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Topic: Being the Best | Class: The Best Class

Main Ideas/Questions	Notes/Examples
Steps to Solve	1. Make sure the absolute value expression is isolated.
	2. Set the "inside" equal to both the positive and negative number from the other side of the equation.
	3. solve both equations.
	4. Write your answer as a solution set. $x = \{\_, \_\}$
Examples	**Directions:** Solve each equation. Write your answer as a solution set.

1. $|x| = 2$

$x = 2 \quad x = -2$

$x = \{-2, 2\}$

2. $|m| = 14$

$m = 14 \quad m = -14$

$m = \{-14, 14\}$

3. $|5z| = 40$

$\frac{5z}{5} = \frac{40}{5} \quad \frac{5z}{5} = \frac{-40}{5}$

$z = 8 \quad z = -8$

$z = \{-8, 8\}$

4. $|-7a| = 28$

$\frac{-7a}{-7} = \frac{28}{-7} \quad \frac{-7a}{-7} = \frac{-28}{-7}$

$a = -4 \quad a = 4$

$a = \{-4, 4\}$

5. $|d + 1| = 8$

$d + 1 = 8 \quad d + 1 = -8$

$-1 \quad -1 \quad -1 \quad -1$

$d = 7 \quad d = -9$

$d = \{-9, 7\}$

6. $|w - 3| = 4$

$w - 3 = 4 \quad w - 3 = -4$

$+3 \quad +3 \quad +3 \quad +3$

$w = 7 \quad w = -1$

$w = \{-1, 7\}$

7. $|4n + 2| = 34$

$4n + 2 = 34 \quad 4n + 2 = -34$

$-2 \quad -2 \quad -2 \quad -2$

$\frac{4n}{4} = \frac{32}{4} \quad \frac{4n}{4} = \frac{-36}{4}$

$n = 8 \quad n = -9$

$n = \{-9, 8\}$

8. $|-2v - 5| = 17$

$-2v - 5 = 17 \quad -2v - 5 = -17$

$+5 \quad +5 \quad +5 \quad +5$

$\frac{-2v}{-2} = \frac{22}{-2} \quad \frac{-2v}{-2} = \frac{-12}{-2}$

$v = -11 \quad v = 6$

$v = \{-11, 6\}$

What if there is "stuff" outside the Absolute Value Bars?

Isolate the abs. value!

9. $|c| + 2 = 12$

$-2 \quad -2$

$|c| = 10$

$c = 10 \qquad c = -10$

$c = \{-10, 10\}$

10. $|y| - 8 = -5$

$+8 \quad +8$

$|y| = 3$

$y = 3 \qquad y = -3$

$y = \{-3, 3\}$

11. $\frac{6|x|}{6} = \frac{24}{6}$

$|x| = 4$

$x = 4 \qquad x = -4$

$X = \{-4, 4\}$

12. $\frac{-2|z+3|}{-2} = \frac{-14}{-2}$

$|z+3| = 7$

$z+3 = 7 \qquad z+3 = -7$

$-3 \quad -3 \qquad -3 \quad -3$

$z = 4 \qquad z = -10$

$z = \{-10, 4\}$

13. $6\frac{|2w-4|}{6} = 3 \cdot 6$

$|2w-4| = 18$

$2w-4 = 18 \qquad 2w-4 = -18$

$+4 \quad +4 \qquad +4 \quad +4$

$\frac{2w}{2} = \frac{22}{2} \qquad \frac{2w}{2} = \frac{-14}{2}$

$w = 11 \qquad w = -7$

$w = \{-7, 11\}$

14. $-10|h+5| - 3 = -83$

$+3 \quad +3$

$\frac{-10|h+5|}{-10} = \frac{-80}{-10}$

$|h+5| = 8$

$h+5 = 8 \qquad h+5 = -8$

$-5 \quad -5 \qquad -5 \quad -5$

$h = 3 \qquad h = -13$

$h = \{-13, -3\}$

15. $7|4n+8| - 6 = 106$

$+6 \quad +6$

$\frac{7|4n+8|}{7} = \frac{112}{7}$

$|4n+8| = 16$

$4n+8 = 16 \qquad 4n+8 = -16$

$4n = 8 \qquad 4n = -24$

$n = 2 \qquad n = -6$

$n = \{-6, 2\}$

16. $\frac{3}{2}|4r-4| - 24 = -21$

$+24 \quad +24$

$\frac{2}{3} \cdot \frac{3}{2}|4r-4| = 3 \cdot \frac{2}{3}$

$|4r-4| = 2$

$4r-4 = 2 \qquad 4r-4 = -2$

$4r = 6 \qquad 4r = 2$

$r = 3/2 \qquad r = 1/2$

$r = \{1/2, 3/2\}$

Special Cases

Directions: Solve the equations below. Explain their solutions.

17. $|x| = -6$

$\emptyset$

18. $\frac{-3|2x+1|}{-3} = \frac{21}{-3}$

$|2x+1| = -7$

Explain:

The absolute value cannot equal a negative number once isolated.