# EXERCISES

**Solve each equation or inequality involving absolute value.**

**1.** $|x| = 10$

**2.** $|x| > 10$

**3.** $|x| < 10$

**4.** $|x| \geq 10$

**5.** $|x| \leq 10$

**6.** $|x - 4| = 10$

**7.** $|x + 4| = 10$

**8.** $|x - 4| \geq 10$

**9.** $|x + 4| \leq 10$

**10.** $|5x - 7| = 13$

**11.** $|5x + 7| < 13$

**12.** $|6x + 5| < 7$

**13.** $|6x - 5| > 7$

**14.** $|4y + 12| + 5 > 9$

**15.** $|4y + 12| - 5 \leq 7$

**16.** $2|x| = 12$

**17.** $3|x + 2| = 15$

**18.** $4|x - 2| > 16$

**19.** $5|3a - 4| + 1 < 6$

**20.** $5|2a + 6| - 3 = 7$

**21.** $|2n - \frac{1}{3}| = \frac{2}{3}$

**22.** $|p - \frac{2}{3}| \geq \frac{5}{3}$

**23.** $|\frac{1}{2}x - 2| \geq 2$

**24.** $|\frac{1}{4}y - 5| \leq 7$

**25.** $|0.5x + 0.25| > 0.75$

**26.** $|0.5x - 0.25| < 0.75$

**27.** $|0.25 - 0.5x| \leq 0.75$

**28.** $|-3x| > 6$

**29.** $|-4x| < 12$

**30.** $|4 - 2x| < 16$

**31.** $|5 - 4x| > 7$

**32.** $|6 - 3x| \geq 9$

**33.** $|2 - x| \geq 7$

**34.** $|4 - x| \leq 12$

**35.** $|x| > 0$

**36.** $|x| < 0$

**37.** $|x| \geq 0$

**38.** $|x| \leq 0$

**39.** $|x - 4| > 0$

**40.** $|7x + 14| > 0$

**41.** $|5n - 20| \leq 0$

**42.** $|5n - 20| < 0$

**43.** $1 \leq |x| \leq 5$

**44.** $2 < |x + 1| \leq 3$

**45.** $0 < |2 - x| < 4$

**46.** In a random survey in a city election that 46% of the voters will choose candidate A for mayor. The result of the survey is considered to be accurate within a range of $\pm 5\%$. Write an absolute-value inequality that represents the upper and lower boundaries of the percent ( $p$ ) of voters who will choose candidate A.

**47.** In question **46**, find the boundaries (the upper and the lower) of the percents.

**48.** The normal human body temperature is $98.6^{o}F$ within a range of $\pm 1^{o}F$. Write an inequality that represents the range of normal body temperatures ( $t$ ).

**49.** Solve $|x - a| \leq b$ for $x$. Assume $a$ and $b$ are positive numbers.

**50.** Solve $|x + a| \geq b$ for $x$. Assume $a$ and $b$ are positive numbers.