	81	80	81	81	82

Over this 5-day period, which of the following is NOT equal to  $81^{\circ}\text{F}$ ?

- A. Median of the high temperatures
- B. Mean of the high temperatures
- C. Mode of the high temperatures
- D. Range of the high temperatures

# Question ID a3384df0

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Probability and conditional probability	<div style="width: 20%; background-color: #003366; height: 10px;"></div> <div style="width: 20%; background-color: #003366; height: 10px;"></div> <div style="width: 60%; background-color: #cccccc; height: 10px;"></div>

ID: a3384df0

Penguin Exhibit			
Type of penguin	Male	Female	Total
Chinstrap	41	59	100
Emperor	8	27	35
Gentoo	49	54	103
Macaroni	42	40	82
Total	140	180	320

The number of penguins in a zoo exhibit, sorted by gender and type of penguin, is shown in the table above. Which type of penguin has a female population that is the

$\frac{1}{3}$  closest to being  $\frac{1}{3}$  of the total female penguin population in the exhibit?

- A. Chinstrap
- B. Emperor
- C. Gentoo
- D. Macaroni

# Question ID 6670e407

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	One-variable data: Distributions and measures of center and spread	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div>

ID: 6670e407

Number of High School Students Who Completed Summer Internships

High school	Year				
	2008	2009	2010	2011	2012
Foothill	87	80	75	76	70
Valley	44	54	65	76	82
Total	131	134	140	152	152

The table above shows the number of students from two different high schools who completed summer internships in each of five years. No student attended both schools. Which of the following statements are true about the number of students who completed summer internships for the 5 years shown?

1. The mean number from Foothill High School is greater than the mean number from Valley High School.
  2. The median number from Foothill High School is greater than the median number from Valley High School.
- A. I only
- B. II only
- C. I and II
- D. Neither I nor II

# Question ID 808f7d6c

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Ratios, rates, proportional relationships, and units	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div>

ID: 808f7d6c

If  $t = 4u$ , which of the following is equivalent to  $2t$ ?

- A.  $8u$
- B.  $2u$
- C.  $u$
- D.  $\frac{1}{2}u$

# Question ID af142f8d

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Two-variable data: Models and scatterplots	<div style="width: 75%; background-color: #0056b3; height: 10px;"></div>

ID: af142f8d

	Amount invested	Balance increase
Account A	\$500	6% annual interest
Account B	\$1,000	\$25 per year

Two investments were made as shown in the table above. The interest in Account A is compounded once per year. Which of the following is true about the investments?

- A. Account A always earns more money per year than Account B.
- B. Account A always earns less money per year than Account B.
- C. Account A earns more money per year than Account B at first but eventually earns less money per year.
- D. Account A earns less money per year than Account B at first but eventually earns more money per year.

## Question ID 566759ef

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Percentages	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 50%; background-color: #e0e0e0; height: 10px;"></div>

ID: 566759ef

Thomas installed a new stove in his restaurant. At the time of installation, the stove had a value of \$800. Thomas estimates that each year the value of the stove will depreciate by 20% of the previous year's estimated value. What is the estimated value of the stove exactly 2 years after Thomas installed it?

- A. \$480
- B. \$512
- C. \$556
- D. \$640

## Question ID 6e4a60dd

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Percentages	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div>

ID: 6e4a60dd

Rita's total bill at a restaurant was \$25.00, including tax. If she left a tip of 20% of the total bill, what was the amount of the tip?

- A. \$3.50
- B. \$4.00
- C. \$4.50
- D. \$5.00

## Question ID 9ee22c16

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Inference from sample statistics and margin of error	<div style="width: 20%; background-color: #003366; height: 10px;"></div> <div style="width: 20%; background-color: #003366; height: 10px;"></div> <div style="width: 60%; background-color: #cccccc; height: 10px;"></div>

ID: 9ee22c16

A random sample of 400 town voters were asked if they plan to vote for Candidate A or Candidate B for mayor. The results were sorted by gender and are shown in the table below.

	Plan to vote for Candidate A	Plan to vote for Candidate B
Female	202	20
Male	34	144

The town has a total of 6,000 voters. Based on the table, what is the best estimate of the number of voters who plan to vote for Candidate A?

# Question ID 41b71b4e

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Percentages	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div>

ID: 41b71b4e

What number is 20% greater than 60?

- A. 50
- B. 72
- C. 75
- D. 132

## Question ID 46b2e169

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Probability and conditional probability	<div style="width: 25%; background-color: #003366; height: 10px;"></div> <div style="width: 25%; background-color: #003366; height: 10px;"></div> <div style="width: 50%; background-color: #cccccc; height: 10px;"></div>

ID: 46b2e169

A box contains **13** red pens and **37** blue pens. If one of these pens is selected at random, what is the probability of selecting a red pen? (Express your answer as a decimal or fraction, not as a percent.)

## Question ID 8213b1b3

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Percentages	<div style="width: 30%; background-color: #005a9f; height: 10px;"></div> <div style="width: 30%; background-color: #005a9f; height: 10px;"></div> <div style="width: 30%; background-color: #005a9f; height: 10px;"></div>

ID: 8213b1b3

According to a set of standards, a certain type of substance can contain a maximum of **0.001%** phosphorus by mass. If a sample of this substance has a mass of **140** grams, what is the maximum mass, in grams, of phosphorus the sample can contain to meet these standards?

## Question ID f8696cd8

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Probability and conditional probability	<div style="width: 20%; background-color: #003366; height: 10px;"></div> <div style="width: 20%; background-color: #003366; height: 10px;"></div> <div style="width: 60%; background-color: #cccccc; height: 10px;"></div>

ID: f8696cd8

	Human Resources	Accounting
Bachelor's degree	4	3
Master's degree	2	6

The table above shows the number of people who work in the Human Resources and Accounting departments of a company and the highest level of education they have completed. A person from one of these departments is to be chosen at random. If the person chosen works in the Human Resources department, what is the probability that the highest level of education the person completed is a master's degree?

A.  $\frac{2}{15}$

B.  $\frac{1}{3}$

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

D.  $\frac{8}{15}$

# Question ID 34f8cd89

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Percentages	<div style="width: 100px; height: 10px; background-color: #0056b3;"></div> <div style="width: 100px; height: 10px; background-color: #0056b3;"></div> <div style="width: 100px; height: 10px; background-color: #0056b3;"></div>

ID: 34f8cd89

37% of the items in a box are green. Of those, 37% are also rectangular. Of the green rectangular items, 42% are also metal. Which of the following is closest to the percentage of the items in the box that are not rectangular green metal items?

- A. 1.16%
- B. 57.50%
- C. 94.25%
- D. 98.84%

## Question ID 6fca0144

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Evaluating statistical claims: Observational studies and experiments	<div style="width: 75%; background-color: #005a99; height: 10px;"></div>

ID: 6fca0144

For a baobab tree habitat in South Africa, a scientist randomly selected **50** baobab trees that were **17** years old and randomly assigned them to two groups. Each group was subjected to a different watering pattern for **2** consecutive years to observe whether the watering pattern affects the trees' growth rate. Based on the design of the study, what is the largest group to which these results can be applied?

- A. All the **50** baobab trees that were selected in this habitat
- B. All the baobab trees that were **19** years old in this habitat
- C. All the baobab trees that were **17** years old in South Africa
- D. All the baobab trees that were **17** years old in this habitat

# Question ID 20b69297

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Ratios, rates, proportional relationships, and units	<div style="width: 75%; background-color: #0056b3; height: 10px;"></div>

ID: 20b69297

Anita created a batch of green paint by mixing 2 ounces of blue paint with 3 ounces of yellow paint. She must mix a second batch using the same ratio of blue and yellow paint as the first batch. If she uses 5 ounces of blue paint for the second batch, how much yellow paint should Anita use?

- A. Exactly 5 ounces
- B. 3 ounces more than the amount of yellow paint used in the first batch
- C. 1.5 times the amount of yellow paint used in the first batch
- D. 1.5 times the amount of blue paint used in the second batch

# Question ID 94237701

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	One-variable data: Distributions and measures of center and spread	<div style="width: 75%; background-color: #0056b3; height: 10px;"></div>

ID: 94237701

For a certain computer game, individuals receive an integer score that ranges from 2 through 10. The table below shows the frequency distribution of the scores of the 9 players in group A and the 11 players in group B.

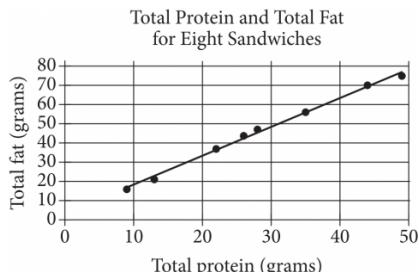
Score	Score Frequencies	
	Group A	Group B
2	1	0
3	1	0
4	2	0
5	1	4
6	3	2
7	0	0
8	0	2
9	1	1
10	0	2
Total	9	11

The median of the scores for group B is how much greater than the median of the scores for group A?

# Question ID 9d95e7ad

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Two-variable data: Models and scatterplots	<div style="width: 100px; height: 10px; background-color: #0056b3;"></div> <div style="width: 120px; height: 10px; background-color: #0056b3;"></div> <div style="width: 130px; height: 10px; background-color: #0056b3;"></div>

ID: 9d95e7ad



The scatterplot above shows the numbers of grams of both total protein and total fat for eight sandwiches on a restaurant menu. The line of best fit for the data is also shown. According to the line of best fit, which of the following is closest to the predicted increase in total fat, in grams, for every increase of 1 gram in total protein?

- A. 2.5
- B. 2.0
- C. 1.5
- D. 1.0

## Question ID 11b06e35

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Ratios, rates, proportional relationships, and units	<div style="width: 75%; background-color: #0056b3; height: 10px;"></div>

ID: 11b06e35

The density of a certain solid substance is **813** kilograms per cubic meter. A sample of this substance is in the shape of a cube, where each edge has a length of **0.60** meters. To the nearest whole number, what is the mass, in kilograms, of this sample?

- A. **176**
- B. **488**
- C. **1,355**
- D. **3,764**

## Question ID d6456c7a

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Ratios, rates, proportional relationships, and units	<div style="width: 75%; background-color: #0056b3; height: 10px;"></div>

ID: d6456c7a

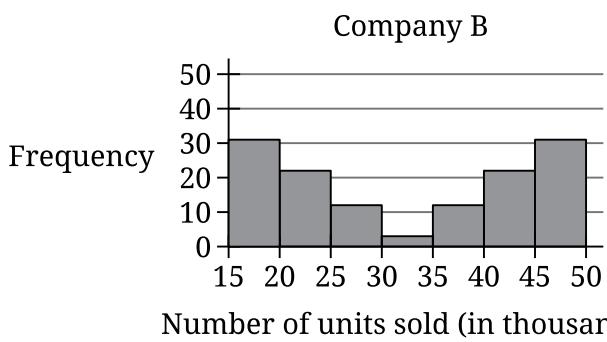
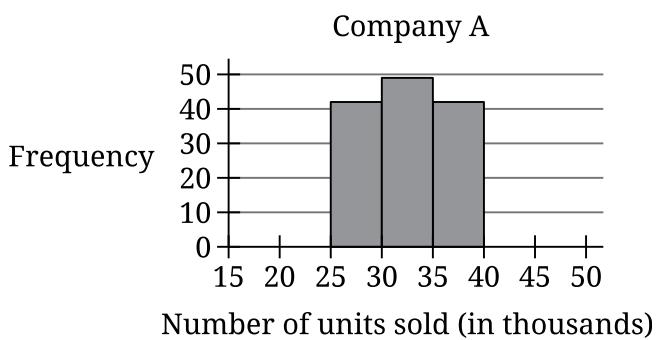
A certain park has an area of **11,863,808** square yards. What is the area, in square miles, of this park? (**1 mile = 1,760 yards**)

- A. **1.96**
- B. **3.83**
- C. **3,444.39**
- D. **6,740.8**

# Question ID 25fc031a

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	One-variable data: Distributions and measures of center and spread	<div style="width: 20%; background-color: #003366; height: 10px;"></div> <div style="width: 20%; background-color: #003366; height: 10px;"></div> <div style="width: 60%; background-color: #cccccc; height: 10px;"></div>

ID: 25fc031a



The histograms summarize the distributions of number of units sold, in thousands, for company A and company B. Which statement best compares the standard deviations of number of units sold for these companies?

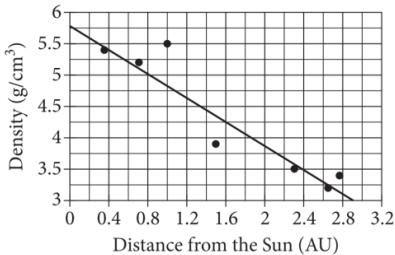
- A. The standard deviation of number of units sold for company A is less than the standard deviation of number of units sold for company B.
- B. The standard deviation of number of units sold for company A is greater than the standard deviation of number of units sold for company B.
- C. The standard deviation of number of units sold for company A is equal to the standard deviation of number of units sold for company B.
- D. There is not enough information to compare the standard deviations.

# Question ID cf0ae57a

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Two-variable data: Models and scatterplots	<div style="width: 25%; background-color: #003366; height: 10px;"></div> <div style="width: 25%; background-color: #cccccc; height: 10px;"></div> <div style="width: 25%; background-color: #cccccc; height: 10px;"></div>

ID: cf0ae57a

Distance and Density of Planetoids in the Inner Solar System



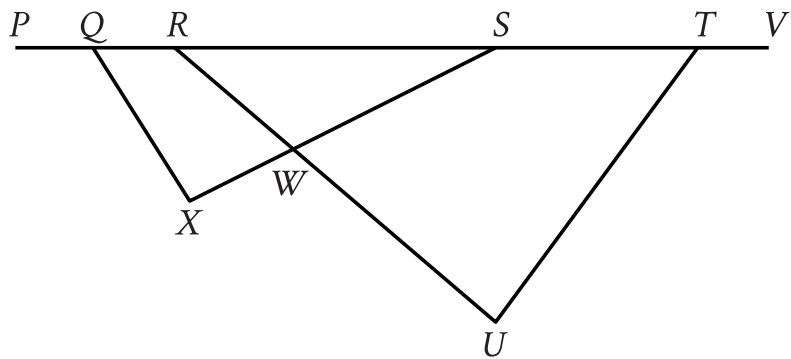
The scatterplot above shows the densities of 7 planetoids, in grams per cubic centimeter, with respect to their average distances from the Sun in astronomical units (AU). The line of best fit is also shown. An astronomer has discovered a new planetoid about 1.2 AU from the Sun. According to the line of best fit, which of the following best approximates the density of the planetoid, in grams per cubic centimeter?

- A. 3.6
- B. 4.1
- C. 4.6
- D. 5.5

# Question ID e10d8313

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Geometry and Trigonometry	Lines, angles, and triangles	<div style="width: 30%; background-color: #0056b3; height: 10px;"></div> <div style="width: 30%; background-color: #0056b3; height: 10px;"></div> <div style="width: 30%; background-color: #0056b3; height: 10px;"></div>

ID: e10d8313



Note: Figure not drawn to scale.

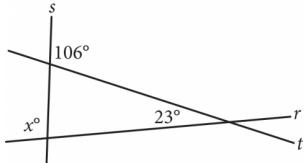
In the figure shown, points  $Q$ ,  $R$ ,  $S$ , and  $T$  lie on line segment  $PV$ , and line segment  $RU$  intersects line segment  $SX$  at point  $W$ . The measure of  $\angle SQX$  is  $48^\circ$ , the measure of  $\angle SXQ$  is  $86^\circ$ , the measure of  $\angle SWU$  is  $85^\circ$ , and the measure of  $\angle VTU$  is  $162^\circ$ . What is the measure, in degrees, of  $\angle TUR$ ?

# Question ID f88f27e5

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Geometry and Trigonometry	Lines, angles, and triangles	<div style="width: 75%; background-color: #0056b3; height: 10px;"></div>

ID: f88f27e5

Intersecting lines  $r$ ,  $s$ , and  $t$  are shown below.

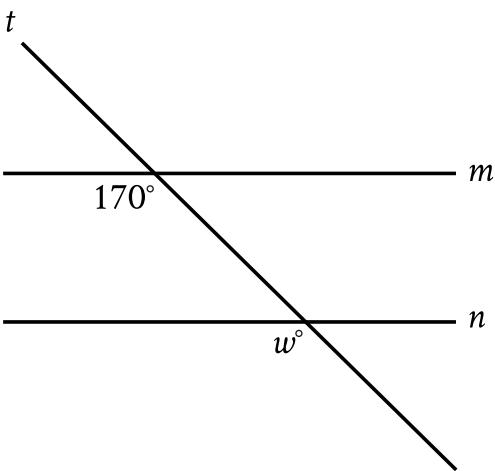


What is the value of  $x$ ?

# Question ID 5207e508

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Geometry and Trigonometry	Lines, angles, and triangles	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div>

ID: 5207e508



Note: Figure not drawn to scale.

In the figure, line  $m$  is parallel to line  $n$ . What is the value of  $w$ ?

