

SAT Linear Equations Worksheet

Name: _____ Date: _____

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

1. If $3(2x - 5) = 21$, what is x ?

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

2. If $\frac{x}{4} + 3 = 8$, what is x ?

- A. 11
- B. 32
- C. 5
- D. 20

3. If $5x + 7 = 2x - 11$, what is x ?

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

4. A repair costs a fixed fee of \$35 plus \$18 per hour. A customer pays \$107 before tax. How many hours of work are charged?
- A. 2
 - B. 3
 - C. 4
 - D. 5
5. For which value of k does the equation $kx + 4 = 7x - 2$ have no solution?
- A. -2
 - B. 7
 - C. -7
 - D. 4
6. The equation $2(3x + a) = 6x + 10$ is true for every real x . What is a ?
- A. 5
 - B. 3
 - C. 10
 - D. 2

7. If $4(x + 2) - 3x = 19$, what is x ?

- A. 3
- B. 7
- C. 11
- D. 27

8. If $\frac{2x - 3}{5} = 7$, what is x ?

- A. 16
- B. 19
- C. 20
- D. 35

9. A tank initially contains 120 liters of water and drains at 8 liters per minute. After how many minutes will 56 liters remain?

- A. 7
- B. 8
- C. 15
- D. 22

10. If $\frac{x-2}{3} = \frac{x+4}{5}$, what is x ?

- A. 4
- B. 8
- C. 11
- D. 22

11. For which value of a does $5x + 2 = 5(x + a)$ have infinitely many solutions?

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

12. If $7x - 4 = 3x + 20$, what is $2x + 1$?

- A. 6
- B. 11
- C. 12
- D. 13

Answer key

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

1. B: 6

Distribute: $6x - 15 = 21$. Add 15 to get $6x = 36$, so $x = 6$. Checking gives $3(12 - 5) = 21$.

2. D: 20

Subtract 3: $\frac{x}{4} = 5$. Multiply both sides by 4 to obtain $x = 20$.

3. A: -6

Subtract $2x$ and 7 from both sides: $3x = -18$. Divide by 3 to obtain $x = -6$.

4. C: 4

Set $35 + 18h = 107$. Then $18h = 72$, so $h = 4$ hours. The fixed fee is paid once.

5. B: 7

No solution occurs when the x coefficients are equal but constants differ. With $k = 7$, subtracting $7x$ gives the false statement $4 = -2$.

6. A: 5

Expand to $6x + 2a = 6x + 10$. For every x , the constants must agree: $2a = 10$, so $a = 5$.

7. C: 11

Distribute and combine like terms: $4x + 8 - 3x = 19$ becomes $x + 8 = 19$. Subtract 8 to obtain $x = 11$.

8. B: 19

Multiply both sides by 5: $2x - 3 = 35$. Adding 3 gives $2x = 38$, so $x = 19$.

9. B: 8

Set $120 - 8t = 56$. The tank loses 64 liters, so $t = \frac{64}{8} = 8$ minutes.

10. C: 11

Multiply by 15 to get $5(x - 2) = 3(x + 4)$. Thus $5x - 10 = 3x + 12$, giving $2x = 22$ and $x = 11$.

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

The right side expands to $5x + 5a$. The equations agree for every x only if $2 = 5a$, so $a = \frac{2}{5}$.

12. D: 13

First solve $4x = 24$, giving $x = 6$. The question asks for $2x + 1$, which is $12 + 1 = 13$.