

Solving and Graphing Two-Step Inequalities

Grade 7 math · Test Answer Key · Standards: 7.EE.B.4b

Award points as marked. A correct solution with the wrong inequality direction earns partial credit for the undoing steps only, and a graph earns its point only when both the circle type and the shading direction are right.

Standards: 7.EE.B.4b · **Level:** Grade 7

Question 1 Solve and Graph (2 points)

Add 8: $5x > 30$. Divide by 5: $x > 6$.



Graph of $x > 6$.

Scoring: 1 point for the solution, 1 point for an open circle at 6 with the ray to the right.

Question 2 Negative Coefficient (2 points)

Subtract 7: $-3x < -15$. Divide by -3 and reverse the sign: $x > 5$.

Scoring: 1 point for $-3x < -15$, 1 point for the reversed sign and 5.

Question 3 Decimal Inequality (2 points)

Add 1.6: $0.4x < 4$. Divide by 0.4: $x < 10$.

Scoring: 1 point for each correct step.

Question 4 Negative Factor Outside (3 points)

- Divide by -4 and reverse the sign: $x + 2 > -5$. Subtract 2: $x > -7$.
- Dividing both sides by a negative number reverses their order, so $<$ becomes $>$.

Scoring: part a, 1 point for the division with the reversed sign and 1 point for the final answer; part b, 1 point.

Question 5 Fraction and Negative (3 points)

Add 2: $-\frac{3}{4}x > 6$. Multiply by $-\frac{4}{3}$ and reverse the sign: $x < -8$.

Test -12 : $-\frac{3}{4}(-12) - 2 = 9 - 2 = 7$, and $7 > 4$.

$$x < -8$$

Scoring: 1 point for adding 2, 1 point for the reciprocal step, 1 point for the reversed sign and result.

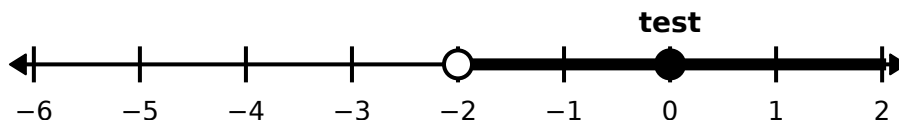
Question 6 Transit Card (3 points)

- a. $85 - 2.75r > 30$.
- b. Subtract 85: $-2.75r > -55$. Divide by -2.75 and reverse the sign: $r < 20$.
- c. The rides are whole numbers below 20, so **19 rides**. Check: $85 - 2.75(19) = 32.75$.

Scoring: 1 point per part.

Question 7 Reading a Graph (3 points)

- a. $x > -2$.
- b. No. The circle is open, so -2 is not included, and $3(-2) + 4 = -2$ is not greater than -2 .
- c. Subtract 4: $3x > -6$. Divide by 3: $x > -2$, which matches.



Solution set $x > -2$ with the test point 0.

Scoring: 1 point per part.

Question 8 Find the Mistake (2 points)

- a. Kai divided both sides by -6 but did not reverse the inequality sign.
- b. Subtract 5: $-6x > 24$. Divide by -6 and reverse the sign: $x < -4$. Test -5 : $-6(-5) + 5 = 35 > 29$.

Scoring: 1 point per part.