- A. 17
- B. 30
- C. 70
- D. 170

## Question ID f67e4efc

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Geometry and Trigonometry	Area and volume	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 50%; background-color: #e0e0e0; height: 10px;"></div>

ID: f67e4efc

A right circular cylinder has a volume of  $45\pi$ . If the height of the cylinder is 5, what is the radius of the cylinder?

- A. 3
- B. 4.5
- C. 9
- D. 40

# Question ID bb560789

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Geometry and Trigonometry	Area and volume	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div>

ID: bb560789

Triangle R has an area of 80 square centimeters ( $\text{cm}^2$ ). Square S has side lengths of 4 cm. What is the total area of triangle R and square S, in  $\text{cm}^2$ ?

- A. 42
- B. 44
- C. 84
- D. 96

# Question ID 5afbdc8e

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Geometry and Trigonometry	Area and volume	<div style="width: 25%; background-color: #0056b3;"></div> <div style="width: 25%; background-color: #0056b3;"></div> <div style="width: 50%; background-color: #e0e0e0;"></div>

ID: 5afbdc8e

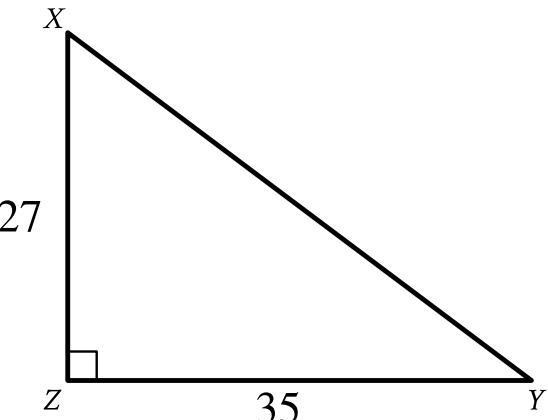
What is the length of one side of a square that has the same area as a circle with radius 2 ?

- A. 2
- B.  $\sqrt{2\pi}$
- C.  $2\sqrt{\pi}$
- D.  $2\pi$

# Question ID 659cb706

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Geometry and Trigonometry	Right triangles and trigonometry	<div style="width: 20%; background-color: #0056b3; height: 10px;"></div> <div style="width: 20%; background-color: #0056b3; height: 10px;"></div> <div style="width: 60%; background-color: #e0e0e0; height: 10px;"></div>

ID: 659cb706



Note: Figure not drawn to scale.

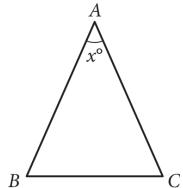
Triangle  $XYZ$  shown is a right triangle. Which of the following has the same value as  $\sin X$ ?

- A.  $\tan X$
- B.  $\tan Y$
- C.  $\cos X$
- D.  $\cos Y$

# Question ID c8d60e48

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Geometry and Trigonometry	Lines, angles, and triangles	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div>

ID: c8d60e48



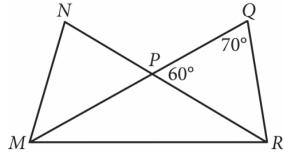
In the given triangle,  $AB = AC$  and  $\angle ABC$  has a measure of  $67^\circ$ . What is the value of  $x$ ?

- A. 36
- B. 46
- C. 58
- D. 70

# Question ID 947a3cde

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Geometry and Trigonometry	Lines, angles, and triangles	<div style="width: 100px; height: 10px; background-color: #0056b3;"></div> <div style="width: 150px; height: 10px; background-color: #0056b3;"></div> <div style="width: 150px; height: 10px; background-color: #0056b3;"></div>

ID: 947a3cde



In the figure above,  $\overline{MQ}$  and  $\overline{NR}$  intersect at point  $P$ ,  $NP = QP$ , and  $MP = PR$ . What is the measure, in degrees, of  $\angle QMR$ ? (Disregard the degree symbol when gridding your answer.)

## Question ID deff8a2f

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Geometry and Trigonometry	Area and volume	<div style="width: 30%; background-color: #0056b3; height: 10px;"></div> <div style="width: 30%; background-color: #0056b3; height: 10px;"></div> <div style="width: 30%; background-color: #0056b3; height: 10px;"></div>

ID: deff8a2f

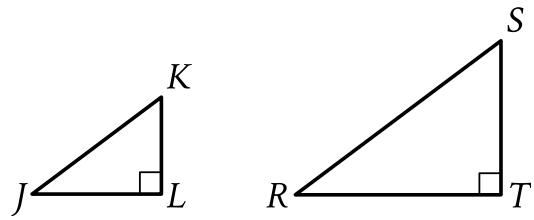
The circumference of the base of a right circular cylinder is  $20\pi$  meters, and the height of the cylinder is 6 meters. What is the volume, in cubic meters, of the cylinder?

- A.  $60\pi$
- B.  $120\pi$
- C.  $600\pi$
- D.  $2,400\pi$

# Question ID babd7461

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Geometry and Trigonometry	Area and volume	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div>

ID: babd7461



Note: Figure not drawn to scale.

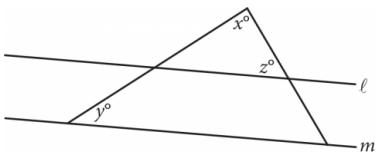
In the figure shown, triangle  $\mathbf{JKL}$  is similar to triangle  $\mathbf{RST}$ , where  $\mathbf{J}$  corresponds to  $\mathbf{R}$  and  $\mathbf{K}$  corresponds to  $\mathbf{S}$ . The length of  $\overline{JK}$  is 15, and the perimeter of triangle  $\mathbf{JKL}$  is 36. The length of  $\overline{RS}$  is 135. What is the perimeter of triangle  $\mathbf{RST}$ ?

- A. 324
- B. 540
- C. 2,916
- D. 8,100

# Question ID a6dbad6b

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Geometry and Trigonometry	Lines, angles, and triangles	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 25%; background-color: #e0e0e0; height: 10px;"></div> <div style="width: 25%; background-color: #e0e0e0; height: 10px;"></div>

ID: a6dbad6b



Note: Figure not drawn to scale.

In the figure above, lines  $\ell$  and  $m$  are parallel,  $y = 20$ , and

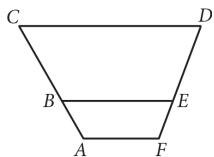
$z = 60$ . What is the value of  $x$ ?

- A. 120
- B. 100
- C. 90
- D. 80

# Question ID 81b664bc

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Geometry and Trigonometry	Lines, angles, and triangles	<div style="width: 20%; background-color: #0056b3; height: 10px;"></div> <div style="width: 20%; background-color: #0056b3; height: 10px;"></div> <div style="width: 60%; background-color: #e0e0e0; height: 10px;"></div>

ID: 81b664bc



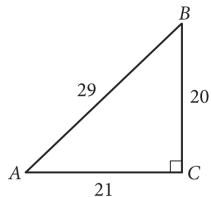
In the figure above,  $\overline{AF}$ ,  $\overline{BE}$ , and  $\overline{CD}$  are parallel. Points  $B$  and  $E$  lie on  $\overline{AC}$  and  $\overline{FD}$ , respectively. If  $AB = 9$ ,  $BC = 18.5$ , and  $FE = 8.5$ , what is the length of  $\overline{ED}$ , to the nearest tenth?

- A. 16.8
- B. 17.5
- C. 18.4
- D. 19.6

# Question ID 902dc959

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Geometry and Trigonometry	Right triangles and trigonometry	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 50%; background-color: #e0e0e0; height: 10px;"></div>

ID: 902dc959



In the figure above, what is the value of  $\tan(A)$ ?

A.  $\frac{20}{29}$

B.  $\frac{21}{29}$

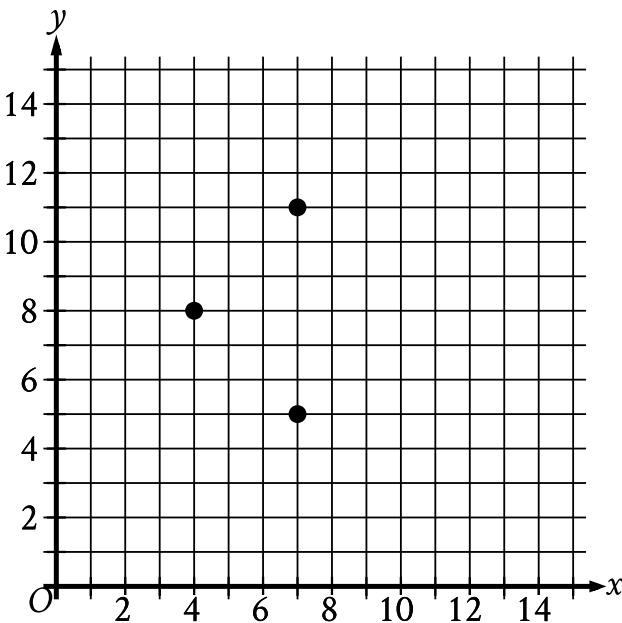
C.  $\frac{20}{21}$

D.  $\frac{21}{20}$

# Question ID 096c7ef5

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Geometry and Trigonometry	Area and volume	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 50%; background-color: #e0e0e0; height: 10px;"></div>

ID: 096c7ef5



The three points shown define a circle. The circumference of this circle is  $k\pi$ , where  $k$  is a constant. What is the value of  $k$ ?

- A. 3
- B. 6
- C. 7
- D. 9

# Question ID ec5d4823

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Geometry and Trigonometry	Area and volume	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 50%; background-color: #e0e0e0; height: 10px;"></div>

ID: ec5d4823

What is the volume, in cubic centimeters, of a right rectangular prism that has a length of 4 centimeters, a width of 9 centimeters, and a height of 10 centimeters?

## Question ID 2b41a4c4

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Geometry and Trigonometry	Area and volume	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div>

ID: 2b41a4c4

A right rectangular prism has a length of **11** meters, a width of **8** meters, and a height of **10** meters. What is the volume, in cubic meters, of the prism?

## Question ID cbe8ca31

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Geometry and Trigonometry	Lines, angles, and triangles	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div>

ID: cbe8ca31

In  $\triangle XYZ$ , the measure of  $\angle X$  is  $24^\circ$  and the measure of  $\angle Y$  is  $98^\circ$ . What is the measure of  $\angle Z$ ?

- A.  $58^\circ$
- B.  $74^\circ$
- C.  $122^\circ$
- D.  $212^\circ$

## Question ID 94364a79

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Geometry and Trigonometry	Lines, angles, and triangles	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 50%; background-color: #e0e0e0; height: 10px;"></div>

ID: 94364a79

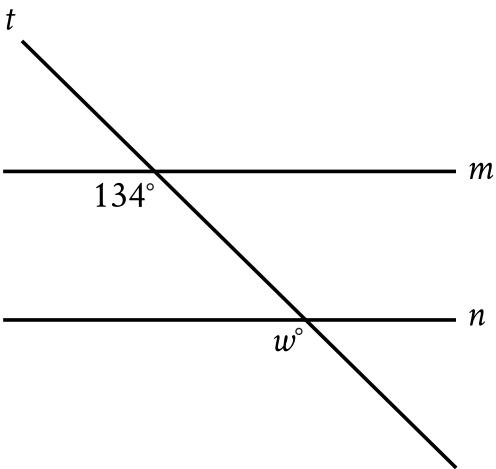
Two nearby trees are perpendicular to the ground, which is flat. One of these trees is **10** feet tall and has a shadow that is **5** feet long. At the same time, the shadow of the other tree is **2** feet long. How tall, in feet, is the other tree?

- A. **3**
- B. **4**
- C. **8**
- D. **27**

## Question ID c24e1bda

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Geometry and Trigonometry	Lines, angles, and triangles	<div style="width: 25%; background-color: #003366; height: 10px;"></div> <div style="width: 25%; background-color: #cccccc; height: 10px;"></div> <div style="width: 25%; background-color: #cccccc; height: 10px;"></div>

ID: c24e1bda



Note: Figure not drawn to scale.

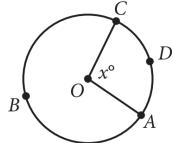
In the figure, line  $m$  is parallel to line  $n$ . What is the value of  $w$ ?

- A. 13
- B. 34
- C. 66
- D. 134

# Question ID c8345903

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Geometry and Trigonometry	Circles	<div style="width: 100px; height: 10px; background-color: #0056b3;"></div> <div style="width: 100px; height: 10px; background-color: #0056b3;"></div> <div style="width: 100px; height: 10px; background-color: #0056b3;"></div>

ID: c8345903



The circle above has center  $O$ , the length of arc  $\overset{\frown}{ADC}$  is  $5\pi$ , and

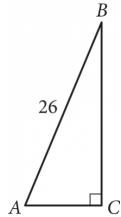
$x = 100$ . What is the length of arc  $\overset{\frown}{ABC}$ ?

- A.  $9\pi$
- B.  $13\pi$
- C.  $18\pi$
- D.  $\frac{13}{2}\pi$

# Question ID bd87bc09

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Geometry and Trigonometry	Right triangles and trigonometry	<div style="width: 75%; background-color: #0056b3; height: 10px;"></div>

ID: bd87bc09



Triangle  $ABC$  above is a right triangle, and  $\sin(B) = \frac{5}{13}$ .

What is the length of side  $\overline{BC}$ ?

## Question ID f7dbde16

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Geometry and Trigonometry	Lines, angles, and triangles	<div style="width: 30%; background-color: #0056b3; height: 10px;"></div> <div style="width: 30%; background-color: #0056b3; height: 10px;"></div> <div style="width: 30%; background-color: #0056b3; height: 10px;"></div>

ID: f7dbde16

In triangles  $LMN$  and  $RST$ , angles  $L$  and  $R$  each have measure  $60^\circ$ ,  $LN = 10$ , and  $RT = 30$ . Which additional piece of information is sufficient to prove that triangle  $LMN$  is similar to triangle  $RST$ ?

- A.  $MN = 7$  and  $ST = 7$
- B.  $MN = 7$  and  $ST = 21$
- C. The measures of angles  $M$  and  $S$  are  $70^\circ$  and  $60^\circ$ , respectively.
- D. The measures of angles  $M$  and  $T$  are  $70^\circ$  and  $50^\circ$ , respectively.

## Question ID 58c26db8

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Geometry and Trigonometry	Right triangles and trigonometry	<div style="width: 75%; background-color: #0056b3; height: 10px;"></div>

ID: 58c26db8

The perimeter of an isosceles right triangle is  $18 + 18\sqrt{2}$  inches. What is the length, in inches, of the hypotenuse of this triangle?

- A. 9
- B.  $9\sqrt{2}$
- C. 18
- D.  $18\sqrt{2}$

## Question ID e336a1d2

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Geometry and Trigonometry	Area and volume	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 50%; background-color: #e0e0e0; height: 10px;"></div>

ID: e336a1d2

A cube has an edge length of **41** inches. What is the volume, in cubic inches, of the cube?

- A. 164
- B. 1,681
- C. 10,086
- D. 68,921

# Question ID c0586eb5

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Geometry and Trigonometry	Area and volume	<div style="width: 20%; background-color: #0056b3; height: 10px;"></div> <div style="width: 20%; background-color: #0056b3; height: 10px;"></div> <div style="width: 60%; background-color: #e0e0e0; height: 10px;"></div>

ID: c0586eb5

A cylinder has a diameter of **8** inches and a height of **12** inches. What is the volume, in cubic inches, of the cylinder?

- A.  $16\pi$
- B.  $96\pi$
- C.  $192\pi$
- D.  $768\pi$

## Question ID 03c6994f

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Geometry and Trigonometry	Area and volume	<div style="width: 20%; background-color: #0056b3; height: 10px;"></div> <div style="width: 20%; background-color: #0056b3; height: 10px;"></div> <div style="width: 60%; background-color: #e0e0e0; height: 10px;"></div>

ID: 03c6994f

Square A has side lengths that are **246** times the side lengths of square B. The area of square A is ***k*** times the area of square B. What is the value of ***k***?

- A. **60,516**
- B. **492**
- C. **246**
- D. **123**

## Question ID 151eda3c

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Geometry and Trigonometry	Area and volume	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 50%; background-color: #e0e0e0; height: 10px;"></div>

ID: 151eda3c

A manufacturing company produces two sizes of cylindrical containers that each have a height of 50 centimeters. The radius of container A is 16 centimeters, and the radius of container B is 25% longer than the radius of container A. What is the volume, in cubic centimeters, of container B?

- A.  $16,000\pi$
- B.  $20,000\pi$
- C.  $25,000\pi$
- D.  $31,250\pi$

## Question ID 35d37640

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Geometry and Trigonometry	Circles	<div style="width: 75%; background-color: #0056b3; height: 10px;"></div>

ID: 35d37640

Point  $F$  lies on a unit circle in the  $xy$ -plane and has coordinates  $(1, 0)$ . Point  $G$  is the center of the circle and has coordinates  $(0, 0)$ . Point  $H$  also lies on the circle and has coordinates  $(-1, y)$ , where  $y$  is a constant. Which of the following could be the positive measure of angle  $FGH$ , in radians?

