## NAME

Module 6	Solving Absolute Value Equations and
	Inequalities
Lesson 1	Solving Basic Absolute Value Equations

## Solve the following absolute value equations.

1.	x  = 7 <u>x = 7 or -7</u>
3.	x + 1  = 2 x = 1 or -3
5.	x + 3  = 12 <b>x = 9 or -15</b>
7.	x + 2  = 7 <b>x = 5 or x = -9</b>
9.	x + 1  = 3 x = 2 or -4
11.	x + 7  = 4 x = -3 or -11
13.	x-8  = 4 <b>x = 12 or 4</b>
15.	$\left \frac{x}{2}\right  = 3 \ x = 6 \text{ or } -6$
17.	$\left \frac{\mathbf{x}}{3}\right  = 0  \mathbf{x} = 0$
19.	$\left \frac{x}{2}\right  = 2$ x = 4 or -4

2.	x  = -4 Ø
4.	x + 3  = 6 <b>x = 3 or -9</b>
6.	x + 6  = 7 <u>x = 1 or -13</u>
8.	x + 9  = 1 <u>x = -8 or -10</u>
10.	x + 1  = 7 <b>x = 6 or -8</b>
12.	x + 5  = 5 <b>x = 0 or -10</b>
14.	x - 3  = 1 x = 4 or 2
16.	$\left \frac{x}{4}\right  = 5$ <u>x = 20 or -20</u>
18.	$\left \frac{x}{3}\right  = 4$ <u>x = 12 or -12</u>
20.	$\left \frac{x}{2}\right  = 6$ <u>x = 12 or -12</u>

independent practice



- **1.** When solving for the variable in absolute value equations, why is there often more than one solution?
- **2.** How do absolute value problems and the symbol  $\pm$  translate into disjunction statements? Give examples.
- **3.** George says that the solution to the inequality |x 8| = 4 is x = 12. Sally says that the solution is x = 12 or -4. Who is correct and why?
- **4.** How many numbers are in the solution set of the equation |x + 3| = 6?
- **5.** Can you think of situations where there would be only one number in the solution set to solve an absolute value equation?
- **6.** Explain how to solve  $\left|\frac{x}{4}\right| = 5$ .

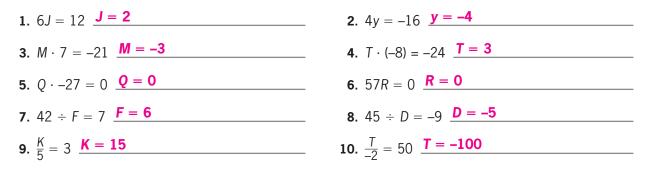
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Module 6 Lesson 1

## **Cumulative Review**

Solve by inspection.



## **Possible Journal Answers**

- 1. When you take the absolute value of an expression, its value could be positive or negative. You need to solve for the variable under each condition. For example, |x + 3| = 1 means that x + 3 could equal 1 or -1. You need to solve for x for these two conditions.
- 2. An absolute value problem such as |b| = 4 can be written as  $b = \pm 4$  and then translated into a dysjunction statement b = 4 or b = -4.
- 3. Sally is correct. She remembered that x 8 can equal 4 or -4.
- 4. There are two numbers in the solution set, x = 3 and x = -9.
- 5. Equations of the form |x + a| = 0, where x is a variable and a is a real number, have only one solution.
- 6. Start by writing the two equations,  $\frac{x}{4} = 5$ , and  $\frac{x}{4} = -5$ ., Then solve each equation by multiplying by four. So, x = 20 and x = -20. You can then write  $x = \pm 20$ .

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