

SAT Systems of Equations Worksheet

Name: _____ Date: _____

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

1. The equations $x + y = 11$ and $x - y = 3$ hold. What is x ?

- A. 8
- B. 14
- C. 7
- D. 4

2. If $2x + y = 13$ and $y = 3x - 2$, what is y ?

- A. 7
- B. 5
- C. 9
- D. 3

3. A school sells adult tickets for \$8 and student tickets for \$5. It sells 40 tickets for a total of \$260. How many adult tickets did it sell?

- A. 25
- B. 15
- C. 30
- D. 20

4. If $3x + 2y = 17$ and $2x + 3y = 18$, what is $x + y$?
- A. 5
 - B. 7
 - C. 3
 - D. 4
5. For which value of k does the system $2x + 3y = 9$ and $4x + ky = 20$ have no solution?
- A. 3
 - B. 9
 - C. 12
 - D. 6
6. The equations $6x - 4y = 12$ and $3x - 2y = c$ describe the same line. What is c ?
- A. 4
 - B. 12
 - C. 6
 - D. 3

7. If $4x + y = 23$ and $x + y = 8$, what is x ?

- A. 3
- B. 4
- C. 5
- D. 8

8. If $y = 2x + 1$ and $3x + 2y = 23$, what is x ?

- A. 2
- B. 3
- C. 5
- D. 7

9. A collection contains 18 coins, all nickels or dimes, worth \$1.35 altogether. How many dimes are in the collection?

- A. 6
- B. 9
- C. 12
- D. 15

10. The system $ax + 2y = 8$ and $3x + 6y = 24$ has infinitely many solutions. What is a ?

- A. 1
- B. 2
- C. 3
- D. 6

11. If $5x - y = 9$ and $2x + y = 12$, what is $7x$?

- A. 3
- B. 9
- C. 21
- D. 24

12. A system consists of $2x - 3y = 4$ and $4x - 6y = 10$. How many solutions does it have?

- A. Zero
- B. One
- C. Two
- D. Infinitely many

Answer key

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

1. C: 7

Add the equations to eliminate y : $2x = 14$, so $x = 7$. Then $y = 4$.

2. A: 7

Substitute $3x - 2$ for y : $5x - 2 = 13$, giving $x = 3$. The question asks for $y = 3(3) - 2 = 7$.

3. D: 20

Let a be adult tickets and s student tickets. From $a + s = 40$, $s = 40 - a$. Then $8a + 5(40 - a) = 260$, so $3a = 60$ and $a = 20$.

4. B: 7

Add the equations: $5x + 5y = 35$. Factor $5(x + y) = 35$, so $x + y = 7$. Solving for both variables is unnecessary.

5. D: 6

Doubling the first equation gives $4x + 6y = 18$. When $k = 6$, the second equation has the same left side but equals 20, so the equations cannot both hold.

6. C: 6

Divide the first equation by 2: $3x - 2y = 6$. The same line requires $c = 6$, producing infinitely many shared solutions.

7. C: 5

Subtract the second equation from the first: $3x = 15$, so $x = 5$. Substitution gives $y = 3$.

8. B: 3

Substitute for y : $3x + 2(2x + 1) = 23$. Then $7x = 21$ and $x = 3$.

9. B: 9

In cents, $n + d = 18$ and $5n + 10d = 135$. Subtract five times the first equation to get $5d = 45$, so $d = 9$.

10. A: 1

Dividing the second equation by 3 gives $x + 2y = 8$. To represent the same line, the first equation must have $a = 1$.

11. C: 21

Adding the equations eliminates y and immediately gives $7x = 21$. Solving separately for x is unnecessary.

12. A: Zero

Doubling the first equation gives $4x - 6y = 8$, which contradicts the second equation. Parallel distinct lines have no shared solution.