

1.4**Practice A**

In Exercises 1–4, simplify the expression.

1. $-|-2|$

2. $|-7| - |7|$

3. $|-3 \cdot 2|$

4. $\left| \frac{-15}{5} \right|$

In Exercises 5–12, solve the equation. Graph the solution(s), if possible.

5. $|r| = 5$

6. $|q| = -7$

7. $|b - 2| = 5$

8. $|k + 6| = 9$

9. $|-5p| = 35$

10. $\left| \frac{a}{3} \right| = 4$

11. $|8y - 3| = 13$

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

13. The minimum distance between two fence posts is 4 feet. The maximum distance is 10 feet.

a. Represent these two distances on a number line.

b. Write an absolute value equation that represents the minimum and maximum distances.

In Exercises 14–19, solve the equation. Check your solutions.

14. $|j| = |2j + 3|$

15. $|3f - 6| = |9f|$

16. $|b + 3| = |2b - 2|$

17. $|4h - 2| = 2|h + 3|$

18. $3|w - 5| = |2w + 10|$

19. $|2y + 5| = 3y$

20. Your friend says the absolute value equation $|2x + 9| + 7 = 3$ has two solutions because the constant on the right side of the equation is positive. Is your friend correct? Explain.

21. Describe a real-life situation that can be modeled by an absolute-value equation with the solutions $x = 5$ and $x = 10$.

1.4 Practice B

In Exercises 1–10, solve the equation. Graph the solution(s), if possible.

1. $|p - 3| = 10$

2. $|-2k| = 6$

3. $|6f| = -2$

4. $\left|\frac{q}{5}\right| = 3$

5. $|-a + 2| + 9 = 6$

6. $3|4 - 3m| = 30$

7. $-4|5g - 12| = -12$

8. $|x - 3| + 9 = 30$

9. $3|2d - 6| + 2 = 2$

10. $7|2c - 6| + 4 = 32$

11. A company manufactures penny number 2 nails that are 1 inch in length.

The actual length is allowed to vary by up to $\frac{1}{32}$ inch.

- Write and solve an absolute value equation to find the minimum and maximum acceptable nail length.
- A penny number 2 nail is 1.05 inches long. Is the nail acceptable? Explain.

In Exercises 12–14, write an absolute value equation that has the given solutions.

12. 3 and 9

13. -5 and 15

14. 4 and 11

In Exercises 15–20, solve the equation. Check your solutions.

15. $|9w - 4| = |2w + 10|$

16. $2|n + 7| = |4n + 8|$

17. $3|3t + 1| = 2|6t + 3|$

18. $|5r + 3| = 2r$

19. $|j - 5| = |j + 9|$

20. $|2k + 4| = |2k + 3|$

21. You conduct a random survey of your small town about having a townwide garage sale. Of those surveyed, 56% are in favor and 44% are opposed. The actual percent could be 5% more or 5% less than the acquired results.

- Write and solve an absolute value equation to find the least and greatest percents of your town population that could be opposed to a townwide garage sale.
- A friend claims that half the town is actually opposed to a townwide garage sale. Does this statement conflict with the survey data? Explain.