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
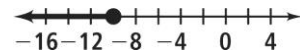inequality by a negative number *only if you reverse
the inequality sign.*

Problem

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

$\dfrac{c}{5} \le -2$ Original inequality

$5\left(\dfrac{c}{5}\right) \le (-2)$ Multiply each side by 5. Keep the inequality symbol the same.

$c \le -10$ Simplify.

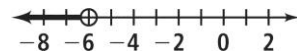To graph $c \le -10$, place a closed circle at -10 and shade to the left.

Problem

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

$-\dfrac{2}{3}t > 4$ Original inequality

$-\dfrac{3}{2}\left(\v{G}\dfrac{2}{3}t\right) < \v{G}\dfrac{3}{2}(4)$ Multiply each side by $-\dfrac{3}{2}$. Reverse the inequality symbol.

$t < -6$ Simplify.

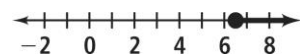To graph $t < -6$, place an open circle at -6 and shade to the left.

Problem

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

$-6h \le -39$ Original inequality

$\dfrac{-6h}{-6} \le \dfrac{-39}{-6}$ Divide each side by -6. Reverse the inequality symbol.

Simplify.

$h \ge 6\dfrac{1}{2}$

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

Exercises
Solve each inequality. Graph and check your solutions.

1. $\dfrac{x}{7} > -2$

2. $8p \le 32$

3. $\dfrac{2}{5}r \ge 6$

4. $-\dfrac{k}{2} < -5$

5. $-3f \ge 12$

6. $\dfrac{3}{5}t > -9$

7. $-2w > -8$

8. $-\dfrac{z}{5} \ge 4$

9. $-\dfrac{3}{4}d < -\dfrac{3}{8}$

10. $-4n \ge 14$

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.

Extra Practice Lesson 3-3

Solve each inequality. Graph and check your solution.

1. $-8w < 24$

2. $\dfrac{r}{4} > -1$

3. $9h > -108$

4. $\dfrac{s}{6} \le 3$

5. $\dfrac{6c}{5} \ge -12$

Define a variable and write an inequality for each situation.

6. You earn $7.50 per hour and need to earn $35. Write and solve an inequality to find how many hours you must work.

Write and solve an inequality for each situation.

7. A homeroom class with 25 students is holding a fund-raiser to support school sports. Their goal is to raise at least $200. On average, how much money does each student need to contribute to meet or exceed the goal?

8. You are reading a book with 19 chapters. How many chapters should you read each week if you want to finish the book in 5 weeks or less?