- A.  $\frac{27\pi}{2}$
- B.  $\frac{29\pi}{2}$
- C.  $24\pi$
- D.  $25\pi$

# Question ID 2266984b

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Geometry and Trigonometry	Circles	<div style="width: 75%; background-color: #0056b3; height: 10px;"></div>

ID: 2266984b

$$x^2 + 20x + y^2 + 16y = -20$$

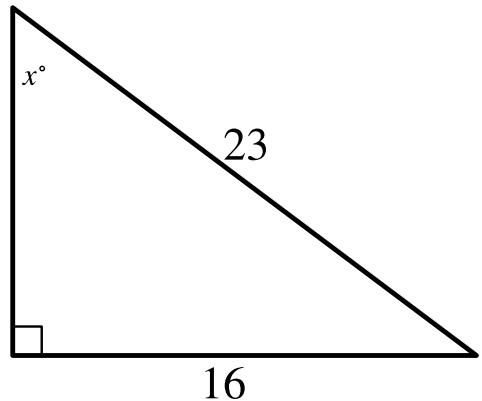
The equation above defines a circle in the  $xy$ -plane. What are the coordinates of the center of the circle?

- A.  $(-20, -16)$
- B.  $(-10, -8)$
- C.  $(10, 8)$
- D.  $(20, 16)$

# Question ID 1429dcdf

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Geometry and Trigonometry	Right triangles and trigonometry	<div style="width: 75%; background-color: #0056b3; height: 10px;"></div>

ID: 1429dcdf



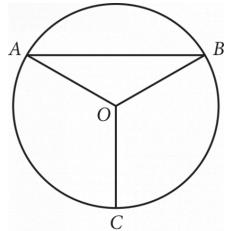
Note: Figure not drawn to scale.

In the triangle shown, what is the value of  $\sin x^\circ$ ?

# Question ID 69b0d79d

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Geometry and Trigonometry	Circles	<div style="width: 100px; height: 10px; background-color: #0056b3;"></div> <div style="width: 100px; height: 10px; background-color: #0056b3;"></div> <div style="width: 100px; height: 10px; background-color: #0056b3;"></div>

ID: 69b0d79d



Point  $O$  is the center of the circle above, and the measure of  $\angle OAB$  is  $30^\circ$ . If the

length of  $\overline{OC}$  is 18, what is the length of arc  $\overset{\frown}{AB}$ ?

- A.  $9\pi$
- B.  $12\pi$
- C.  $15\pi$
- D.  $18\pi$

## Question ID 5a7e3b46

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Geometry and Trigonometry	Right triangles and trigonometry	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 50%; background-color: #e0e0e0; height: 10px;"></div>

ID: 5a7e3b46

In  $\triangle ABC$ ,  $\angle B$  is a right angle and the length of  $\overline{BC}$  is 136 millimeters. If  $\cos A = \frac{3}{5}$ , what is the length, in millimeters, of  $\overline{AB}$ ?

- A. 34
- B. 102
- C. 136
- D. 170

# Question ID a2659088

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Geometry and Trigonometry	Area and volume	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 50%; background-color: #e0e0e0; height: 10px;"></div>

ID: a2659088

A right circular cylinder has a height of **8 meters (m)** and a base with a radius of **12 m**. What is the volume, **in  $m^3$** , of the cylinder?

- A.  $8\pi$
- B.  $20\pi$
- C.  $768\pi$
- D.  $1,152\pi$

## Question ID 502d9690

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Geometry and Trigonometry	Area and volume	<div style="width: 20%; background-color: #0056b3; height: 10px;"></div> <div style="width: 30%; background-color: #0056b3; height: 10px;"></div> <div style="width: 50%; background-color: #0056b3; height: 10px;"></div>

ID: 502d9690

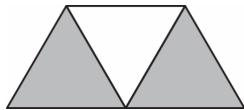
Rectangle  $ABCD$  is similar to rectangle  $EFGH$ . The area of rectangle  $ABCD$  is 648 square inches, and the area of rectangle  $EFGH$  is 72 square inches. The length of the longest side of rectangle  $ABCD$  is 36 inches. What is the length, in inches, of the longest side of rectangle  $EFGH$ ?

- A. 4
- B. 9
- C. 12
- D. 36

## Question ID 4c95c7d4

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Geometry and Trigonometry	Right triangles and trigonometry	<div style="width: 75%; background-color: #0056b3; height: 10px;"></div>

ID: 4c95c7d4



A graphic designer is creating a logo for a company. The logo is shown in the figure above. The logo is in the shape of a trapezoid and consists of three congruent equilateral triangles. If the perimeter of the logo is 20 centimeters, what is the combined area of the shaded regions, in square centimeters, of the logo?

A.  $2\sqrt{3}$

B.  $4\sqrt{3}$

C.  $8\sqrt{3}$

D. 16

## Question ID b8a225ff

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Geometry and Trigonometry	Circles	<div style="width: 30%; background-color: #0056b3; height: 10px;"></div> <div style="width: 30%; background-color: #0056b3; height: 10px;"></div> <div style="width: 30%; background-color: #0056b3; height: 10px;"></div>

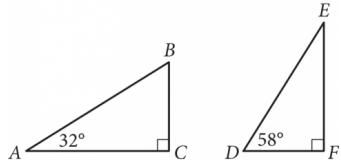
ID: b8a225ff

Circle A in the  $xy$ -plane has the equation  $(x + 5)^2 + (y - 5)^2 = 4$ . Circle B has the same center as circle A. The radius of circle B is two times the radius of circle A. The equation defining circle B in the  $xy$ -plane is  $(x + 5)^2 + (y - 5)^2 = k$ , where  $k$  is a constant. What is the value of  $k$ ?

# Question ID 933fee1a

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Geometry and Trigonometry	Lines, angles, and triangles	<div style="width: 20%; background-color: #0056b3; height: 10px;"></div> <div style="width: 20%; background-color: #0056b3; height: 10px;"></div> <div style="width: 60%; background-color: #e0e0e0; height: 10px;"></div>

ID: 933fee1a



Triangles  $ABC$  and  $DEF$  are shown above. Which of the

following is equal to the ratio  $\frac{BC}{AB}$ ?

A.  $\frac{DE}{DF}$

B.  $\frac{DF}{DE}$

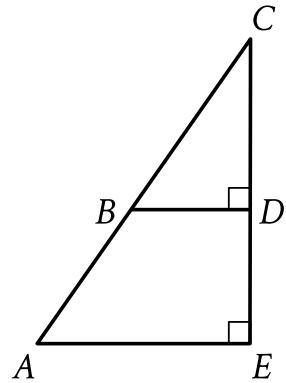
C.  $\frac{DF}{EF}$

D.  $\frac{EF}{DE}$

# Question ID 2f7c92ad

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Geometry and Trigonometry	Lines, angles, and triangles	<div style="width: 20%; background-color: #0056b3; height: 10px;"></div> <div style="width: 20%; background-color: #0056b3; height: 10px;"></div> <div style="width: 60%; background-color: #e0e0e0; height: 10px;"></div>

ID: 2f7c92ad



Note: Figure not drawn to scale.

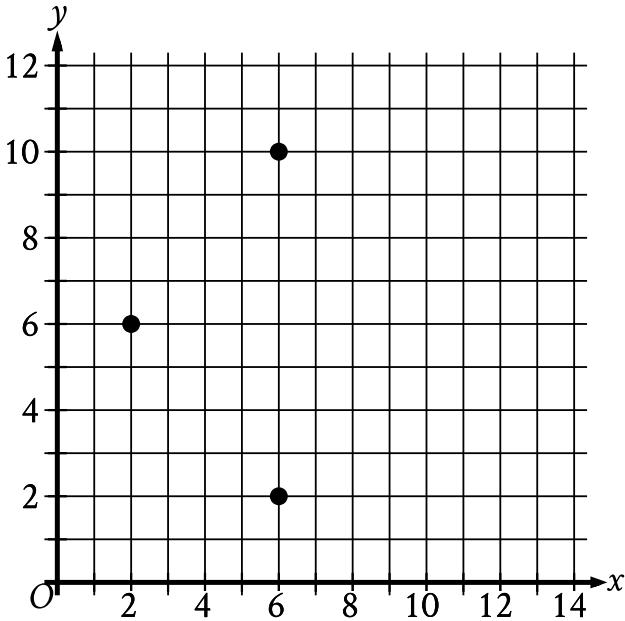
In the figure shown, triangle  $CAB$  is similar to triangle  $CBD$ . The measure of angle  $CBD$  is  $57^\circ$ , and  $AE = 26(BD)$ . What is the measure of angle  $CAB$ ?

- A.  $(26 \cdot 57)^\circ$
- B.  $(26 + 57)^\circ$
- C.  $57^\circ$
- D.  $26^\circ$

# Question ID b2528e6b

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Geometry and Trigonometry	Area and volume	<div style="width: 100px; height: 10px; background-color: #0056b3;"></div> <div style="width: 100px; height: 10px; background-color: #0056b3;"></div> <div style="width: 100px; height: 10px; background-color: #0056b3;"></div>

ID: b2528e6b

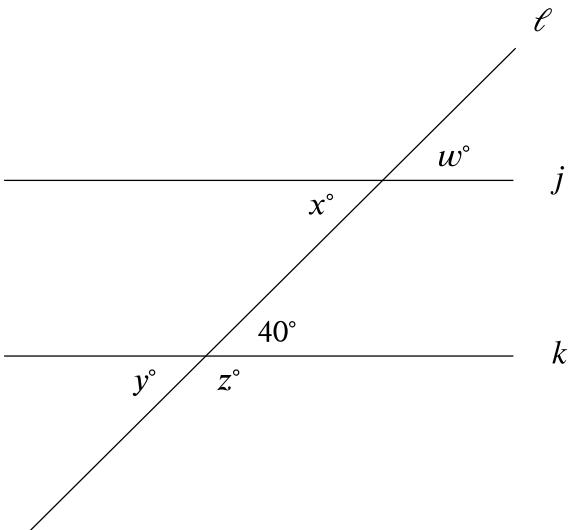


The three points shown define a circle. The circumference of this circle is  $k\pi$ , where  $k$  is a constant. What is the value of  $k$ ?

# Question ID 9d078710

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Geometry and Trigonometry	Lines, angles, and triangles	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div>

ID: 9d078710



Note: Figure not drawn to scale.

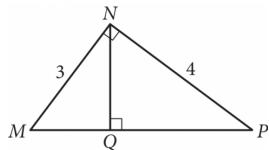
In the figure shown, line  $\ell$  intersects lines  $j$  and  $k$ . Which additional piece of information is sufficient to prove that lines  $j$  and  $k$  are parallel?

- A.  $w = 40$
- B.  $x = 140$
- C.  $y = 40$
- D.  $z = 140$

# Question ID 740bf79f

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Geometry and Trigonometry	Lines, angles, and triangles	<div style="width: 75%; background-color: #0056b3; height: 10px;"></div>

ID: 740bf79f



In the figure above, what is the length of  $NQ$ ?

- A. 2.2
- B. 2.3
- C. 2.4
- D. 2.5

# Question ID 0e40dfb0

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Geometry and Trigonometry	Area and volume	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div>

ID: 0e40dfb0

A rectangle has a length of **3** units and a width of **39** units. Which expression gives the area, in square units, of this rectangle?

- A.  $2(3 + 39)$
- B.  $2(3 \cdot 39)$
- C.  $3 + 39$
- D.  $3 \cdot 39$

# Question ID fc5ef8d3

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Geometry and Trigonometry	Area and volume	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div>

ID: fc5ef8d3

The table gives the perimeters of similar triangles  $TUV$  and  $XYZ$ , where  $\overline{TU}$  corresponds to  $\overline{XY}$ . The length of  $\overline{TU}$  is 6.

	Perimeter
Triangle $TUV$	50
Triangle $XYZ$	150

What is the length of  $\overline{XY}$ ?

- A. 2
- B. 6
- C. 18
- D. 56

# Question ID 38517165

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Geometry and Trigonometry	Area and volume	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 50%; background-color: #e0e0e0; height: 10px;"></div>

ID: 38517165

A circle has a circumference of  $31\pi$  centimeters. What is the diameter, in centimeters, of the circle?

# Question ID ab176ad6

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Geometry and Trigonometry	Circles	<div style="width: 75%; background-color: #0056b3; height: 10px;"></div>

ID: ab176ad6

The equation  $(x + 6)^2 + (y + 3)^2 = 121$  defines a circle in the xy-plane. What is the radius of the circle?

# Question ID d3fe472f

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Geometry and Trigonometry	Lines, angles, and triangles	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 50%; background-color: #e0e0e0; height: 10px;"></div>

ID: d3fe472f

Triangle  $ABC$  is similar to triangle  $XYZ$ , such that  $A$ ,  $B$ , and  $C$  correspond to  $X$ ,  $Y$ , and  $Z$  respectively. The length of each side of triangle  $XYZ$  is 2 times the length of its corresponding side in triangle  $ABC$ . The measure of side  $AB$  is 16. What is the measure of side  $XY$ ?

- A. 14
- B. 16
- C. 18
- D. 32

## Question ID 3e577e4a

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Geometry and Trigonometry	Circles	<div style="width: 100px; height: 10px; background-color: #0056b3;"></div> <div style="width: 100px; height: 10px; background-color: #0056b3;"></div> <div style="width: 100px; height: 10px; background-color: #0056b3;"></div>

ID: 3e577e4a

A circle in the  $xy$ -plane has its center at  $(-4, -6)$ . Line  $k$  is tangent to this circle at the point  $(-7, -7)$ . What is the slope of line  $k$ ?

- A.  $-3$
- B.  $-\frac{1}{3}$
- C.  $\frac{1}{3}$
- D.  $3$

# Question ID b0dc920d

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Geometry and Trigonometry	Area and volume	<div style="width: 100px; height: 10px; background-color: #0056b3;"></div> <div style="width: 150px; height: 10px; background-color: #0056b3;"></div> <div style="width: 150px; height: 10px; background-color: #0056b3;"></div>

ID: b0dc920d

A manufacturer determined that right cylindrical containers with a height that is 4 inches longer than the radius offer the optimal number of containers to be displayed on a shelf. Which of the following expresses the volume,  $V$ , in cubic inches, of such containers, where  $r$  is the radius, in inches?

- A.  $V = 4\pi r^3$
- B.  $V = \pi(2r)^3$
- C.  $V = \pi r^2 + 4\pi r$
- D.  $V = \pi r^3 + 4\pi r^2$

## Question ID 2085e10e

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Geometry and Trigonometry	Lines, angles, and triangles	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 50%; background-color: #e0e0e0; height: 10px;"></div>

ID: 2085e10e

In triangle  $DEF$ , the measure of angle  $D$  is  $47^\circ$  and the measure of angle  $E$  is  $97^\circ$ . In triangle  $RST$ , the measure of angle  $R$  is  $47^\circ$  and the measure of angle  $S$  is  $97^\circ$ . Which of the following additional pieces of information is needed to determine whether triangle  $DEF$  is similar to triangle  $RST$ ?

- A. The measure of angle  $F$
- B. The measure of angle  $T$
- C. The measure of angle  $F$  and the measure of angle  $T$
- D. No additional information is needed.

## Question ID fa2771d5

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Geometry and Trigonometry	Circles	<div style="width: 75%; background-color: #0056b3; height: 10px;"></div>

ID: fa2771d5

Circle A has equation  $(x - 7)^2 + (y + 3)^2 = 1$ . In the  $xy$ -plane, circle B is obtained by translating circle A to the right 4 units. Which equation represents circle B?

- A.  $(x - 7)^2 + (y + 7)^2 = 1$
- B.  $(x - 3)^2 + (y + 3)^2 = 1$
- C.  $(x - 11)^2 + (y + 3)^2 = 1$
- D.  $(x - 7)^2 + (y - 1)^2 = 1$

## Question ID bbaac300

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Geometry and Trigonometry	Right triangles and trigonometry	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div>

ID: bbaac300

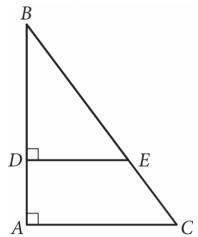
Triangle  $ABC$  is similar to triangle  $DEF$ , where angle  $A$  corresponds to angle  $D$ , and angles  $C$  and  $F$  are right angles. If  $\cos B = \frac{1}{22}$ , what is the value of  $\cos E$ ?

- A.  $\frac{1}{22}$
- B.  $\frac{1}{23}$
- C.  $\frac{21}{22}$
- D.  $\frac{22}{23}$

## Question ID 55bb437a

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Geometry and Trigonometry	Right triangles and trigonometry	<div style="width: 75%; background-color: #0056b3; height: 10px;"></div>

ID: 55bb437a



In the figure above,  $\tan B = \frac{3}{4}$ . If  $BC = 15$  and  $DA = 4$ , what is the length of  $\overline{DE}$ ?

