

Algebra 1 · Linear and Compound Inequalities · Test Answer Key

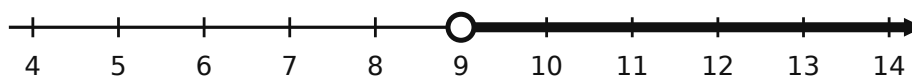
Common Core A-REI.B.3, A-CED.A.1, A-CED.A.3 · mathovore.fr

Use this key to score the test out of 20 points. Each solution shows the full work and a scoring guide. Accept any correct method, and accept equivalent forms such as $9 < x$ for $x > 9$. Deduct only the points listed when a step is missing or wrong.

Algebra 1 Common Core: A-REI.B.3 · A-CED.A.1 · A-CED.A.3

Question 1: Solve and graph (2 points)

Subtract $3x$: $2x - 12 > 6$. Add 12: $2x > 18$. Divide: $x > 9$.



Graph of $x > 9$.

Scoring: 1 point for the correct inequality, 1 point for the graph with an open circle at 9 and a ray to the right.

Question 2: Distribute with a negative (2 points)

Distribute: $-3x + 12 \leq 2x + 7$. Subtract $2x$: $-5x + 12 \leq 7$. Subtract 12: $-5x \leq -5$. Divide by -5 and reverse: $x \geq 1$. Check: $x = 1$ gives $9 \leq 9$.

Scoring: 1 point for distributing and isolating the variable term correctly, 1 point for reversing the sign to get the correct answer.

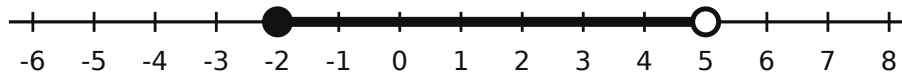
Question 3: Negative fraction (2 points)

Subtract 2: $-\frac{3}{4}x > 6$. Multiply by $-\frac{4}{3}$ and reverse: $x < -8$. Check: $x = -12$ gives $9 + 2 = 11 > 8$.

Scoring: 1 point for isolating the term, 1 point for the correct answer with the sign reversed.

Question 4: Read a compound graph (2 points)

$-2 \leq x < 5$, interval notation **$[-2, 5)$** .

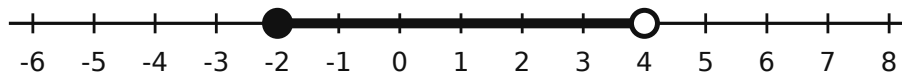


Graph of $-2 \leq x < 5$.

Scoring: 1 point for the inequality with the correct symbols, 1 point for interval notation with a bracket and a parenthesis.

Question 5: Three-part inequality (3 points)

Add 1 to all parts: $-6 \leq 3x < 12$. Divide by 3: $-2 \leq x < 4$.

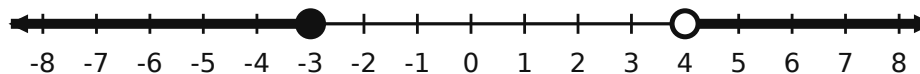


Graph of $-2 \leq x < 4$.

Scoring: 2 points for the solution (1 point if only one bound is correct), 1 point for the graph with a closed circle at -2 and an open circle at 4.

Question 6: Either-or inequality (3 points)

First: $3x \leq -9$, so $x \leq -3$. Second: $2x > 8$, so $x > 4$. Solution: $x \leq -3$ or $x > 4$.



Graph of $x \leq -3$ or $x > 4$.

Scoring: 2 points for solving both parts (1 point each), 1 point for the correct graph.

Question 7: Test a value (2 points)

- Substitute: $6 - 2(-2) = 10$, and $10 \geq 10$ is true, so **yes**.
- Subtract 6: $-2x \geq 4$. Divide by -2 and reverse: $x \leq -2$.

Scoring: 1 point for the substitution and conclusion, 1 point for the solution with the sign reversed.

Question 8: County fair budget (3 points)

- a. $12 + 2.50t \leq 40$
- b. Subtract 12: $2.50t \leq 28$. Divide: $t \leq 11.2$.
- c. Tickets are whole numbers, so **11 tickets**. Check: $12 + 2.50(11) = 39.50$.

Scoring: 1 point for the inequality, 1 point for solving, 1 point for rounding down to 11 with a reason.

Question 9: Special case (1 point)

Distribute: $2x + 6 < 2x + 4$. Subtract $2x$: $6 < 4$, which is false. **No solution.**

Scoring: 1 point for concluding that there is no solution with the false statement shown.

Total
20 points