

Goal 1: Solve absolute value equations	Steps
	1. Isolate _____
	2. Split _____
	3. Solve _____
	4. Check _____



Solving absolute value equations

Example 1: Solve each absolute value equation

a. $|x| = 4$

b. $|b| = -8$

Example 2: Solve each absolute value equation

a. $|d| + 5 = 13$

b. $|3c - 6| = 9$

c. $6 + |2 - 4x| = 16$

Practice: Solve each absolute value equation

a. $|a| - 3 = 5$

b. $3|n| = 15$

c. $2|k| - 3 = -15$

d. $|c - 2| = 6$

e. $|7d| = 14$

Algebra 2

1-6 Absolute Value Eqs & Ineqs

A#13

Decide whether the number is a solution of the equation.

1. $|5x - 4| = 6$; 2

2. $|3x + 4| = 8$; -4

3. $|2x - 3| = 7$; 2

4. $|5 - 3x| = 8$; 1

5. $|\frac{1}{2}x - 2| = 4$; -1

6. $|3 - \frac{1}{4}x| = 4$; 28

Solve the equation.

7. $|x + 3| = 5$

8. $|3x - 2| = 8$

9. $|2x + 6| = 14$

10. $|\frac{1}{2}t - 4| = 1$

11. $|11 - 3t| = 2$

12. $|7t + 3| = 4$

13. $2|x + 3| - 7 = 13$

14. $\frac{1}{2}|\frac{2}{3}x| + 3 = 11$

15. $\frac{3|2x + 17|}{4} = 87$

Goal 1: Solve absolute value equations	Steps 1. Isolate _____ 2. Split _____ a. greatOR _____ b. less thAND _____ 3. Solve _____ 4. Check _____
---	---

Solving absolute value inequalities

Example 3: Solve $|y - 5| \leq 2$. Graph the solutions.

Example 4: Solve $4 - |f - 7| \geq -11$. Graph the solutions.

Practice: Solve each absolute value inequalities

a. $|x + 5| > 9$

b. $3 - |v + 2| < -8$

Practice A: Rewriting

Rewrite the absolute value inequality as a compound inequality.

22. $|x + 7| < 3$

23. $|2x - 4| \leq 10$

24. $|5 - 3x| < 7$

25. $|x - 4| > 5$

26. $|5x + 1| \geq 4$

27. $|2 - x| > 9$

Practice B: Solve each inequality and graph the solutions.

1. $|x - 5| < 1$

2. $|3x + 2| \geq 7$

3. $|4x + 2| - 7 > 11$

4. $-2|3x - 6| + 15 > 5$

Application and Word Problems

Example: Write an absolute value inequality then solve it to find the values of the length: a length of 4.2 cm with a tolerance of 0.01 cm.

Tolerance Inequality
 $|x - a| \leq b$

<p>Practice: Write an absolute value inequality then solve it to find the values of the length.</p>	
<p>a. a length of 10 ft with a tolerance of 1 in</p>	<p>b. a length of 3.5 m with a tolerance of 0.2 cm</p>
<p>Example: Write an absolute value inequality and a compound inequality for the temperature T that was recorded to be as low as 65° F and as high as 87° F on a certain day.</p>	<p>c. <i>Touring a Ship</i> The diagram below shows the water line of a large ship. The ship extends 27 feet above the water and 27 feet below the water. Suppose you toured the entire ship. Write an absolute value inequality that represents all the distances you could have been from the water line.</p>
<p>b. The duration of a telephone call to a software company's help desk is at least 2.5 minutes and at most 25 minutes. Write an absolute value inequality and a compound inequality for the duration d of a telephone cal.</p>	