# Question ID fecc446d

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Geometry and Trigonometry	Lines, angles, and triangles	<div style="width: 100px; height: 10px; background-color: #0056b3;"></div> <div style="width: 150px; height: 10px; background-color: #0056b3;"></div> <div style="width: 150px; height: 10px; background-color: #0056b3;"></div>

ID: fecc446d

A line intersects two parallel lines, forming four acute angles and four obtuse angles. The measure of one of these eight angles is  $(7x - 250)^\circ$ . The sum of the measures of four of the eight angles is  $k^\circ$ . Which of the following could NOT be equivalent to  $k$ , for all values of  $x$ ?

- A.  $-14x + 1,540$
- B.  $14x - 320$
- C.  $-28x + 1,720$
- D.  $360$

# Question ID 8e7689e0

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Geometry and Trigonometry	Circles	<div style="width: 25%; background-color: #0056b3;"></div> <div style="width: 25%; background-color: #0056b3;"></div> <div style="width: 50%; background-color: #e0e0e0;"></div>

ID: 8e7689e0

The number of radians in a 720-degree angle can be written as  $a\pi$ , where  $a$  is a constant. What is the value of  $a$ ?

## Question ID 3563d76d

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Geometry and Trigonometry	Lines, angles, and triangles	<div style="width: 25%; background-color: #003366; height: 10px;"></div> <div style="width: 75%; background-color: #cccccc; height: 10px;"></div> <div style="width: 75%; background-color: #cccccc; height: 10px;"></div>

ID: 3563d76d

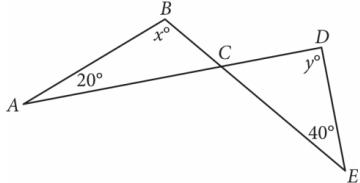
At a certain time and day, the Washington Monument in Washington, DC, casts a shadow that is 300 feet long. At the same time, a nearby cherry tree casts a shadow that is 16 feet long. Given that the Washington Monument is approximately 555 feet tall, which of the following is closest to the height, in feet, of the cherry tree?

- A. 10
- B. 20
- C. 30
- D. 35

# Question ID dfc420b2

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Geometry and Trigonometry	Lines, angles, and triangles	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 25%; background-color: #e0e0e0; height: 10px;"></div> <div style="width: 25%; background-color: #e0e0e0; height: 10px;"></div>

ID: dfc420b2



Note: Figure not drawn to scale.

In the figure above,  $\overline{AD}$  intersects  $\overline{BE}$  at  $C$ . If

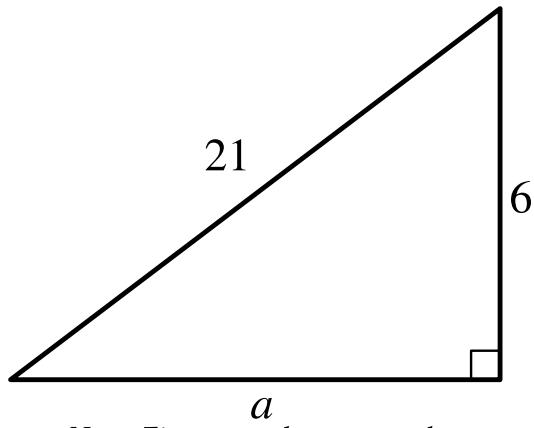
$x = 100$ , what is the value of  $y$ ?

- A. 100
- B. 90
- C. 80
- D. 60

# Question ID de550be0

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Geometry and Trigonometry	Right triangles and trigonometry	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 50%; background-color: #e0e0e0; height: 10px;"></div>

ID: de550be0



Note: Figure not drawn to scale.

For the triangle shown, which expression represents the value of  $a$ ?

- A.  $\sqrt{21^2 - 6^2}$
- B.  $21^2 - 6^2$
- C.  $\sqrt{21 - 6}$
- D.  $21 - 6$

# Question ID f2495de4

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Geometry and Trigonometry	Circles	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div>

ID: f2495de4

What is the value of  $\cos \frac{565\pi}{6}$ ?

A.  $\frac{1}{2}$

B. 1

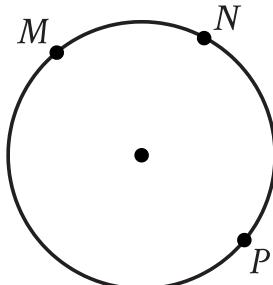
C.  $\frac{\sqrt{3}}{2}$

D.  $\sqrt{3}$

# Question ID 800e71b8

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Geometry and Trigonometry	Circles	<div style="width: 20%; background-color: #0056b3; height: 10px;"></div> <div style="width: 20%; background-color: #0056b3; height: 10px;"></div> <div style="width: 60%; background-color: #e0e0e0; height: 10px;"></div>

ID: 800e71b8



Points  $M$ ,  $N$ , and  $P$  lie on the circle shown. On this circle, minor arc  $MN$  has a length of 39 centimeters and major arc  $MPN$  has a length of 195 centimeters. What is the circumference, in centimeters, of the circle shown?

- A. 39
- B. 156
- C. 195
- D. 234

# Question ID 901e3285

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Geometry and Trigonometry	Lines, angles, and triangles	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 50%; background-color: #e0e0e0; height: 10px;"></div>

ID: 901e3285

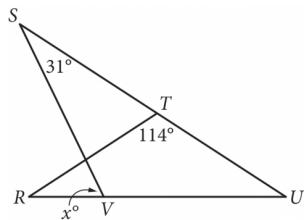
In triangle  $ABC$ , the measure of angle  $A$  is  $50^\circ$ . If triangle  $ABC$  is isosceles, which of the following is NOT a possible measure of angle  $B$ ?

- A.  $50^\circ$
- B.  $65^\circ$
- C.  $80^\circ$
- D.  $100^\circ$

# Question ID bd7f6e30

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Geometry and Trigonometry	Lines, angles, and triangles	<div style="width: 75%; background-color: #0056b3; height: 10px;"></div>

ID: bd7f6e30



In the figure above,  $RT = TU$ .

What is the value of  $x$ ?

- A. 72
- B. 66
- C. 64
- D. 58

# Question ID 6708546e

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Geometry and Trigonometry	Area and volume	<div style="width: 25%; background-color: #005a9f; height: 10px;"></div> <div style="width: 25%; background-color: #005a9f; height: 10px;"></div> <div style="width: 25%; background-color: #005a9f; height: 10px;"></div>

ID: 6708546e

Parallelogram  $ABCD$  is similar to parallelogram  $PQRS$ . The length of each side of parallelogram  $PQRS$  is 2 times the length of its corresponding side of parallelogram  $ABCD$ . The area of parallelogram  $ABCD$  is 5 square centimeters. What is the area, in square centimeters, of parallelogram  $PQRS$ ?

- A. 7
- B. 10
- C. 20
- D. 25

# Question ID 0837c3b9

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Geometry and Trigonometry	Area and volume	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div>

ID: 0837c3b9

Triangle  $ABC$  and triangle  $DEF$  are similar triangles, where  $\overline{AB}$  and  $\overline{DE}$  are corresponding sides. If  $DE = 2AB$  and the perimeter of triangle  $ABC$  is 20, what is the perimeter of triangle  $DEF$ ?

- A. 10
- B. 40
- C. 80
- D. 120

# Question ID 9e44284b

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Geometry and Trigonometry	Circles	<div style="width: 75%; background-color: #0056b3; height: 10px;"></div>

ID: 9e44284b

In the  $xy$ -plane, the graph of  $2x^2 - 6x + 2y^2 + 2y = 45$  is a

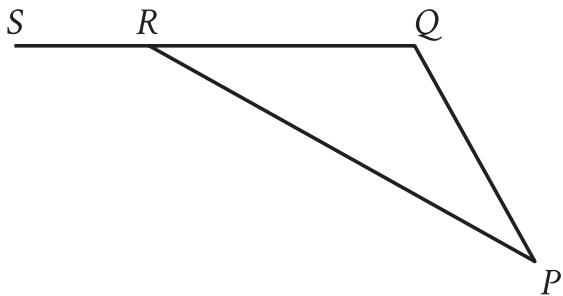
circle. What is the radius of the circle?

- A. 5
- B. 6.5
- C.  $\sqrt{40}$
- D.  $\sqrt{50}$

# Question ID 014edcb7

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Geometry and Trigonometry	Lines, angles, and triangles	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 50%; background-color: #e0e0e0; height: 10px;"></div>

ID: 014edcb7



Note: Figure not drawn to scale.

In triangle  $PQR$ ,  $\overline{QR}$  is extended to point  $S$ . The measure of  $\angle PQR$  is  $132^\circ$ , and the measure of  $\angle PRS$  is  $163^\circ$ . What is the measure of  $\angle QPR$ ?

- A.  $48^\circ$
- B.  $31^\circ$
- C.  $24^\circ$
- D.  $17^\circ$

## Question ID 568d66a7

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Geometry and Trigonometry	Right triangles and trigonometry	<div style="width: 75%; background-color: #0056b3; height: 10px;"></div>

ID: 568d66a7

An isosceles right triangle has a perimeter of  $94 + 94\sqrt{2}$  inches. What is the length, in inches, of one leg of this triangle?

- A. 47
- B.  $47\sqrt{2}$
- C. 94
- D.  $94\sqrt{2}$

## Question ID 322a6dfe

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Geometry and Trigonometry	Lines, angles, and triangles	<div style="width: 30%; background-color: #0056b3; height: 10px;"></div> <div style="width: 30%; background-color: #0056b3; height: 10px;"></div> <div style="width: 30%; background-color: #0056b3; height: 10px;"></div>

ID: 322a6dfe

Quadrilaterals  $PQRS$  and  $WXYZ$  are similar, where  $P$ ,  $Q$ , and  $R$  correspond to  $W$ ,  $X$ , and  $Y$ , respectively. The measure of  $\angle S$  is  $135^\circ$ ,  $PS = 45$ , and  $WZ = 9$ . What is the measure of  $\angle Z$ ?

- A.  $5^\circ$
- B.  $27^\circ$
- C.  $45^\circ$
- D.  $135^\circ$

## Question ID 0e709a29

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Geometry and Trigonometry	Right triangles and trigonometry	<div style="width: 75%; background-color: #0056b3; height: 10px;"></div>

ID: 0e709a29

$$RS = 440$$

$$ST = 384$$

$$TR = 584$$

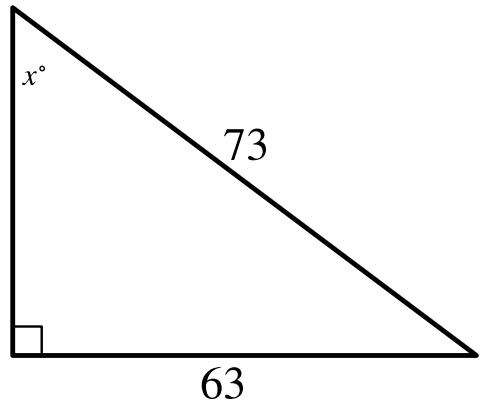
The side lengths of right triangle  $RST$  are given. Triangle  $RST$  is similar to triangle  $UVW$ , where  $S$  corresponds to  $V$  and  $T$  corresponds to  $W$ . What is the value of  $\tan W$ ?

- A.  $\frac{48}{73}$
- B.  $\frac{55}{73}$
- C.  $\frac{48}{55}$
- D.  $\frac{55}{48}$

# Question ID a6097ec2

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Geometry and Trigonometry	Right triangles and trigonometry	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div>

ID: a6097ec2



Note: Figure not drawn to scale.

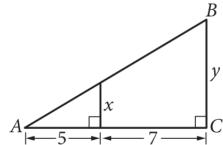
In the right triangle shown, what is the value of  $\sin x^\circ$ ?

- A.  $\frac{1}{73}$
- B.  $\frac{10}{73}$
- C.  $\frac{63}{73}$
- D.  $\frac{136}{73}$

# Question ID eeb4143c

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Geometry and Trigonometry	Lines, angles, and triangles	<div style="width: 100px; height: 10px; background-color: #0056b3;"></div> <div style="width: 150px; height: 10px; background-color: #0056b3;"></div> <div style="width: 150px; height: 10px; background-color: #0056b3;"></div>

ID: eeb4143c



Note: Figure not drawn to scale.

The area of triangle  $ABC$  above is at least 48 but no more than 60. If  $y$  is an integer, what is one possible value of  $x$ ?

## Question ID 5b2b8866

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Geometry and Trigonometry	Area and volume	<div style="width: 100px; height: 10px; background-color: #0056b3;"></div> <div style="width: 150px; height: 10px; background-color: #0056b3;"></div> <div style="width: 180px; height: 10px; background-color: #0056b3;"></div>

ID: 5b2b8866

A rectangular poster has an area of **360** square inches. A copy of the poster is made in which the length and width of the original poster are each increased by **20%**. What is the area of the copy, in square inches?

# Question ID fc8aa563

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Geometry and Trigonometry	Circles	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 50%; background-color: #e0e0e0; height: 10px;"></div>

ID: fc8aa563

What is the center of the circle in the  $xy$ -plane defined by the equation  $(x - 1)^2 + (y + 7)^2 = 1$ ?

- A.  $(-1, -7)$
- B.  $(-1, 7)$
- C.  $(1, -7)$
- D.  $(1, 7)$

## Question ID 2855cb58

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Geometry and Trigonometry	Circles	<div style="width: 75%; background-color: #0056b3; height: 10px;"></div>

ID: 2855cb58

A circle in the  $xy$ -plane has its center at  $(16, 17)$  and has a radius of  $7k$ . Which equation represents this circle?

- A.  $(x - 16)^2 + (y - 17)^2 = 49k$
- B.  $(x - 16)^2 + (y - 17)^2 = 49k^2$
- C.  $(x - 16)^2 + (y - 17)^2 = 7k$
- D.  $(x - 16)^2 + (y - 17)^2 = 7k^2$

# Question ID 74d8b897

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Geometry and Trigonometry	Circles	<div style="width: 20%; background-color: #0056b3; height: 10px;"></div> <div style="width: 20%; background-color: #0056b3; height: 10px;"></div> <div style="width: 60%; background-color: #e0e0e0; height: 10px;"></div>

ID: 74d8b897

An angle has a measure of  $\frac{9\pi}{20}$  radians. What is the measure of the angle in degrees?

# Question ID ee540927

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Geometry and Trigonometry	Circles	<div style="width: 25%; background-color: #0056b3;"></div> <div style="width: 25%; background-color: #0056b3;"></div> <div style="width: 50%; background-color: #e0e0e0;"></div>

ID: ee540927

$$x^2 + 58x + y^2 = 0$$

In the  $xy$ -plane, the graph of the given equation is a circle. What are the coordinates  $(x, y)$  of the center of the circle?

- A.  $(0, 29)$
- B.  $(0, -29)$
- C.  $(29, 0)$
- D.  $(-29, 0)$

## Question ID dc71597b

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Geometry and Trigonometry	Area and volume	<div style="width: 30%; background-color: #0056b3; height: 10px;"></div> <div style="width: 30%; background-color: #0056b3; height: 10px;"></div> <div style="width: 30%; background-color: #0056b3; height: 10px;"></div>

ID: dc71597b

A right circular cone has a volume of  $\frac{1}{3} \pi$  cubic feet and a height of 9 feet. What is the radius, in feet, of the base of the cone?

A.  $\frac{1}{3}$

B.  $\frac{1}{\sqrt{3}}$

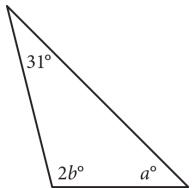
C.  $\sqrt{3}$

D. 3

# Question ID 410bdb6

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Geometry and Trigonometry	Lines, angles, and triangles	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div>

ID: 410bdb6



In the triangle above,  $a = 45$ . What is the value of  $b$ ?

- A. 52
- B. 59
- C. 76
- D. 104

## Question ID a0cacec1

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Geometry and Trigonometry	Circles	<div style="width: 20%; background-color: #0056b3; height: 10px;"></div> <div style="width: 20%; background-color: #0056b3; height: 10px;"></div> <div style="width: 60%; background-color: #e0e0e0; height: 10px;"></div>

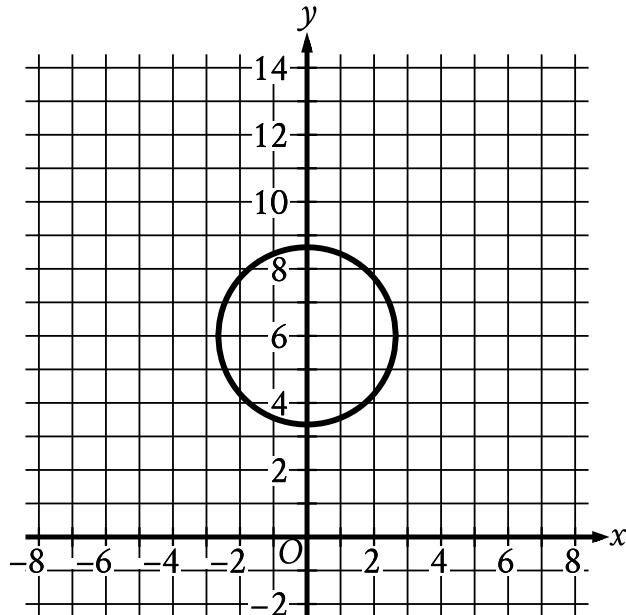
ID: a0cacec1

An angle has a measure of  $\frac{16\pi}{15}$  radians. What is the measure of the angle, in degrees?

