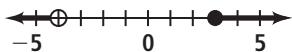
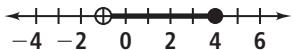


3-6**Reteaching****Compound Inequalities**

A compound inequality with the word *or* means one or both inequalities must be true. The graph of the compound inequality $a < -4$ or $a \geq 3$ is shown below.



A compound inequality with the word *and* means both inequalities must be true. The graph of the compound inequality $b \leq 4$ and $b > -1$ is shown below.



To solve a compound inequality, solve the simple inequalities from which it is made.

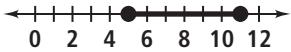
Problem

What are the solutions of $17 \leq 2x + 7 \leq 29$? Graph the solutions.

$17 \leq 2x + 7 \leq 29$ is the same as $17 \leq 2x + 7$ and $2x + 7 \leq 29$. You can solve it as two inequalities.

$$\begin{array}{lll} 17 \leq 2x + 7 & \text{and} & 2x + 7 \leq 29 \\ 17 - 7 \leq 2x + 7 - 7 & \text{and} & 2x + 7 - 7 \leq 29 - 7 \\ 10 \leq 2x & \text{and} & 2x \leq 22 \\ \frac{10}{2} \leq \frac{2x}{2} & \text{and} & \frac{2x}{2} \leq \frac{22}{2} \\ 5 \leq x & \text{and} & x \leq 11 \end{array}$$

To graph the compound inequality, place closed circles at 5 and 11. Shade between the two circles.



3-6**Reteaching** (continued)**Compound Inequalities****Problem**

What are the solutions of $3t - 5 < -8$ or $2t + 5 > 17$? Graph the solutions.

Solve each inequality.

$$3t - 5 < -8$$

or

$$2t + 5 > 17$$

$$3t - 5 + 5 < -8 + 5$$

or

$$2t + 5 - 5 > 17 - 5$$

$$3t < -3$$

or

$$2t > 12$$

$$\frac{3t}{3} < \frac{-3}{3}$$

or

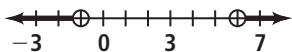
$$\frac{2t}{2} > \frac{12}{2}$$

$$t < -1$$

or

$$t > 6$$

To graph the compound inequality, place open circles at -1 and at 6 . Shade to the left of -1 and to the right of 6 .

**Exercises**

Solve each compound inequality. Graph the solutions.

1. $h - 7 \geq -5$ and $h + 4 < 10$

$$2 \leq h < 6$$



3. $-7 < w - 4 < 2$

$$-3 < w < 6$$



5. $5p + 3 \leq -2$ or $3p - 6 \geq 3$

$$p \leq -1 \text{ or } p \geq 3$$



7. $\frac{3}{4}a - 6 < 0$ and $\frac{2}{3}a + 4 > 2$

$$-3 < a < 8$$



9. $5m - 2 < 8$ or $6m - 2 > 6 + 5m$

$$m < 2 \text{ or } m > 8$$



2. $r - 2 \leq -1$ or $r - 3 > 2$

$$r \leq 1 \text{ or } r > 5$$



4. $-2 \leq \frac{y}{2} \leq 1$

$$-4 \leq y \leq 2$$



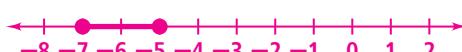
6. $-2n - 5 \geq 1$ or $5n + 7 > 2$

$$n \leq -3 \text{ or } n > -1$$



8. $-4 \leq 4d + 24 \leq 4$

$$-7 \leq d \leq -5$$



10. $\frac{w}{2} + 1 \geq 2$ and $w - 5 \leq 1$

$$2 \leq w \leq 6$$

