

Name _____ Date _____ Period _____

Solving Absolute Value Linear Equations - Practice

Algebra II | Unit 2 | Lesson 5 Practice | TEK A2.6.E

Objective: I can isolate an absolute value, split it into two cases, solve each case, and check both answers.

Section 1 — Recall

1. Solve $|x| = 12$.

$x = \underline{\hspace{2cm}}$ or $x = \underline{\hspace{2cm}}$

2. Solve $|x - 5| = 9$.

Split: $x - 5 = \underline{\hspace{2cm}}$ OR $x - 5 = \underline{\hspace{2cm}}$

Solve: $x = \underline{\hspace{2cm}}$ or $x = \underline{\hspace{2cm}}$

3. Solve $|2x + 6| = 10$.

Split: $2x + 6 = \underline{\hspace{2cm}}$ OR $2x + 6 = \underline{\hspace{2cm}}$

Solve: $x = \underline{\hspace{2cm}}$ or $x = \underline{\hspace{2cm}}$

4. Solve $|x| + 4 = 11$. Isolate first.

Isolate: $|x| = \underline{\hspace{2cm}}$ Solve: $x = \underline{\hspace{2cm}}$ or $x = \underline{\hspace{2cm}}$

Section 2 — Apply

5. Solve $3|x - 2| = 15$, showing the isolate, split, and solve steps.

Isolate: $|x - 2| = \underline{\hspace{2cm}}$

Split: $x - 2 = \underline{\hspace{2cm}}$ OR $x - 2 = \underline{\hspace{2cm}}$

Solve: $x = \underline{\hspace{2cm}}$ or $x = \underline{\hspace{2cm}}$

6. Solve $2|x + 3| - 5 = 9$.

Isolate: $|x + 3| = \underline{\hspace{2cm}}$

Solve: $x = \underline{\hspace{2cm}}$ or $x = \underline{\hspace{2cm}}$

7. Solve $|4x - 1| = 11$, then CHECK both answers in the original equation.

Solve: $x = \underline{\hspace{2cm}}$ or $x = \underline{\hspace{2cm}}$

Check: $|4(3) - 1| = \underline{\hspace{2cm}}$ ✓ $|4(-2.5) - 1| = \underline{\hspace{2cm}}$ ✓

Section 3 — Challenge

8. Solve $5 - 2|x - 1| = -3$. Careful: isolating divides by a NEGATIVE.

Isolate: $-2|x - 1| = \underline{\hspace{2cm}}$ → $|x - 1| = \underline{\hspace{2cm}}$

Solve: $x = \underline{\hspace{2cm}}$ or $x = \underline{\hspace{2cm}}$

9. A student solves $|x - 4| = 6$ and writes only $x = 10$. What did they miss, and what is the full solution set?

What they missed: _____

Full solution set: {_____}

Section 4 — Explain It

10. Explain why $|A| = k$ (where k is positive) always produces TWO equations to solve, and why you must isolate the absolute value BEFORE splitting.