# Question ID 1b2b20b9

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Geometry and Trigonometry	Circles	<div style="width: 100px; height: 10px; background-color: #0056b3;"></div> <div style="width: 100px; height: 10px; background-color: #0056b3;"></div> <div style="width: 100px; height: 10px; background-color: #0056b3;"></div>

ID: 1b2b20b9

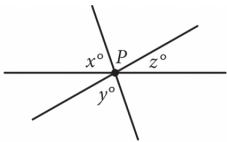


Circle A shown is defined by the equation  $x^2 + (y - 6)^2 = 7$ . Circle B (not shown) has the same radius but is translated 96 units to the right. If the equation of circle B is  $(x - h)^2 + (y - k)^2 = a$ , where  $h$ ,  $k$ , and  $a$  are constants, what is the value of  $4a$ ?

# Question ID 087cdcfid

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Geometry and Trigonometry	Lines, angles, and triangles	<div style="width: 25%; background-color: #003366; height: 10px;"></div> <div style="width: 75%; background-color: #cccccc; height: 10px;"></div>

ID: 087cdcfid



Note: Figure not drawn to scale.

In the figure, three lines intersect at point P. If  $x = 65$  and

$y = 75$ , what is the value of  $z$ ?

- A. 140
- B. 80
- C. 40
- D. 20

# Question ID c88183f7

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Geometry and Trigonometry	Area and volume	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div>

ID: c88183f7

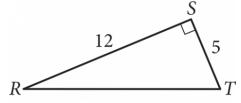
A rectangle has a length of **13** and a width of **6**. What is the perimeter of the rectangle?

- A. **12**
- B. **26**
- C. **38**
- D. **52**

# Question ID 6933b3d9

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Geometry and Trigonometry	Right triangles and trigonometry	<div style="width: 75%; background-color: #0056b3; height: 10px;"></div>

ID: 6933b3d9

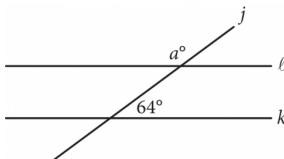


In triangle  $RST$  above, point  $W$  (not shown) lies on  $\overline{RT}$ . What is the value of  $\cos(\angle RSW) - \sin(\angle WST)$ ?

# Question ID 992f4e93

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Geometry and Trigonometry	Lines, angles, and triangles	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 25%; background-color: #cccccc; height: 10px;"></div> <div style="width: 25%; background-color: #cccccc; height: 10px;"></div>

ID: 992f4e93



Note: Figure not drawn to scale.

In the figure above, lines  $\ell$  and  $k$  are parallel.

What is the value of  $a$ ?

- A. 26
- B. 64
- C. 116
- D. 154

## Question ID f1747a6a

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Geometry and Trigonometry	Lines, angles, and triangles	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div>

ID: f1747a6a

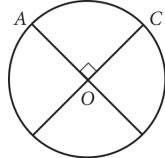
In triangle  $ABC$ , the measure of angle  $B$  is  $52^\circ$  and the measure of angle  $C$  is  $17^\circ$ . What is the measure of angle  $A$ ?

- A.  $21^\circ$
- B.  $35^\circ$
- C.  $69^\circ$
- D.  $111^\circ$

# Question ID 23c5fcce

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Geometry and Trigonometry	Circles	<div style="width: 25%; background-color: #003366; height: 10px;"></div> <div style="width: 75%; background-color: #cccccc; height: 10px;"></div>

ID: 23c5fcce



The circle above with center  $O$  has a circumference of 36.

What is the length of minor arc  $\widehat{AC}$ ?

- A. 9
- B. 12
- C. 18
- D. 36

## Question ID 6ab30ce3

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Geometry and Trigonometry	Right triangles and trigonometry	<div style="width: 75%; background-color: #0056b3; height: 10px;"></div>

ID: 6ab30ce3

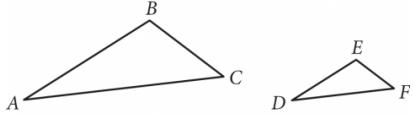
Triangle  $ABC$  is similar to triangle  $DEF$ , where  $A$  corresponds to  $D$  and  $C$  corresponds to  $F$ . Angles  $C$  and  $F$  are right angles. If  $\tan(A) = \sqrt{3}$  and  $DF = 125$ , what is the length of  $\overline{DE}$ ?

- A.  $125\frac{\sqrt{3}}{3}$
- B.  $125\frac{\sqrt{3}}{2}$
- C.  $125\sqrt{3}$
- D. 250

# Question ID 1c3d613c

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Geometry and Trigonometry	Lines, angles, and triangles	<div style="width: 20%; background-color: #003366; height: 10px;"></div> <div style="width: 20%; background-color: #003366; height: 10px;"></div> <div style="width: 60%; background-color: #cccccc; height: 10px;"></div>

ID: 1c3d613c



Note: Figures not drawn to scale.

Triangle  $ABC$  and triangle  $DEF$  are shown. The relationship between the side lengths of the two triangles is such that  $\frac{AB}{DE} = \frac{BC}{EF} = \frac{AC}{DF} = 3$ . If the measure of angle  $BAC$  is  $20^\circ$ , what is the measure, in degrees, of angle  $EDF$ ? (Disregard the degree symbol when gridding your answer.)

## Question ID 2d521ca9

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Geometry and Trigonometry	Circles	<div style="width: 25%; background-color: #0056b3;"></div> <div style="width: 25%; background-color: #0056b3;"></div> <div style="width: 50%; background-color: #e0e0e0;"></div>

ID: 2d521ca9

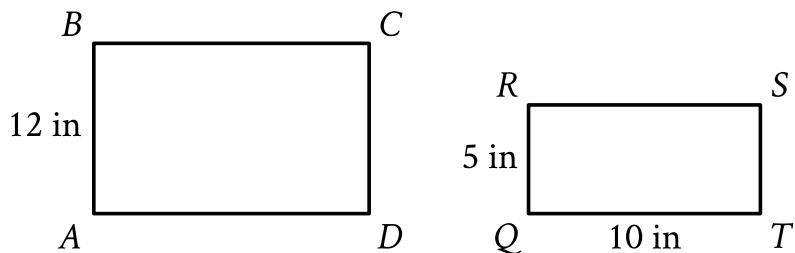
The measure of angle  $Z$  is  $60^\circ$ . What is the measure, in radians, of angle  $Z$ ?

- A.  $\frac{1}{6}\pi$
- B.  $\frac{1}{3}\pi$
- C.  $\frac{2}{3}\pi$
- D.  $1\pi$

# Question ID e9c5fb2

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Geometry and Trigonometry	Area and volume	<div style="width: 20%; background-color: #0056b3; height: 10px;"></div> <div style="width: 20%; background-color: #0056b3; height: 10px;"></div> <div style="width: 60%; background-color: #e0e0e0; height: 10px;"></div>

ID: e9c5fb2



Note: Figure not drawn to scale.

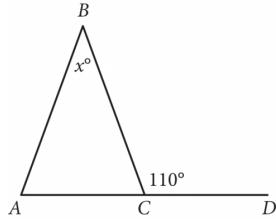
Rectangles  $ABCD$  and  $QRST$  shown are similar, where  $A$ ,  $B$ ,  $C$ , and  $D$  correspond to  $Q$ ,  $R$ ,  $S$ , and  $T$ , respectively. What is the length, in inches (in), of  $\overline{AD}$ ?

- A. 60
- B. 24
- C. 17
- D. 10

# Question ID 5733ce30

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Geometry and Trigonometry	Lines, angles, and triangles	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div>

ID: 5733ce30



In the given figure,  $\overline{AC}$  extends to point  $D$ . If the measure of  $\angle BAC$  is equal to the measure of  $\angle BCA$ , what is the value of  $x$ ?

- A. 110
- B. 70
- C. 55
- D. 40

## Question ID 7a8ad237

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Geometry and Trigonometry	Lines, angles, and triangles	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 50%; background-color: #e0e0e0; height: 10px;"></div>

ID: 7a8ad237

Triangles  $ABC$  and  $DEF$  are congruent, where  $A$  corresponds to  $D$ , and  $B$  and  $E$  are right angles. The measure of angle  $A$  is  $69^\circ$ . What is the measure, in degrees, of angle  $F$ ?

# Question ID 50774285

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Geometry and Trigonometry	Area and volume	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div>

ID: 50774285

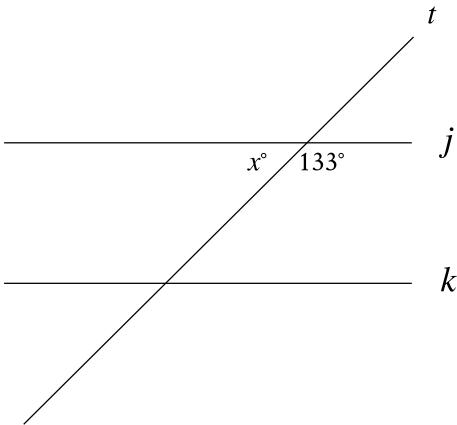
Each base of a right rectangular prism has a length of **19** inches and a width of **8** inches. The prism has a volume of **2,736** cubic inches. What is the height, in inches, of the prism?

- A. **18**
- B. **27**
- C. **144**
- D. **152**

# Question ID 3b4b5b1e

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Geometry and Trigonometry	Lines, angles, and triangles	<div style="width: 25%; background-color: #003366; height: 10px;"></div> <div style="width: 25%; background-color: #cccccc; height: 10px;"></div> <div style="width: 25%; background-color: #cccccc; height: 10px;"></div>

ID: 3b4b5b1e



Note: Figure not drawn to scale.

In the figure, line  $j$  is parallel to line  $k$ . What is the value of  $x$ ?

## Question ID 5b4757df

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Geometry and Trigonometry	Lines, angles, and triangles	<div style="width: 100px; height: 10px; background-color: #0056b3;"></div> <div style="width: 100px; height: 10px; background-color: #0056b3;"></div> <div style="width: 100px; height: 10px; background-color: #0056b3;"></div>

ID: 5b4757df

In triangle  $RST$ , angle  $T$  is a right angle, point  $L$  lies on  $\overline{RS}$ , point  $K$  lies on  $\overline{ST}$ , and  $\overline{LK}$  is parallel to  $\overline{RT}$ . If the length of  $\overline{RT}$  is 72 units, the length of  $\overline{LK}$  is 24 units, and the area of triangle  $RST$  is 792 square units, what is the length of  $\overline{KT}$ , in units?

## Question ID ca2235f6

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Geometry and Trigonometry	Circles	<div style="width: 100px; height: 10px; background-color: #0056b3;"></div> <div style="width: 100px; height: 10px; background-color: #0056b3;"></div> <div style="width: 100px; height: 10px; background-color: #0056b3;"></div>

ID: ca2235f6

A circle has center  $O$ , and points  $A$  and  $B$  lie on the circle. The measure of arc  $AB$  is  $45^\circ$  and the length of arc  $AB$  is 3 inches. What is the circumference, in inches, of the circle?

- A. 3
- B. 6
- C. 9
- D. 24

## Question ID 856372ca

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Geometry and Trigonometry	Circles	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 50%; background-color: #e0e0e0; height: 10px;"></div>

ID: 856372ca

In the  $xy$ -plane, a circle with radius 5 has center  $(-8, 6)$ . Which of the following is an equation of the circle?

- A.  $(x - 8)^2 + (y + 6)^2 = 25$
- B.  $(x + 8)^2 + (y - 6)^2 = 25$
- C.  $(x - 8)^2 + (y + 6)^2 = 5$
- D.  $(x + 8)^2 + (y - 6)^2 = 5$

## Question ID 9c0a0eca

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Geometry and Trigonometry	Area and volume	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 50%; background-color: #e0e0e0; height: 10px;"></div>

ID: 9c0a0eca

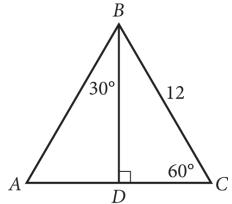
A triangle has a base length of **10** centimeters and a corresponding height of **70** centimeters. What is the area, in square centimeters, of the triangle?

- A. **700**
- B. **350**
- C. **175**
- D. **80**

# Question ID bf8d843e

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Geometry and Trigonometry	Right triangles and trigonometry	<div style="width: 20%; background-color: #0056b3; height: 10px;"></div> <div style="width: 20%; background-color: #0056b3; height: 10px;"></div> <div style="width: 60%; background-color: #e0e0e0; height: 10px;"></div>

ID: bf8d843e



In  $\triangle ABC$  above, what is the length of  $\overline{AD}$ ?

- A. 4
- B. 6
- C.  $6\sqrt{2}$
- D.  $6\sqrt{3}$

## Question ID aef4fd8a

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Geometry and Trigonometry	Area and volume	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 50%; background-color: #e0e0e0; height: 10px;"></div>

ID: aef4fd8a

The length of each side of a square is **94** centimeters (cm). Which expression gives the area, in **cm<sup>2</sup>**, of the square?

- A.  $2 \cdot 94$
- B.  $2 \cdot 94 \cdot 94$
- C.  $4 \cdot 94$
- D.  $94 \cdot 94$

# Question ID 981275d2

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Geometry and Trigonometry	Circles	<div style="width: 75%; background-color: #0056b3; height: 10px;"></div>

ID: 981275d2

$$(x - 6)^2 + (y + 5)^2 = 16$$

In the  $xy$ -plane, the graph of the equation above is a circle. Point  $P$  is on the circle and has coordinates  $(10, -5)$ . If  $\overline{PQ}$  is a diameter of the circle, what are the coordinates of point  $Q$ ?

- A.  $(2, -5)$
- B.  $(6, -1)$
- C.  $(6, -5)$
- D.  $(6, -9)$

# Question ID 89661424

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Geometry and Trigonometry	Circles	<div style="width: 100px; height: 10px; background-color: #0056b3;"></div> <div style="width: 150px; height: 10px; background-color: #0056b3;"></div> <div style="width: 150px; height: 10px; background-color: #0056b3;"></div>

ID: 89661424

A circle in the  $xy$ -plane has its center at  $(-5, 2)$  and has a radius of  $9$ . An equation of this circle is  $x^2 + y^2 + ax + by + c = 0$ , where  $a$ ,  $b$ , and  $c$  are constants. What is the value of  $c$ ?

## Question ID d03e29f1

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Geometry and Trigonometry	Circles	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div>

ID: d03e29f1

$$(x - 6)^2 + (y - 3)^2 = 81$$

The graph of the given equation in the  $xy$ -plane is a circle. What is the length of the radius of this circle?

- A. 3
- B. 6
- C. 9
- D. 81

## Question ID 7c25b0dc

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Geometry and Trigonometry	Right triangles and trigonometry	<div style="width: 30%; background-color: #0056b3; height: 10px;"></div> <div style="width: 30%; background-color: #0056b3; height: 10px;"></div> <div style="width: 30%; background-color: #0056b3; height: 10px;"></div>

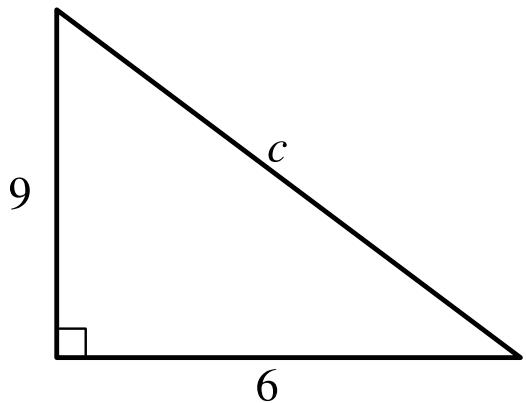
ID: 7c25b0dc

The length of a rectangle's diagonal is  $3\sqrt{17}$ , and the length of the rectangle's shorter side is 3. What is the length of the rectangle's longer side?

# Question ID 36661021

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Geometry and Trigonometry	Right triangles and trigonometry	<div style="width: 25%; background-color: #003366; height: 10px;"></div> <div style="width: 75%; background-color: #cccccc; height: 10px;"></div>

ID: 36661021



Note: Figure not drawn to scale.

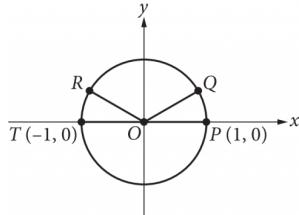
In the right triangle shown, which of the following is closest to the value of  $c$ ?

- A. 7.5
- B. 10.8
- C. 15
- D. 58.5

# Question ID 95ba2d09

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Geometry and Trigonometry	Circles	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 50%; background-color: #e0e0e0; height: 10px;"></div>

ID: 95ba2d09



In the  $xy$ -plane above, points  $P$ ,  $Q$ ,  $R$ , and  $T$  lie on the circle with center  $O$ . The degree measures of angles  $\angle POQ$  and  $\angle ROT$  are each  $30^\circ$ . What is the radian measure of angle  $\angle QOR$ ?

