Chapter 3 review

Notebooks needed

Choose the correct property used to solve each inequality.

1. $\frac{z}{4} < 6$

   $4 \cdot \frac{z}{4} < 6 \cdot 4$

   $z < 24$ **C**

   A. Addition Property of Inequality

   B. Subtraction Property of Inequality

   C. Multiplication Property of Inequality

2. $a + 4 \geq -2$

   $a + 4 - 4 \geq -2 - 4$

   $a \geq -6$ **B**

   D. Division Property of Inequality

3. $-2.5n > -8$

   $\dfrac{-2.5n}{-2.5} > \dfrac{-8}{-2.5}$

   $n < 3.2$ **D**

4. $15 \leq x - 3$

   $15 + 3 \leq x - 3 + 3$

   $18 \leq x$ **A**

A mathematical sentence that contains $<, >, \le, \ge,$ or $\ne$ is called an **inequality.** A **solution of an inequality** is any number that makes an inequality true. When graphing, use an open circle for $>$ and $<$, and use a closed circle for $\ge$ and $\le$.

Which of the given numbers are solutions of each inequality?

  5. $x \ge -3; -5.2, -3, -1$ **−3, −1**   **6.** $x < 4; \frac{1}{6}, 4, 6\frac{1}{2}$ **$\frac{1}{6}$**
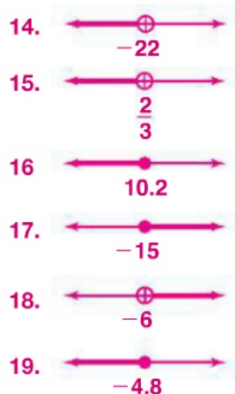
Graph the solution of each inequality.

  7. $a > -5$ **8.** $4.7 \ge b$ **9.** $c < \frac{7}{8}$

Write an inequality for each statement. Then graph the inequality.

  10. The ticket is at most $10.   **11.** The race is less than 5 miles. **$r < 5$**
       $t \le 10$
  12. You swim more than 45 min.   **13.** Lunch costs at least $4.75.
       $m > 45$ **$d \ge 4.75$**

You solve inequalities involving addition or subtraction just as you solve equations. You use inverse operations, and whatever you do to one side of the inequality, you do to the other side of the inequality.

When you multiply or divide each side of an inequality by the same positive number, the direction of the inequality symbol remains unchanged. When you multiply or divide each side of any inequality by the same negative number, the direction of the inequality symbol is reversed.

14. ⊕ −22

15. ⊕ $\frac{2}{3}$

16 ● 10.2

17. ● −15

18. ⊕ −6

19. ● −4.8

Solve each inequality. Then graph the inequality.

  14. $7 + h < -15$ **$h < -22$**   **15.** $-\frac{1}{2} + w < \frac{1}{6}$ **$w < \frac{2}{3}$**

  16. $7.8 \ge z - 2.4$ **$10.2 \ge z$ or $z \le 10.2$**   **17.** $-3 \le \frac{p}{5}$ **$-15 \le p$ or $p \ge -15$**

  18. $-30 < 5k$ **$-6 < k$ or $k > -6$**   **19.** $1.5 \le -\frac{c}{3.2}$ **$-4.8 \ge c$ or $c \le -4.8$**

You can also use inverse operations to solve two-step inequalities. First
you add or subtract the same number from each side. Then you multiply
or divide each side by the same number.

Solve each inequality. Then graph the inequality. **22–27. See left.**

22.

2

23.

2.52

24.

−65

25.

−3

26.

$-\frac{1}{2}$

27

2.04

22. $-4q + 3 > -5$ **$q < 2$**

23. $2.6 + \frac{x}{1.8} \le 4$ **$x \le 2.52$**

24. $-7 - \frac{r}{5} < 6$ **$r > -65$**

25. $-2\frac{3}{4} \le \frac{3}{4}t - \frac{1}{2}$ **$-3 \le t$ or $t \ge -3$**

26. $\frac{2}{3} + \frac{-2}{3}w < 1$ **$w > -\frac{1}{2}$**

27. $1.4 < \frac{b}{0.6} - 2$ **$2.04 < b$ or $b > 2.04$**