# Question 1

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

ID: 548a4929

The function $h$ is defined by $h(x) = 4x + 28$. The graph of $y = h(x)$ in the *xy*-plane has an *x*-intercept at $(a, 0)$ and a *y*-intercept at $(0, b)$, where $a$ and $b$ are constants. What is the value of $a + b$?

A. $21$

B. $28$

C. $32$

D. $35$

# Question 2

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

ID: e62cfe5f

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

# Question 3

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

ID: a5834ea4

$$f(x) = 39$$

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

A.

| $x$ | $f(x)$ |
|---|---|
| 0 | 0 |
| 1 | 0 |
| 2 | 0 |

B.

| $x$ | $f(x)$ |
|---|---|
| 0 | 39 |
| 1 | 39 |
| 2 | 39 |

C.

| $x$ | $f(x)$ |
|---|---|
| 0 | 0 |
| 1 | 39 |
| 2 | 78 |

D.

| $x$ | $f(x)$ |
|---|---|
| 0 | 39 |
| 1 | 0 |
| 2 | $-39$ |

# Question 4

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

ID: 7e3f8363

In the *xy*-plane, the graph of the linear function $f$ contains the points $(0, 3)$ and $(7, 31)$. Which equation defines $f$, where $y = f(x)$?

A. $f(x) = 28x + 34$

B. $f(x) = 3x + 38$

C. $f(x) = 4x + 3$

D. $f(x) = 7x + 3$

# Question 5

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

ID: c1bd5301

A model predicts that a certain animal weighed $241$ pounds when it was born and that the animal gained $3$ pounds per day in its first year of life. This model is defined by an equation in the form $f(x) = a + bx$, where $f(x)$ is the predicted weight, in pounds, of the animal $x$ days after it was born,and $a$ and $b$ are constants. What is the value of $a$ ?

# Question 6

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

ID: 620fe971

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

$y = 120 - 25x$

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

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

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

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

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

# Question 7

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

ID: e470e19d

The function $f$ is defined by $f(x) = 7x - 84$. What is the $x$-intercept of the graph of $y = f(x)$ in the $xy$-plane?

A. $(-12, 0)$

B. $(-7, 0)$

C. $(7, 0)$

D. $(12, 0)$

# Question 8

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

ID: f7e39fe9

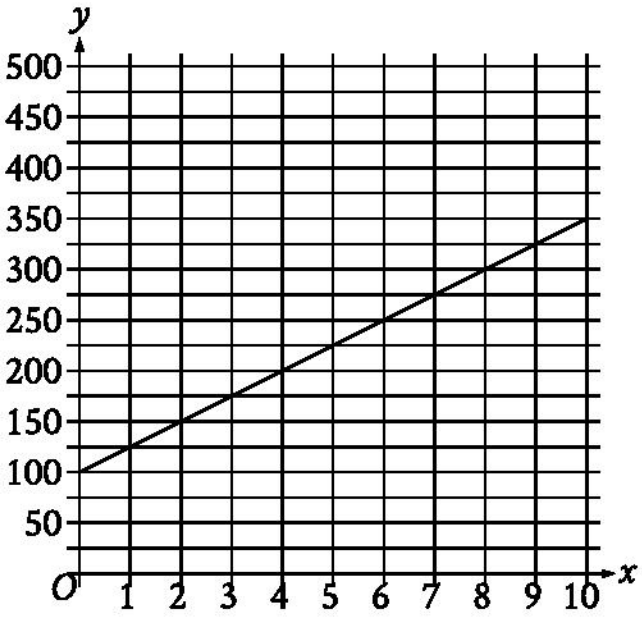
| $x$ | 10 | 15 | 20 | 25 |
|---|---|---|---|---|
| $f(x)$ | 82 | 137 | 192 | 247 |

The table shows four values of $x$ and their corresponding values of $f(x)$. There is a linear relationship between $x$ and $f(x)$ that is defined by the equation $f(x) = mx - 28$, where $m$ is a constant. What is the value of $m$ ?

# Question 9

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

ID: 5cf1bbc9




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

A. Each game costs $\$25$.

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

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

D. Each game costs $\$100$.

# Question 10

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

ID: 3e9eaffc

Caleb used juice to make popsicles. The function $f(x) = -5x + 30$ approximates the volume, in fluid ounces, of juice Caleb had remaining after making $x$ popsicles. Which statement is the best interpretation of the *y*-intercept of the graph of $y = f(x)$ in the *xy*-plane in this context?

A. Caleb used approximately $5$ fluid ounces of juice for each popsicle.

B. Caleb had approximately $5$ fluid ounces of juice when he began to make the popsicles.

C. Caleb had approximately $30$ fluid ounces of juice when he began to make the popsicles.

D. Caleb used approximately $30$ fluid ounces of juice for each popsicle.

# Question 11

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

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 12

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

ID: dae126d7

The boiling point of water at sea level is 212 degrees Fahrenheit $(^\circ F)$. For every 550 feet above sea level, the boiling point of water is lowered by about $1^\circ F$. Which of the following equations can be used to find the boiling point $B$ of water, in $^\circ F$, $x$ 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 13

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

ID: 271f7e3f

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

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

A. 1

B. 2

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

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

# Question 14

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

**ID: c651cc56**

| $x$ | $f(x)$ |
|---|---|
| 0 | −2 |
| 2 | 4 |
| 6 | 16 |

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

A. 6

B. 7

C. 8

D. 9

# Question 15

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

ID: c22b5f25

In the *xy*-plane, the points $(-2,3)$ and $(4,-5)$ lie on the graph of which of the following linear functions?

A. $f(x)=x+5$

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

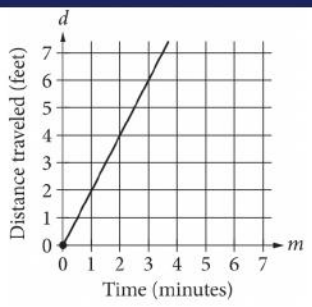
C. $f(x)=-\frac{4}{3}x+\frac{1}{3}$

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

# Question 16

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

ID: 11e1ab81




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

A. $d = 2m$

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

C. $d = m + 2$

D. $d = 2m + 2$

# Question 17

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

ID: 4fe4fd7c

$c(x) = mx + 500$

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