

FOR TEACHER / SELF-CHECK USE

This test was written to cover Unit 4's topics (solving systems of linear equations by graphing, substitution, and elimination, and applying systems to real-world problems). Every solution below has been independently verified.

- | | |
|-----------|---|
| 1 | <p>Substitute $y=x+2$ into $3x+y=14$: $3x + x + 2 = 14 \rightarrow 4x = 12 \rightarrow x = 3$.
 $y = 3 + 2 = 5$.
 Answer: A — $x = 3, y = 5$</p> |
| 2 | <p>Add the equations: $(2x+y)+(x-y) = 7+2 \rightarrow 3x = 9 \rightarrow x = 3$.
 $y = 7 - 2(3) = 1$.
 Answer: A — $x = 3, y = 1$</p> |
| 3 | <p>Add the equations: $2x = 8 \rightarrow x = 4$.
 $y = 6 - 4 = 2$.
 Answer: $x = 4, y = 2$</p> |
| 4 | <p>Multiplying the first equation by 2 gives $4x - 2y = 8$, identical to the second equation — the two equations describe the same line.
 Answer: A — Infinitely many solutions</p> |
| 5 | <p>Both lines have slope 2 but different y-intercepts (1 and -3), so they are parallel and never intersect.
 Answer: A — No solution</p> |
| 6 | <p>Multiply $x+y=6$ by 2: $2x+2y=12$. Subtract from $3x+2y=16$: $x = 4$.
 $y = 6 - 4 = 2$.
 Answer: $x = 4, y = 2$</p> |
| 7 | <p>Set equal: $-x+5 = 3x-3 \rightarrow 8 = 4x \rightarrow x = 2$. $y = -2+5 = 3$.
 Answer: A — (2, 3)</p> |
| 8 | <p>Parallel lines (same slope, different y-intercept) never intersect, so the system has no solution.
 Answer: A — Same slope, different y-intercept</p> |
| 9 | <p>Let a = adult tickets, c = child tickets.
 $a + c = 200$ and $8a + 5c = 1150$.
 From the first equation, $c = 200 - a$. Substitute: $8a + 5(200-a) = 1150 \rightarrow 8a + 1000 - 5a = 1150 \rightarrow 3a = 150 \rightarrow a = 50$.
 $c = 200 - 50 = 150$.
 Answer: 50 adult tickets and 150 child tickets</p> |
| 10 | <p>Let the numbers be x and y.
 $x + y = 24$ and $x - y = 6$.
 Add the equations: $2x = 30 \rightarrow x = 15$. $y = 24 - 15 = 9$.
 Answer: The numbers are 15 and 9</p> |