A.  $\frac{5}{6}\pi$

B.  $\frac{3}{4}\pi$

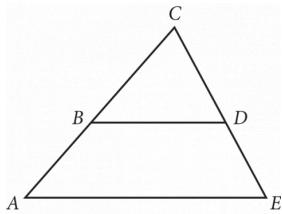
C.  $\frac{2}{3}\pi$

D.  $\frac{1}{3}\pi$

# Question ID 6dd463ca

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Geometry and Trigonometry	Lines, angles, and triangles	<div style="width: 20%; background-color: #0056b3; height: 10px;"></div> <div style="width: 20%; background-color: #0056b3; height: 10px;"></div> <div style="width: 60%; background-color: #e0e0e0; height: 10px;"></div>

ID: 6dd463ca



Note: Figure not drawn to scale.

In the figure above, segments  $AE$  and  $BD$  are parallel. If angle  $BDC$  measures  $58^\circ$  and angle  $ACE$  measures  $62^\circ$ , what is the measure of angle  $CAE$ ?

- A.  $58^\circ$
- B.  $60^\circ$
- C.  $62^\circ$
- D.  $120^\circ$

## Question ID 93de3f84

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Geometry and Trigonometry	Area and volume	<div style="width: 30%; background-color: #0056b3; height: 10px;"></div> <div style="width: 30%; background-color: #0056b3; height: 10px;"></div> <div style="width: 30%; background-color: #0056b3; height: 10px;"></div>

ID: 93de3f84

The volume of right circular cylinder A is 22 cubic centimeters. What is the volume, in cubic centimeters, of a right circular cylinder with twice the radius and half the height of cylinder A?

- A. 11
- B. 22
- C. 44
- D. 66

# Question ID f60bb551

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Geometry and Trigonometry	Area and volume	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div>

ID: f60bb551

The area of a rectangle is **630** square inches. The length of the rectangle is **70** inches. What is the width, in inches, of this rectangle?

- A. **9**
- B. **70**
- C. **315**
- D. **560**

# Question ID d2047497

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Geometry and Trigonometry	Area and volume	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div>

ID: d2047497

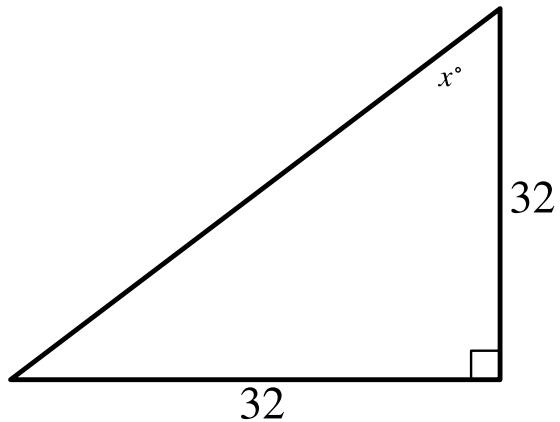
What is the area of a rectangle with a length of **17 centimeters (cm)** and a width of **7 cm**?

- A. **24 cm<sup>2</sup>**
- B. **48 cm<sup>2</sup>**
- C. **119 cm<sup>2</sup>**
- D. **576 cm<sup>2</sup>**

# Question ID a71617d3

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Geometry and Trigonometry	Right triangles and trigonometry	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 50%; background-color: #e0e0e0; height: 10px;"></div>

ID: a71617d3



Note: Figure not drawn to scale.

In the triangle shown, what is the value of  $x$ ?

## Question ID a5aee181

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Geometry and Trigonometry	Right triangles and trigonometry	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 50%; background-color: #e0e0e0; height: 10px;"></div>

ID: a5aee181

The length of a rectangle's diagonal is  $5\sqrt{17}$ , and the length of the rectangle's shorter side is 5. What is the length of the rectangle's longer side?

- A.  $\sqrt{17}$
- B. 20
- C.  $15\sqrt{2}$
- D. 400

## Question ID fb58c0db

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Geometry and Trigonometry	Circles	<div style="width: 75%; background-color: #0056b3; height: 10px;"></div>

ID: fb58c0db

Points A and B lie on a circle with radius 1, and arc  $\widehat{AB}$  has length  $\frac{\pi}{3}$ . What fraction of the circumference of the circle is the length of arc  $\widehat{AB}$ ?

## Question ID c6dff223

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Geometry and Trigonometry	Right triangles and trigonometry	<div style="width: 75%; background-color: #0056b3; height: 10px;"></div>

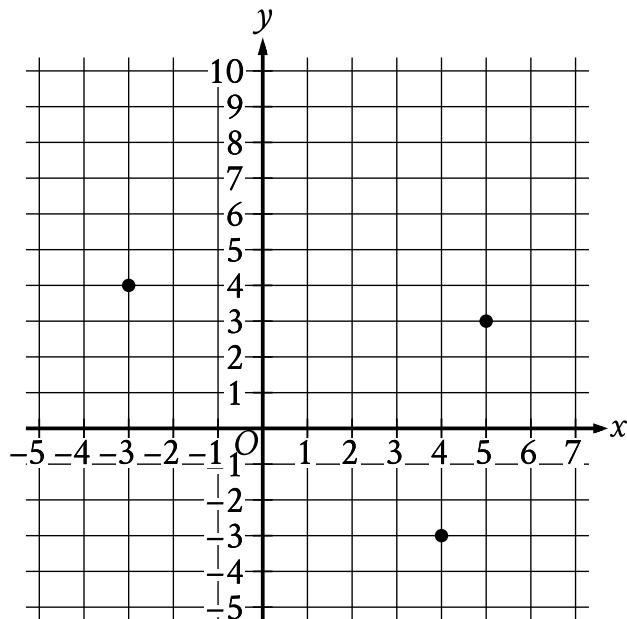
ID: c6dff223

Triangle  $ABC$  is similar to triangle  $DEF$ , where angle  $A$  corresponds to angle  $D$  and angles  $C$  and  $F$  are right angles. The length of  $\overline{AB}$  is 2.9 times the length of  $\overline{DE}$ . If  $\tan A = \frac{21}{20}$ , what is the value of  $\sin D$ ?

# Question ID eb70d2d0

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Geometry and Trigonometry	Area and volume	<div style="width: 100px; height: 10px; background-color: #0056b3;"></div> <div style="width: 100px; height: 10px; background-color: #0056b3;"></div> <div style="width: 100px; height: 10px; background-color: #0056b3;"></div>

ID: eb70d2d0



What is the area, in square units, of the triangle formed by connecting the three points shown?

## Question ID 92eb236a

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Geometry and Trigonometry	Right triangles and trigonometry	<div style="width: 75%; background-color: #0056b3; height: 10px;"></div>

ID: 92eb236a

In a right triangle, the tangent of one of the two acute angles is  $\frac{\sqrt{3}}{3}$ . What is the tangent of the other acute angle?

A.  $-\frac{\sqrt{3}}{3}$

B.  $-\frac{3}{\sqrt{3}}$

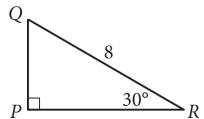
C.  $\frac{\sqrt{3}}{3}$

D.  $\frac{3}{\sqrt{3}}$

# Question ID 13d9a1c3

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Geometry and Trigonometry	Right triangles and trigonometry	<div style="width: 20%; background-color: #0056b3; height: 10px;"></div> <div style="width: 20%; background-color: #0056b3; height: 10px;"></div> <div style="width: 60%; background-color: #e0e0e0; height: 10px;"></div>

ID: 13d9a1c3

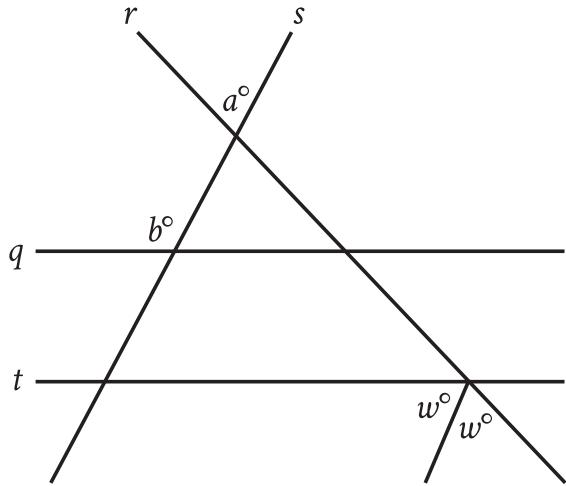


In the right triangle shown above, what is the length of  $\overline{PQ}$ ?

# Question ID 17912810

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Geometry and Trigonometry	Lines, angles, and triangles	<div style="width: 100px; height: 10px; background-color: #0056b3;"></div> <div style="width: 150px; height: 10px; background-color: #0056b3;"></div> <div style="width: 150px; height: 10px; background-color: #0056b3;"></div>

ID: 17912810



Note: Figure not drawn to scale.

In the figure, parallel lines  $q$  and  $t$  are intersected by lines  $r$  and  $s$ . If  $a = 43$  and  $b = 122$ , what is the value of  $w$ ?

# Question ID 4420e500

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Geometry and Trigonometry	Area and volume	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div>

ID: 4420e500

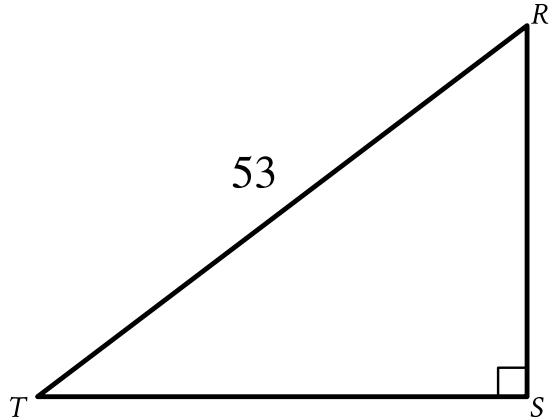
What is the area of a rectangle with a length of **4 centimeters (cm)** and a width of **2 cm**?

- A. **6 cm<sup>2</sup>**
- B. **8 cm<sup>2</sup>**
- C. **12 cm<sup>2</sup>**
- D. **36 cm<sup>2</sup>**

# Question ID a67b9f88

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Geometry and Trigonometry	Right triangles and trigonometry	<div style="width: 100px; height: 10px; background-color: #0056b3;"></div> <div style="width: 150px; height: 10px; background-color: #0056b3;"></div> <div style="width: 150px; height: 10px; background-color: #0056b3;"></div>

ID: a67b9f88



Note: Figure not drawn to scale.

In the triangle shown,  $RS = \sqrt{105}$ . What is the value of  $\sin R$ ?

## Question ID f7e626b2

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Geometry and Trigonometry	Area and volume	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 25%; background-color: #0056b3; height: 10px;"></div>

ID: f7e626b2

The dimensions of a right rectangular prism are 4 inches by 5 inches by 6 inches. What is the surface area, in square inches, of the prism?

- A. 30
- B. 74
- C. 120
- D. 148

## Question ID 2be01bd9

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Geometry and Trigonometry	Right triangles and trigonometry	<div style="width: 30%; background-color: #0056b3; height: 10px;"></div> <div style="width: 30%; background-color: #0056b3; height: 10px;"></div> <div style="width: 30%; background-color: #0056b3; height: 10px;"></div>

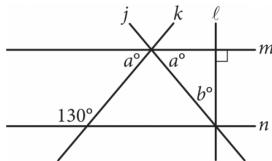
ID: 2be01bd9

Triangle  $ABC$  is similar to triangle  $DEF$ , where angle  $A$  corresponds to angle  $D$  and angle  $C$  corresponds to angle  $F$ . Angles  $C$  and  $F$  are right angles. If  $\tan(A) = \frac{50}{7}$ , what is the value of  $\tan(E)$ ?

# Question ID 3828f53d

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Geometry and Trigonometry	Lines, angles, and triangles	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div>

ID: 3828f53d



Note: Figure not drawn to scale.

In the figure above, lines  $m$  and  $n$  are parallel.

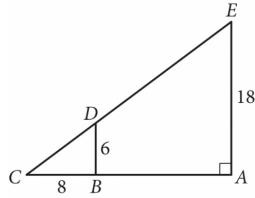
What is the value of  $b$ ?

- A. 40
- B. 50
- C. 65
- D. 80

## Question ID dba6a25a

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Geometry and Trigonometry	Right triangles and trigonometry	<div style="width: 75%; background-color: #0056b3; height: 10px;"></div>

ID: dba6a25a



In the figure above,  $\overline{BD}$  is parallel to  $\overline{AE}$ .

What is the length of  $\overline{CE}$ ?

## Question ID c984f1a5

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Geometry and Trigonometry	Area and volume	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 25%; background-color: #0056b3; height: 10px;"></div>

ID: c984f1a5

A hemisphere is half of a sphere. If a hemisphere has a radius of **27** inches, which of the following is closest to the volume, in cubic inches, of this hemisphere?

- A. 1,500
- B. 6,100
- C. 30,900
- D. 41,200

# Question ID acd30391

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Geometry and Trigonometry	Circles	<div style="width: 75%; background-color: #0056b3; height: 10px;"></div>

ID: acd30391

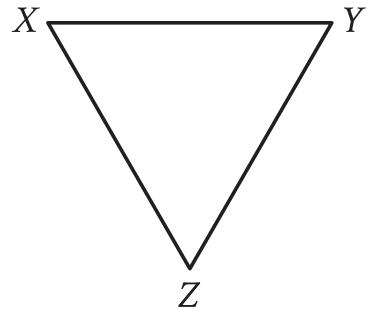
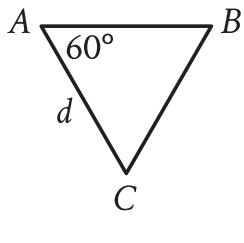
A circle in the  $xy$ -plane has equation  $(x + 3)^2 + (y - 1)^2 = 25$ . Which of the following points does NOT lie in the interior of the circle?

- A.  $(-7, 3)$
- B.  $(-3, 1)$
- C.  $(0, 0)$
- D.  $(3, 2)$

# Question ID e0d2e21a

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Geometry and Trigonometry	Lines, angles, and triangles	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 25%; background-color: #e0e0e0; height: 10px;"></div> <div style="width: 25%; background-color: #e0e0e0; height: 10px;"></div>

ID: e0d2e21a



Note: Figures not drawn to scale.

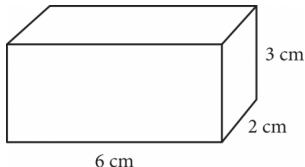
For the triangles shown, triangle  $ABC$  is dilated by a scale factor of 3 to obtain triangle  $XYZ$ , where  $d = 16$ . What is the measure, in degrees, of angle  $X$ ?

- A. 20
- B. 57
- C. 60
- D. 63

# Question ID d683a9cc

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Geometry and Trigonometry	Area and volume	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div>

ID: d683a9cc



The figure shows the lengths, in centimeters (cm), of the edges of a right rectangular prism. The volume  $V$  of a right rectangular prism is  $\ell wh$ , where  $\ell$  is the length of the prism,  $w$  is the width of the prism, and  $h$  is the height of the prism. What is the volume, in cubic centimeters, of the prism?

- A. 36
- B. 24
- C. 12
- D. 11

## Question ID 14e7c1f4

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Geometry and Trigonometry	Right triangles and trigonometry	<div style="width: 30%; background-color: #0056b3; height: 10px;"></div> <div style="width: 30%; background-color: #0056b3; height: 10px;"></div> <div style="width: 30%; background-color: #0056b3; height: 10px;"></div>

ID: 14e7c1f4

For two acute angles,  $\angle Q$  and  $\angle R$ ,  $\cos(Q) = \sin(R)$ . The measures, in degrees, of  $\angle Q$  and  $\angle R$  are  $x + 61$  and  $4x + 4$ , respectively. What is the value of  $x$ ?

- A. 5
- B. 19
- C. 23
- D. 29

# Question ID a2e76b60

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Geometry and Trigonometry	Area and volume	<div style="width: 20%; background-color: #0056b3; height: 10px;"></div> <div style="width: 20%; background-color: #0056b3; height: 10px;"></div> <div style="width: 60%; background-color: #e0e0e0; height: 10px;"></div>

ID: a2e76b60

A cylindrical can containing pieces of fruit is filled to the top with syrup before being sealed. The base of the can has an area of  $75 \text{ cm}^2$ , and the height of the can is 10 cm.

If  $110 \text{ cm}^3$  of syrup is needed to fill the can to the top, which of the following is closest to the total volume of the pieces of fruit in the can?

