

# 7-1C Alternative Lesson

Name \_\_\_\_\_

Date \_\_\_\_\_

You can use the algebraic properties of absolute value to solve absolute value equations.

## EXAMPLES

Solve.

1.  $|x - 3| = 7$

Think: The absolute value of the quantity between the bars equals 7.

Therefore, the quantity between the bars can be either 7 or  $-7$ .

We will write an equation to account for each possibility.

$$\begin{array}{lcl} x - 3 = 7 & \text{or} & x - 3 = -7 \\ x = 10 & \text{or} & x = -4 \end{array}$$

Check:

$ x - 3  = 7$	$ x - 3  = 7$
$ 10 - 3  \stackrel{?}{=} 7$	$ -4 - 3  \stackrel{?}{=} 7$
$ 7  \stackrel{?}{=} 7$	$ -7  \stackrel{?}{=} 7$
$7 = 7 \checkmark$	$7 = 7 \checkmark$

2.  $-3 + 4|x - 2| = 9$

Use the properties of equality to simplify the equation.

$-3 + 4 x - 2  = 9$	
$4 x - 2  = 12$	Add 3 to both sides.
$ x - 2  = 3$	Divide both sides by 4.
$x - 2 = 3$ or $x - 2 = -3$	Write two equations.
$x = 5$ or $x = -1$	Solve for $x$

## TRY IT

Solve.

a.  $|x + 4| = 8$

$x + 4 = \underline{\hspace{2cm}}$  or  $x + 4 = \underline{\hspace{2cm}}$ .

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

b.  $|x - 5| = 7$

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

c.  $3|x - 2| + 4 = 10$

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

d.  $\frac{1}{3}|2x + 1| + 2 = 5$

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

