

Practice 1-5

Absolute Value Equations and Inequalities

Write each specification as an absolute value inequality.

1. $6.3 \leq h \leq 10.3$ 2. $-2.5 \leq a \leq 2.5$ 3. $22 \leq x \leq 33$

Solve each inequality. Graph the solutions.

4. $|x + 5| > 12$ 5. $|k - 3| \leq 19$ 6. $|x + 2| \geq 0$
 7. $2|t - 5| < 14$ 8. $|3x - 2| + 7 \geq 11$ 9. $5|2b + 1| - 3 \leq 7$
 10. $|2 - 3w| \geq 4$ 11. $-3|7m - 8| < 5$ 12. $|2u| > 6$

Solve each equation. Check for extraneous solutions.

13. $|4x| = 28$ 14. $|3x + 6| = -12$ 15. $|z - 1| = 7z - 13$
 16. $|s + 12| = 15$ 17. $|-3x| = 63$ 18. $2|5x + 3| = 16$
 19. $|6x + 7| = 5x + 2$ 20. $|7r - 4| = 24$ 21. $|3c| + 2 = 11$
 22. $5|x + 1| + 6 = 21$ 23. $|3x + 5| - 2x = 3x + 4$ 24. $-|d + 2| = 7$

Write an absolute value inequality and a compound inequality for each length x with the given tolerance.

25. a length of 4.2 cm with a tolerance of 0.01 cm
 26. a length of 3.5 m with a tolerance of 0.2 cm
 27. a length of 10 ft with a tolerance of 1 in.
 28. 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.
 29. The weight of a 40-lb bag of fertilizer varies as much as 4 oz from the stated weight. Write an absolute value inequality and a compound inequality for the weight w of a bag of fertilizer.
 30. 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 call.