- A.  $7.5 \text{ cm}^3$
- B.  $185 \text{ cm}^3$
- C.  $640 \text{ cm}^3$
- D.  $750 \text{ cm}^3$

# Question ID 468613c0

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Geometry and Trigonometry	Area and volume	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 50%; background-color: #e0e0e0; height: 10px;"></div>

ID: 468613c0

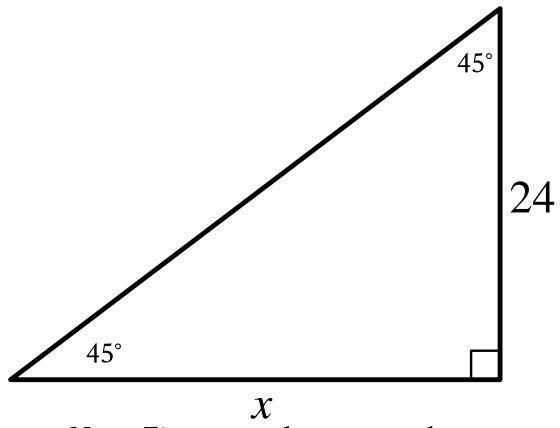
A triangle has a base length of **56** centimeters and a height of **112** centimeters. What is the area, in square centimeters, of the triangle?

- A. **168**
- B. **1,568**
- C. **3,136**
- D. **6,272**

# Question ID 145337bc

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Geometry and Trigonometry	Right triangles and trigonometry	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div>

ID: 145337bc



Note: Figure not drawn to scale.

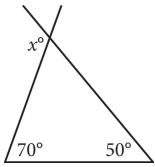
In the triangle shown, what is the value of  $x$ ?

- A. 24
- B. 45
- C. 48
- D. 69

# Question ID 36200a38

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Geometry and Trigonometry	Lines, angles, and triangles	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div>

ID: 36200a38



In the figure above, two sides of a triangle are extended. What is the value of  $x$ ?

- A. 110
- B. 120
- C. 130
- D. 140

## Question ID a490003a

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Geometry and Trigonometry	Area and volume	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div>

ID: a490003a

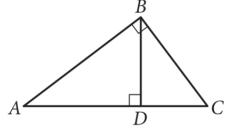
The width of a rectangle is 7 centimeters. The length of the rectangle is 40 centimeters longer than the width. What is the area, in square centimeters, of this rectangle?

- A. 7
- B. 14
- C. 54
- D. 329

# Question ID 6a3fbec3

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Geometry and Trigonometry	Lines, angles, and triangles	<div style="width: 75%; background-color: #0056b3; height: 10px;"></div>

ID: 6a3fbec3



Note: Figure not drawn to scale.

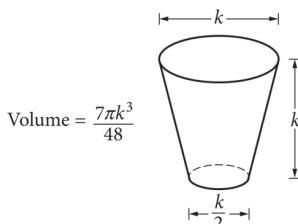
In the figure above,  $BD = 6$  and  $AD = 8$ .

What is the length of  $\overline{DC}$ ?

# Question ID 37dde49f

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Geometry and Trigonometry	Area and volume	<div style="width: 20%; background-color: #0056b3; height: 10px;"></div> <div style="width: 20%; background-color: #0056b3; height: 10px;"></div> <div style="width: 60%; background-color: #e0e0e0; height: 10px;"></div>

ID: 37dde49f



The glass pictured above can hold a maximum volume of 473 cubic centimeters, which is approximately 16 fluid ounces. What is the value of  $k$ , in centimeters?

- A. 2.52
- B. 7.67
- C. 7.79
- D. 10.11

## Question ID 82c8325f

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Geometry and Trigonometry	Circles	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 50%; background-color: #e0e0e0; height: 10px;"></div>

ID: 82c8325f

A circle in the  $xy$ -plane has its center at  $(-4, 5)$  and the point  $(-8, 8)$  lies on the circle. Which equation represents this circle?

- A.  $(x - 4)^2 + (y + 5)^2 = 5$
- B.  $(x + 4)^2 + (y - 5)^2 = 5$
- C.  $(x - 4)^2 + (y + 5)^2 = 25$
- D.  $(x + 4)^2 + (y - 5)^2 = 25$

# Question ID 459dd6c5

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Geometry and Trigonometry	Area and volume	<div style="width: 30%; background-color: #0056b3; height: 10px;"></div> <div style="width: 30%; background-color: #0056b3; height: 10px;"></div> <div style="width: 30%; background-color: #0056b3; height: 10px;"></div>

ID: 459dd6c5

Triangles  $ABC$  and  $DEF$  are similar. Each side length of triangle  $ABC$  is 4 times the corresponding side length of triangle  $DEF$ . The area of triangle  $ABC$  is 270 square inches. What is the area, in square inches, of triangle  $DEF$ ?

## Question ID 25da87f8

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Geometry and Trigonometry	Right triangles and trigonometry	<div style="width: 75%; background-color: #0056b3; height: 10px;"></div>

ID: 25da87f8

A triangle with angle measures  $30^\circ$ ,  $60^\circ$ , and  $90^\circ$  has a perimeter of  $18 + 6\sqrt{3}$ . What is the length of the longest side of the triangle?

## Question ID 310c87fe

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Geometry and Trigonometry	Area and volume	<div style="width: 30%; background-color: #0056b3; height: 10px;"></div> <div style="width: 30%; background-color: #0056b3; height: 10px;"></div> <div style="width: 30%; background-color: #0056b3; height: 10px;"></div>

ID: 310c87fe

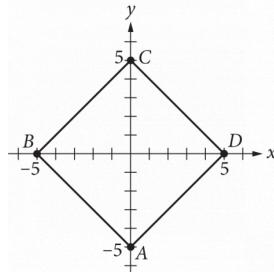
A cube has a surface area of 54 square meters. What is the volume, in cubic meters, of the cube?

- A. 18
- B. 27
- C. 36
- D. 81

# Question ID cf53cb56

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Geometry and Trigonometry	Area and volume	<div style="width: 25%; background-color: #0056b3;"></div> <div style="width: 25%; background-color: #0056b3;"></div> <div style="width: 50%; background-color: #e0e0e0;"></div>

ID: cf53cb56



In the  $xy$ -plane shown, square  $ABCD$  has its diagonals on the  $x$ - and  $y$ -axes. What is the area, in square units, of the square?

- A. 20
- B. 25
- C. 50
- D. 100

## Question ID b96ff36e

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Geometry and Trigonometry	Circles	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 50%; background-color: #e0e0e0; height: 10px;"></div>

ID: b96ff36e

In the  $xy$ -plane, the graph of the equation  $(x - 3)^2 + (y - 5)^2 = 9$  is a circle. The point  $(6, c)$ , where  $c$  is a constant, lies on this circle. What is the value of  $c$ ?

# Question ID ac472881

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear equations in one variable	<div style="width: 75%; background-color: #0056b3; height: 10px;"></div>

ID: ac472881

$$\frac{12x+28}{4} - \frac{s}{13} = r(x - 8)$$

In the given equation,  $s$  and  $r$  are constants, and  $s > 0$ . If the equation has infinitely many solutions, what is the value of  $s$ ?

## Question ID 002dba45

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear equations in two variables	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 50%; background-color: #e0e0e0; height: 10px;"></div>

ID: 002dba45

Line  $k$  is defined by  $y = -\frac{17}{3}x + 5$ . Line  $j$  is perpendicular to line  $k$  in the  $xy$ -plane. What is the slope of line  $j$ ?

## Question ID f224df07

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear inequalities in one or two variables	<div style="width: 25%; background-color: #003366; height: 10px;"></div> <div style="width: 25%; background-color: #003366; height: 10px;"></div> <div style="width: 50%; background-color: #cccccc; height: 10px;"></div>

ID: f224df07

A cargo helicopter delivers only 100-pound packages and 120-pound packages. For each delivery trip, the helicopter must carry at least 10 packages, and the total weight of the packages can be at most 1,100 pounds. What is the maximum number of 120-pound packages that the helicopter can carry per trip?

- A. 2
- B. 4
- C. 5
- D. 6

## Question ID d1b66ae6

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Systems of two linear equations in two variables	<div style="width: 75%; background-color: #0056b3; height: 10px;"></div>

ID: d1b66ae6

$$-x + y = -3.5$$

$$x + 3y = 9.5$$

If  $(x, y)$  satisfies the system of equations

above, what is the value of  $y$ ?

# Question ID cb8f449f

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Systems of two linear equations in two variables	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 50%; background-color: #e0e0e0; height: 10px;"></div>

ID: cb8f449f

$$\begin{array}{l} \frac{1}{2}y = 4 \\ x - \frac{1}{2}y = 2 \end{array}$$

The system of equations above has solution  $(x, y)$ . What is the value of  $x$ ?

A. 3

B.  $\frac{7}{2}$

C. 4

D. 6

## Question ID 3cdbc026

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear equations in two variables	<div style="width: 75%; background-color: #0056b3; height: 10px;"></div>

ID: 3cdbc026

The graph of the equation  $ax + ky = 6$  is a line in the  $xy$ -plane, where  $a$  and  $k$  are constants. If the line contains the points  $(-2, -6)$  and  $(0, -3)$ , what is the value of  $k$ ?

- A.  $-2$
- B.  $-1$
- C.  $2$
- D.  $3$

# Question ID ff501705

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Systems of two linear equations in two variables	<div style="width: 75%; background-color: #0056b3; height: 10px;"></div>

ID: ff501705

$$\begin{aligned}\frac{3}{2}y - \frac{1}{4}x &= \frac{2}{3} - \frac{3}{2}y \\ \frac{1}{2}x + \frac{3}{2} &= py + \frac{9}{2}\end{aligned}$$

In the given system of equations,  $p$  is a constant. If the system has no solution, what is the value of  $p$ ?

## Question ID 2937ef4f

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear equations in one variable	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 25%; background-color: #0056b3; height: 10px;"></div>

ID: 2937ef4f

Hector used a tool called an auger to remove corn from a storage bin at a constant rate. The bin contained 24,000 bushels of corn when Hector began to use the auger. After 5 hours of using the auger, 19,350 bushels of corn remained in the bin. If the auger continues to remove corn at this rate, what is the total number of hours Hector will have been using the auger when 12,840 bushels of corn remain in the bin?

- A. 3
- B. 7
- C. 8
- D. 12

## Question ID 9bbce683

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear equations in two variables	<div style="width: 30%; background-color: #0056b3; height: 10px;"></div> <div style="width: 30%; background-color: #0056b3; height: 10px;"></div> <div style="width: 30%; background-color: #0056b3; height: 10px;"></div>

ID: 9bbce683

$x$	$y$
18	130
23	160
26	178

For line  $h$ , the table shows three values of  $x$  and their corresponding values of  $y$ . Line  $k$  is the result of translating line  $h$  down 5 units in the  $xy$ -plane. What is the  $x$ -intercept of line  $k$ ?

- A.  $(-\frac{26}{3}, 0)$
- B.  $(-\frac{9}{2}, 0)$
- C.  $(-\frac{11}{3}, 0)$
- D.  $(-\frac{17}{6}, 0)$

## Question ID 2b15d65f

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear functions	<div style="width: 75%; background-color: #0056b3; height: 10px;"></div>

ID: 2b15d65f

An economist modeled the demand  $Q$  for a certain product as a linear function of the selling price  $P$ . The demand was 20,000 units when the selling price was \$40 per unit, and the demand was 15,000 units when the selling price was \$60 per unit. Based on the model, what is the demand, in units, when the selling price is \$55 per unit?

- A. 16,250
- B. 16,500
- C. 16,750
- D. 17,500

# Question ID e25f0807

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear functions	<div style="width: 30%; background-color: #0056b3; height: 10px;"></div> <div style="width: 30%; background-color: #0056b3; height: 10px;"></div> <div style="width: 30%; background-color: #0056b3; height: 10px;"></div>

ID: e25f0807

$x$	$y$
-12	-45
6	45

The table shows two values of  $x$  and their corresponding values of  $y$ . The graph of the linear equation representing this relationship passes through the point  $(\frac{1}{4}, a)$ . What is the value of  $a$ ?

# Question ID b86123af

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Systems of two linear equations in two variables	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div>

ID: b86123af

Hiro and Sofia purchased shirts and pants from a store. The price of each shirt purchased was the same and the price of each pair of pants purchased was the same. Hiro purchased 4 shirts and 2 pairs of pants for \$86, and Sofia purchased 3 shirts and 5 pairs of pants for \$166. Which of the following systems of linear equations represents the situation, if  $x$  represents the price, in dollars, of each shirt and  $y$  represents the price, in dollars, of each pair of pants?

- A.  $4x + 2y = 86$   
 $3x + 5y = 166$
- B.  $4x + 3y = 86$   
 $2x + 5y = 166$
- C.  $4x + 2y = 166$   
 $3x + 5y = 86$
- D.  $4x + 3y = 166$   
 $2x + 5y = 86$

## Question ID 608eeb6e

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Systems of two linear equations in two variables	<div style="width: 25%; background-color: #003366; height: 10px;"></div> <div style="width: 75%; background-color: #cccccc; height: 10px;"></div>

ID: 608eeb6e

$$\begin{aligned}5x &= 15 \\ -4x + y &= -2\end{aligned}$$

The solution to the given system of equations is  $(x, y)$ . What is the value of  $x + y$ ?

- A. **-17**
- B. **-13**
- C. **13**
- D. **17**

## Question ID be9cb6a2

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear functions	<div style="width: 75%; background-color: #0056b3; height: 10px;"></div>

ID: be9cb6a2

The cost of renting a backhoe for up to 10 days is \$270 for the first day and \$135 for each additional day. Which of the following equations gives the cost  $y$ , in dollars, of renting the backhoe for  $x$  days, where  $x$  is a positive integer and  $x \leq 10$ ?

- A.  $y = 270x - 135$
- B.  $y = 270x + 135$
- C.  $y = 135x + 270$
- D.  $y = 135x + 135$

# Question ID 84664a7c

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear functions	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div>

ID: 84664a7c

The front of a roller-coaster car is at the bottom of a hill and is 15 feet above the ground. If the front of the roller-coaster car rises at a constant rate of 8 feet per second, which of the following equations gives the height  $h$ , in feet, of the front of the roller-coaster car  $s$  seconds after it starts up the hill?

A.  $h = 8s + 15$

B.  $h = 15s + \frac{335}{8}$

C.  $h = 8s + \frac{335}{15}$

D.  $h = 15s + 8$

## Question ID e62cfe5f

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear functions	<div style="width: 25%; background-color: #005a99; height: 10px;"></div> <div style="width: 25%; background-color: #005a99; height: 10px;"></div> <div style="width: 50%; background-color: #e0e0e0; height: 10px;"></div>

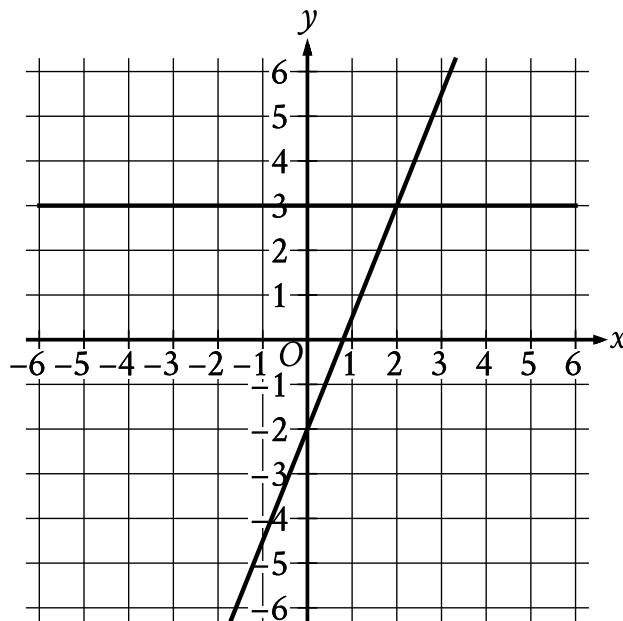
ID: e62cfe5f

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?

# Question ID b0fc3166

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Systems of two linear equations in two variables	<div style="width: 25%; background-color: #003366; height: 10px;"></div> <div style="width: 25%; background-color: #cccccc; height: 10px;"></div> <div style="width: 25%; background-color: #cccccc; height: 10px;"></div>

ID: b0fc3166



The graph of a system of linear equations is shown. What is the solution  $(x, y)$  to the system?

- A.  $(0, 3)$
- B.  $(1, 3)$
- C.  $(2, 3)$
- D.  $(3, 3)$

## Question ID 9b886541

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear equations in one variable	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div>

ID: 9b886541

If  $3x - 8 = 7$ , what is the value of  $3x + 8$ ?

