

NAME \_\_\_\_\_

DATE \_\_\_\_\_

**Module 6** Solving Absolute Value Equations and Inequalities

**Lesson 2** Solving Advanced Absolute Value Equations



**independent  
practice**

Solve the following absolute value equations.

- |                              |                             |
|------------------------------|-----------------------------|
| 1. $ x  = 4$ _____           | 2. $ x  = 5$ _____          |
| 3. $3 x  = 27$ _____         | 4. $3 x  = -3$ _____        |
| 5. $-9 x  = -18$ _____       | 6. $5 x  + 2 = 7$ _____     |
| 7. $6 x  - 2 = 10$ _____     | 8. $7 x  + 1 = 50$ _____    |
| 9. $3 x - 8  = 9$ _____      | 10. $ x - 6  = 4$ _____     |
| 11. $ x - 1  + 2 = 12$ _____ | 12. $4 x  - 9 = 7$ _____    |
| 13. $5 =  x + 2  - 5$ _____  | 14. $ x - 3  - 4 = 7$ _____ |
| 15. $ x + 7  = 14$ _____     | 16. $ x + 3  = 8$ _____     |
| 17. $ 2x - 4  = 16$ _____    | 18. $ 2x - 1  = 9$ _____    |
| 19. $3 x + 5  = 9$ _____     | 20. $ 3x + 6  = 9$ _____    |

## Journal

1. What precedence does absolute value have in the order of operations?
2. Frank says that the solution to the inequality  $|3(t + 1)| = 9$  is  $t = 2$  or  $-4$ . Zoe says that the solution is  $t = 2\frac{2}{3}$  or  $-3\frac{1}{3}$ . Who is correct and why?
3. Explain how to solve  $|2x + 3| = 7$ .
4. Explain how you would solve an equation like this:  $|x + 2| = |2x + 3|$ .
5. Why does the equation  $|x + 2| = |2x + 6|$  have two solutions and not four?

## Cumulative Review

Write an equation to represent each sentence or situation.

1. The product of a number and seven, decreased by five, is twenty-seven.

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3. The cost of  $n$  tires is \$1,408. The cost of one tire is \$88.

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5. Tiffany has five times as many red shirts as Amy. Together, they have 30 game red shirts.

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2. Negative seventeen times the sum of a number and twelve is sixteen.

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4. Carmel is  $y$  years old. Her mother is 23 years older. The sum of their ages is 72.

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6. Six less than twice a number is the same as two more than three times the number.

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Solve.

7. The perimeter of a triangle can be no more than 705 cm. Two sides of the garden are 103 cm long. What is the longest possible length for the third side?

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9. The measure of angle A is equal to  $d + 30$  degrees while the measure of angle B is equal to  $d - 30$  degrees. If the sum of the measures of the two angles is more than 180 degrees, what are the possible measures of angle B?

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8. A glass holds 12 oz of a beverage that contains 10% orange juice. What is the minimum amount of pure orange juice that must be added to the beverage so that it contains at least 20% orange juice?

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\_\_\_\_\_

10. A wagon can hold 50 pounds of dirt. How many wagon-fulls will you need to carry if you need to move at least 625 pounds of dirt?

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