3-3 Reteaching

Solving Inequalities Using Multiplication or Division

You can solve inequalities using multiplication or division using these two important rules.

- You can multiply or divide each side of an inequality by a positive number.
- You can multiply or divide each side of an inequality by a negative number *only if you reverse the inequality sign.*
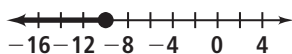
Problem

What are the solutions of $\frac{c}{5} \leq -2$? Graph the solutions.

$\frac{c}{5} \leq -2$	Original inequality
$5\left(\frac{c}{5}\right) \leq 5(-2)$	Multiply each side by 5. Keep the inequality symbol the same.
$c \leq -10$	Simplify.

To graph $c \leq -10$, place a closed circle at -10 and shade to the left.

Problem

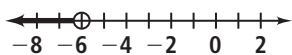What are the solutions of $-\frac{2}{3}t > 4$? Graph the solutions.

$-\frac{2}{3}t > 4$	Original inequality
$-\frac{3}{2}\left(-\frac{2}{3}t\right) < -\frac{3}{2}(4)$	Multiply each side by $-\frac{3}{2}$. Reverse the inequality symbol.
$t < -6$	Simplify.

To graph $t < -6$, place an open circle at -6 and shade to the left.

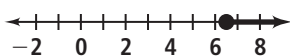# 3-3 **Reteaching** (continued)

Solving Inequalities Using Multiplication or Division

Problem

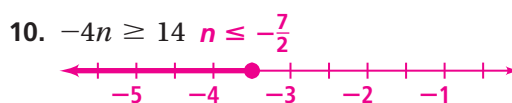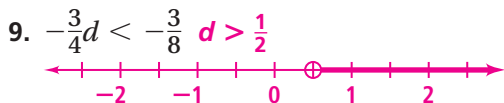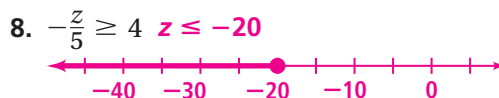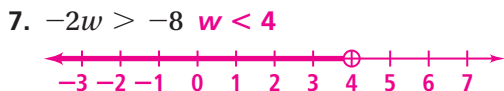What are the solutions of $-6h \le -39$? Graph the solutions.

$$-6h \le -39 \qquad \text{Original inequality}$$

$$\frac{-6h}{-6} \ge \frac{-39}{-6} \qquad \text{Divide each side by } -6. \text{ Reverse the inequality symbol.}$$

$$h \ge 6\frac{1}{2} \qquad \text{Simplify.}$$

To graph $h \ge 6\frac{1}{2}$, place closed circle at $6\frac{1}{2}$ and shade to the right.

Exercises

Solve each inequality. Graph and check your solutions.

1. $\frac{x}{7} > -2$ **x > −14**

2. $8p \le 32$ **p ≤ 4**

3. $\frac{2}{5}r \ge 6$ **r ≥ 15**

4. $-\frac{k}{2} < -5$ **k > 10**

5. $-3f \le 12$ **f ≥ −4**

6. $\frac{3}{5}t > -9$ **t > −15**

7. $-2w > -8$ **w < 4**

8. $-\frac{z}{5} \ge 4$ **z ≤ −20**

9. $-\frac{3}{4}d < -\frac{3}{8}$ **d > $\frac{1}{2}$**

10. $-4n \ge 14$ **n ≤ $-\frac{7}{2}$**
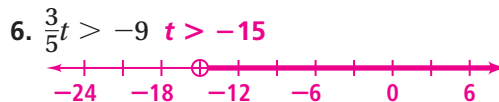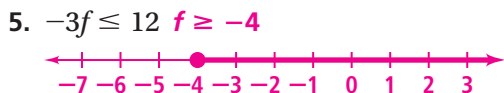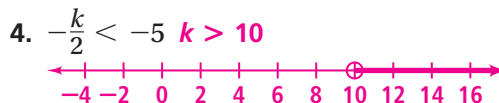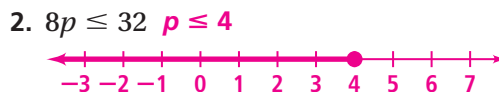
11. A bus company charges $2 for each trip. It also sells monthly passes for $50. Write and solve an inequality to find how many trips you could make before the monthly pass is cheaper.

2t > 50; For more than 25 trips, the monthly pass is cheaper.