

SAT Linear Functions Worksheet

Name: _____ Date: _____

Circle one answer for each question. Use the blank space for calculations. A calculator is allowed.

1. What is the slope of $y = 4x - 7$?

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

2. A line passes through $(2, 5)$ and $(6, 17)$. What is its slope?

- A. 2
- B. 3
- C. 4
- D. 12

3. Which equation describes a line with slope -2 and y -intercept 6 ?

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

4. A taxi fare, in dollars, is modeled by $C(m) = 3m + 5$, where m is the number of miles traveled. What does 5 represent in this model?
- A. Cost per mile
 - B. Miles per dollar
 - C. Initial charge in dollars
 - D. Maximum trip length
5. If f is linear, $f(1) = 7$, and $f(4) = 16$, what is $f(6)$?
- A. 18
 - B. 20
 - C. 22
 - D. 24
6. What is the x-intercept of $y = 3x - 12$?
- A. $(-12, 0)$
 - B. $(0, -12)$
 - C. $(3, 0)$
 - D. $(4, 0)$

7. A tank contains 90 liters at time $t = 0$ and 66 liters at $t = 4$ minutes. If the rate is constant, which model gives the remaining liters?

- A. $V(t) = 90 - 6t$
- B. $V(t) = 90 - 24t$
- C. $V(t) = 66 - 6t$
- D. $V(t) = 6t + 90$

8. Which line is parallel to $y = 5x + 2$ and passes through (1, 9)?

- A. $y = -5x + 14$
- B. $y = 5x + 4$
- C. $y = 2x + 7$
- D. $y = 5x + 9$

9.

x	$f(x)$
2	8
4	14
6	20

The table shows values of a linear function. What is $f(0)$?

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

10. For $f(x) = -0.5x + 12$, how does $f(x)$ change when x increases by 8?

- A. Decreases by 4
- B. Decreases by 8
- C. Increases by 4
- D. Increases by 8

11. A membership costs \$24 plus \$6 per visit. What is the greatest whole number of visits possible with \$90?

- A. 10
- B. 11
- C. 12
- D. 15

12. A linear function g satisfies $g(3) = 2$ and $g(7) = -6$. What is $g(1)$?

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

Answer key

1 C · 2 B · 3 B · 4 C · 5 C · 6 D · 7 A · 8 B · 9 C · 10 A · 11 B · 12 D

1. C: 4

In slope-intercept form $y = mx + b$, the coefficient of x is the slope. Here the coefficient is 4.

2. B: 3

Slope is change in y divided by change in x : $\frac{17-5}{6-2} = \frac{12}{4} = 3$.

3. B: $y = -2x + 6$

Substitute $m = -2$ and $b = 6$ into $y = mx + b$. The coefficient controls slope and the constant controls the y -intercept.

4. C: Initial charge in dollars

At $m = 0$, $C(0) = 5$. The constant is the starting charge before the distance-based charge is added.

5. C: 22

The slope is $\frac{16-7}{4-1} = 3$. Moving from $x = 4$ to $x = 6$ adds $2(3) = 6$, giving 22.

6. D: (4, 0)

At an x -intercept, $y = 0$. Solving $0 = 3x - 12$ gives $x = 4$, so the point is (4, 0).

7. A: $V(t) = 90 - 6t$

The volume drops 24 liters in 4 minutes, a rate of -6 liters per minute. With initial volume 90, $V(t) = 90 - 6t$.

8. B: $y = 5x + 4$

A parallel line has slope 5. Substituting (1, 9) gives $9 = 5 + b$, so $b = 4$.

9. C: 2

The output increases by 6 when x increases by 2, so the slope is 3. From $f(2) = 8$, subtract $2(3)$ to get $f(0) = 2$.

10. A: Decreases by 4

Multiply the input change by the slope: $-0.5(8) = -4$. The output decreases by 4.

11. B: 11

After the membership fee, \$66 remains. At \$6 per visit, $\frac{66}{6} = 11$ visits fit the budget.

12. D: 6

The slope is $\frac{-6-2}{7-3} = -2$. Moving two units left from $x = 3$ increases the output by 4, giving $g(1) = 6$.