

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.

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|------------------------------|-----------------------------|
| 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

- What precedence does absolute value have in the order of operations?
- 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?
- Explain how to solve $|2x + 3| = 7$.
- Explain how you would solve an equation like this: $|x + 2| = |2x + 3|$.
- 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.

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

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

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

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

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

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?

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?

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?

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?