- A. **-1**
- B. **5**
- C. **13**
- D. **23**

## Question ID db422e7f

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear equations in two variables	<div style="width: 30%; background-color: #0056b3; height: 10px;"></div> <div style="width: 30%; background-color: #0056b3; height: 10px;"></div> <div style="width: 30%; background-color: #0056b3; height: 10px;"></div>

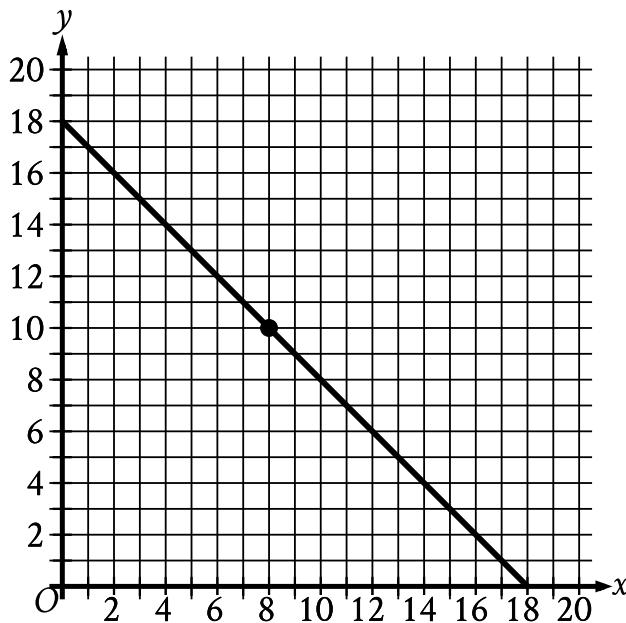
ID: db422e7f

Line  $p$  is defined by  $4y + 8x = 6$ . Line  $r$  is perpendicular to line  $p$  in the  $xy$ -plane. What is the slope of line  $r$ ?

# Question ID 9b0a4eae

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear equations in two variables	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 50%; background-color: #e0e0e0; height: 10px;"></div>

ID: 9b0a4eae



The graph in the  $xy$ -plane models the possible combinations of length  $x$ , in meters (m), and width  $y$ , in meters, for a rectangle with a perimeter of 36 m. Which statement is the best interpretation of the point  $(8, 10)$  in this context?

- A. The length is 10 m less than the perimeter, and the width is 8 m less than the perimeter.
- B. The length is 10 m, and the width is 8 m.
- C. The length is 8 m, and the width is 10 m.
- D. The length is 8 m less than the perimeter, and the width is 10 m less than the perimeter.

## Question ID 7fac16fb

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear functions	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div>

ID: 7fac16fb

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

## Question ID 45cfb9de

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear inequalities in one or two variables	<div style="width: 75%; background-color: #0056b3; height: 10px;"></div>

ID: 45cfb9de

Adam's school is a 20-minute walk or a 5-minute bus ride away from his house. The bus runs once every 30 minutes, and the number of minutes,  $w$ , that Adam waits for the bus varies between 0 and 30. Which of the following inequalities gives the values of  $w$  for which it would be faster for Adam to walk to school?

- A.  $w - 5 < 20$
- B.  $w - 5 > 20$
- C.  $w + 5 < 20$
- D.  $w + 5 > 20$

# Question ID 06fc1726

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear functions	<div style="width: 25%; background-color: #0056b3;"></div> <div style="width: 25%; background-color: #e0e0e0;"></div> <div style="width: 25%; background-color: #e0e0e0;"></div>

ID: 06fc1726

If  $f$  is the function defined by  $f(x) = \frac{2x - 1}{3}$ ,  
what is the value of  $f(5)$ ?

A.  $\frac{4}{3}$

B.  $\frac{7}{3}$

C. 3

D. 9

## Question ID f14484a5

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear equations in one variable	<div style="width: 30%; background-color: #0056b3; height: 10px;"></div> <div style="width: 30%; background-color: #0056b3; height: 10px;"></div> <div style="width: 30%; background-color: #0056b3; height: 10px;"></div>

ID: f14484a5

A manufacturing plant makes **10**-inch, **9**-inch, and **7**-inch frying pans. During a certain day, the number of **10**-inch frying pans that the manufacturing plant makes is **4** times the number  **$n$**  of **9**-inch frying pans it makes, and the number of **7**-inch frying pans it makes is **10**. During this day, the manufacturing plant makes **100** frying pans total. Which equation represents this situation?

- A.  $10(4n) + 9n + 7(10) = 100$
- B.  $10n + 9n + 7n = 100$
- C.  $4n + 10 = 100$
- D.  $5n + 10 = 100$

# Question ID 7e3f8363

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear functions	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 50%; background-color: #e0e0e0; height: 10px;"></div>

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 0eae6be1

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear functions	<div style="width: 25%; background-color: #0056b3;"></div> <div style="width: 75%; background-color: #e0e0e0;"></div> <div style="width: 75%; background-color: #e0e0e0;"></div>

ID: 0eae6be1

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 0dd6227f

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Systems of two linear equations in two variables	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 50%; background-color: #e0e0e0; height: 10px;"></div>

ID: 0dd6227f

At how many points do the graphs of the equations  $y = x + 20$  and  $y = 8x$  intersect in the  $xy$ -plane?

- A. 0
- B. 1
- C. 2
- D. 8

# Question ID 7efe5495

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Systems of two linear equations in two variables	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 50%; background-color: #e0e0e0; height: 10px;"></div>

ID: 7efe5495

$$\begin{aligned}y &= 3x \\2x + y &= 12\end{aligned}$$

The solution to the given system of equations is  $(x, y)$ . What is the value of  $5x$ ?

- A. 24
- B. 15
- C. 12
- D. 5

## Question ID 2c121b25

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear inequalities in one or two variables	<div style="width: 25%; background-color: #002B36; height: 10px;"></div> <div style="width: 75%; background-color: #D9D9D9; height: 10px;"></div> <div style="width: 75%; background-color: #D9D9D9; height: 10px;"></div>

ID: 2c121b25

Valentina bought two containers of beads. In the first container 30% of the beads are red, and in the second container 70% of the beads are red. Together, the containers have at least 400 red beads. Which inequality shows this relationship, where  $x$  is the total number of beads in the first container and  $y$  is the total number of beads in the second container?

A.  $0.3x + 0.7y \geq 400$

B.  $0.7x + 0.3y \leq 400$

C.  $\frac{x}{3} + \frac{y}{7} \leq 400$

D.  $30x + 70y \geq 400$

## Question ID 1087f6c4

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear equations in two variables	<div style="width: 25%; background-color: #005a99; height: 10px;"></div> <div style="width: 25%; background-color: #005a99; height: 10px;"></div> <div style="width: 50%; background-color: #e0e0e0; height: 10px;"></div>

ID: 1087f6c4

$$24.5x + 24.75y = 641$$

Isabel ordered topsoil and crushed stone, which cost a total of \$641, for her garden. The given equation represents the relationship between the number of cubic yards of topsoil,  $x$ , and the number of tons of crushed stone,  $y$ , Isabel ordered. How much more, in dollars, did a ton of crushed stone cost Isabel than a cubic yard of topsoil?

## Question ID 4d8ccb96

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear equations in two variables	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div>

ID: 4d8ccb96

A chemist studying the impact of salt on a process mixes  $x$  kilograms of a low-salt mixture, which is 2% salt by weight, with  $y$  kilograms of a high-salt mixture, which is 96% salt by weight, to create 24 kilograms of a mixture that is 4% salt by weight. Which equation represents this situation?

- A.  $0.96x + 0.02y = (0.04)(24)$
- B.  $0.02x + 0.96y = (0.04)(24)$
- C.  $0.96x + 0.02y = 24$
- D.  $0.02x + 0.96y = 24$

## Question ID b23bba4c

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear equations in two variables	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div>

ID: b23bba4c

$$3a + 4b = 25$$

A shipping company charged a customer \$25 to ship some small boxes and some large boxes. The equation above represents the relationship between  $a$ , the number of small boxes, and  $b$ , the number of large boxes, the customer had shipped. If the customer had 3 small boxes shipped, how many large boxes were shipped?

- A. 3
- B. 4
- C. 5
- D. 6

# Question ID 71189542

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Systems of two linear equations in two variables	<div style="width: 25%; background-color: #003366; height: 10px;"></div> <div style="width: 25%; background-color: #003366; height: 10px;"></div> <div style="width: 50%; background-color: #cccccc; height: 10px;"></div>

ID: 71189542

A group of 202 people went on an overnight camping trip, taking 60 tents with them. Some of the tents held 2 people each, and the rest held 4 people each. Assuming all the tents were filled to capacity and every person got to sleep in a tent, exactly how many of the tents were 2-person tents?

- A. 30
- B. 20
- C. 19
- D. 18

# Question ID 9d4270fe

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear equations in one variable	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 50%; background-color: #e0e0e0; height: 10px;"></div>

ID: 9d4270fe

A company that creates and sells tape dispensers calculates its monthly profit, in dollars, by subtracting its fixed monthly costs, in dollars, from its monthly sales revenue, in dollars. The equation  $15,000 = 2.00x - 4,500$  represents this situation for a month where  $x$  tape dispensers are created and sold. Which statement is the best interpretation of  $2.00x$  in this context?

- A. The monthly sales revenue, in dollars, from selling  $x$  tape dispensers
- B. The monthly sales revenue, in dollars, from each tape dispenser sold
- C. The monthly cost, in dollars, of creating each tape dispenser
- D. The monthly cost, in dollars, of creating  $x$  tape dispensers

## Question ID dba8d38a

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Systems of two linear equations in two variables	<div style="width: 25%; background-color: #003366; height: 10px;"></div> <div style="width: 75%; background-color: #cccccc; height: 10px;"></div>

ID: dba8d38a

A petting zoo sells two types of tickets. The standard ticket, for admission only, costs \$5. The premium ticket, which includes admission and food to give to the animals, costs \$12. One Saturday, the petting zoo sold a total of 250 tickets and collected a total of \$2,300 from ticket sales. Which of the following systems of equations can be used to find the number of standard tickets,  $s$ , and premium tickets,  $p$ , sold on that Saturday?

$$s + p = 250$$

A.  $5s + 12p = 2,300$

$$s + p = 250$$

B.  $12s + 5p = 2,300$

$$5s + 12p = 250$$

C.  $s + p = 2,300$

$$12s + 5p = 250$$

D.  $s + p = 2,300$

# Question ID 64c85440

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear inequalities in one or two variables	<div style="width: 25%; background-color: #003366; height: 10px;"></div> <div style="width: 25%; background-color: #003366; height: 10px;"></div> <div style="width: 50%; background-color: #cccccc; height: 10px;"></div>

ID: 64c85440

In North America, the standard width of a parking space is at least 7.5 feet and no more than 9.0 feet. A restaurant owner recently resurfaced the restaurant's parking lot and wants to determine the number of parking spaces,  $n$ , in the parking lot that could be placed perpendicular to a curb that is 135 feet long, based on the standard width of a parking space. Which of the following describes all the possible values of  $n$ ?

- A.  $18 \leq n \leq 135$
- B.  $7.5 \leq n \leq 9$
- C.  $15 \leq n \leq 135$
- D.  $15 \leq n \leq 18$

# Question ID 87322577

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear equations in two variables	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div>

ID: 87322577

$$x + y = 75$$

The equation above relates the number of minutes,  $x$ , Maria spends running each day and the number of minutes,  $y$ , she spends biking each day. In the equation, what does the number 75 represent?

- A. The number of minutes spent running each day
- B. The number of minutes spent biking each day
- C. The total number of minutes spent running and biking each day
- D. The number of minutes spent biking for each minute spent running

## Question ID 7a5a74a6

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear equations in one variable	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 50%; background-color: #e0e0e0; height: 10px;"></div>

ID: 7a5a74a6

$$3(2x - 6) - 11 = 4(x - 3) + 6$$

If  $x$  is the solution to the equation above,  
what is the value of  $x - 3$ ?

A.  $\frac{23}{2}$

B.  $\frac{17}{2}$

C.  $\frac{15}{2}$

D.  $-\frac{15}{2}$

# Question ID b7e6394d

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear equations in one variable	<div style="width: 75%; background-color: #005a9f; height: 10px;"></div>

ID: b7e6394d

Alan drives an average of 100 miles each week. His car can travel an average of 25 miles per gallon of gasoline. Alan would like to reduce his weekly expenditure on gasoline by \$5. Assuming gasoline costs \$4 per gallon, which equation can Alan use to determine how many fewer average miles,  $m$ , he should drive each week?

A.  $\frac{25}{4}m = 95$

B.  $\frac{25}{4}m = 5$

C.  $\frac{4}{25}m = 95$

D.  $\frac{4}{25}m = 5$

## Question ID 7625073d

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear equations in two variables	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 50%; background-color: #e0e0e0; height: 10px;"></div>

ID: 7625073d

The equation  $7g + 7b = 840$  represents the number of blue tiles,  $b$ , and the number of green tiles,  $g$ , an artist needs for an 840-square-inch tile project. The artist needs 71 blue tiles for the project. How many green tiles does he need?

# Question ID bf36c815

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear functions	<div style="width: 25%; background-color: #0056b3;"></div> <div style="width: 75%; background-color: #e0e0e0;"></div> <div style="width: 75%; background-color: #e0e0e0;"></div>

ID: bf36c815

The function  $g$  is defined by  $g(x) = -x + 8$ .

What is the value of  $g(0)$ ?

- A.  $-8$
- B.  $0$
- C.  $4$
- D.  $8$

# Question ID 968e9e51

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear inequalities in one or two variables	<div style="width: 25%; background-color: #003366; height: 10px;"></div> <div style="width: 25%; background-color: #003366; height: 10px;"></div> <div style="width: 50%; background-color: #cccccc; height: 10px;"></div>

ID: 968e9e51

$$y \leq x$$

$$y \leq -x$$

Which of the following ordered pairs  $(x, y)$  is a solution to the system of inequalities above?

- A.  $(1, 0)$
- B.  $(-1, 0)$
- C.  $(0, 1)$
- D.  $(0, -1)$

# Question ID aa85b138

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear equations in one variable	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 50%; background-color: #e0e0e0; height: 10px;"></div>

ID: aa85b138

$$2n + 6 = 14$$

A tree had a height of 6 feet when it was planted. The equation above can be used to find how many years  $n$  it took the tree to reach a height of 14 feet. Which of the following is the best interpretation of the number 2 in this context?

- A. The number of years it took the tree to double its height
- B. The average number of feet that the tree grew per year
- C. The height, in feet, of the tree when the tree was 1 year old
- D. The average number of years it takes similar trees to grow 14 feet

## Question ID 15daa8d6

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear equations in one variable	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 50%; background-color: #e0e0e0; height: 10px;"></div>

ID: 15daa8d6

$$2x + 16 = a(x + 8)$$

In the given equation,  $a$  is a constant. If the equation has infinitely many solutions, what is the value of  $a$ ?

## Question ID 12ee1edc

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear equations in one variable	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 50%; background-color: #e0e0e0; height: 10px;"></div>

ID: 12ee1edc

$$(b - 2)x = 8$$

In the given equation,  $b$  is a constant. If the equation has no solution, what is the value of  $b$ ?

- A. 2
- B. 4
- C. 6
- D. 10

## Question ID c6b151d4

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear equations in two variables	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div>

ID: c6b151d4

A total of **364** paper straws of equal length were used to construct two types of polygons: triangles and rectangles. The triangles and rectangles were constructed so that no two polygons had a common side. The equation  $3x + 4y = 364$  represents this situation, where  $x$  is the number of triangles constructed and  $y$  is the number of rectangles constructed. What is the best interpretation of  $(x, y) = (24, 73)$  in this context?

- A. If **24** triangles were constructed, then **73** rectangles were constructed.
- B. If **24** triangles were constructed, then **73** paper straws were used.
- C. If **73** triangles were constructed, then **24** rectangles were constructed.
- D. If **73** triangles were constructed, then **24** paper straws were used.

## Question ID ee2f611f

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear inequalities in one or two variables	<div style="width: 75%; background-color: #0056b3; height: 10px;"></div>

ID: ee2f611f

A local transit company sells a monthly pass for \$95 that allows an unlimited number of trips of any length. Tickets for individual trips cost \$1.50, \$2.50, or \$3.50, depending on the length of the trip. What is the minimum number of trips per month for which a monthly pass could cost less than purchasing individual tickets for trips?

## Question ID 8c98c834

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear equations in two variables	<div style="width: 25%; background-color: #0056b3; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div> <div style="width: 75%; background-color: #e0e0e0; height: 10px;"></div>

ID: 8c98c834

The equation  $y = 0.1x$  models the relationship between the number of different pieces of music a certain pianist practices,  $y$ , during an  $x$ -minute practice session. How many pieces did the pianist practice if the session lasted 30 minutes?

- A. 1
- B. 3
- C. 10
- D. 30

# Question ID 563407e5

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear inequalities in one or two variables	<div style="width: 25%; background-color: #002B36; height: 10px;"></div> <div style="width: 75%; background-color: #D9D9D9; height: 10px;"></div> <div style="width: 75%; background-color: #D9D9D9; height: 10px;"></div>

**ID: 563407e5**

A bakery sells trays of cookies. Each tray contains at least 50 cookies but no more than 60. Which of the following could be the total number of cookies on 4 trays of cookies?

- A. 165
- B. 205
- C. 245
- D. 285

## Question ID 25e1cfed

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear equations in one variable	<div style="width: 75%; background-color: #0056b3; height: 10px;"></div>

ID: 25e1cfed

How many solutions does the equation  $10(15x - 9) = -15(6 - 10x)$  have?

- A. Exactly one
- B. Exactly two
- C. Infinitely many
- D. Zero