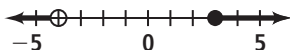


# 3-6

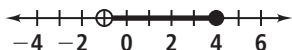
## Reteaching

### 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.

$$17 \leq 2x + 7 \quad \text{and} \quad 2x + 7 \leq 29$$

$$17 - 7 \leq 2x + 7 - 7 \quad \text{and} \quad 2x + 7 - 7 \leq 29 - 7$$

$$10 \leq 2x \quad \text{and} \quad 2x \leq 22$$

$$\frac{10}{2} \leq \frac{2x}{2} \quad \text{and} \quad \frac{2x}{2} \leq \frac{22}{2}$$

$$5 \leq x \quad \text{and} \quad x \leq 11$$

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



# 3-6 **Reteaching** (continued)

## Compound Inequalities

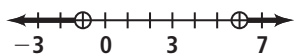
### Problem

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  $h + 4 < 10$

$2 \leq h < 6$



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

$r \leq 1$  or  $r > 5$



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

$-3 < w < 6$



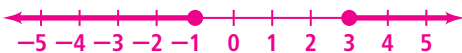
4.  $-2 \leq \frac{y}{2} \leq 1$

$-4 \leq y \leq 2$



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

$p \leq -1$  or  $p \geq 3$



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

$n \leq -3$  or  $n > -1$



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

$-3 < a < 8$



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

$-7 \leq d \leq -5$



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

$m < 2$  or  $m > 8$



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

$2 \leq w \leq 6$

