NAME _____ DATE _____

Study Guide

Student Edition
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Solving Inequalities by Using Multiplication and Division

You can solve inequalities by using the same methods you have already used to solve equations. However, when solving inequalities, if you multiply or divide each side by the same negative number, you must *reverse* the direction of the inequality symbol. The following chart shows the multiplication and division properties for solving inequalities.

Multiplication Property for Inequalities	Division Property for Inequalities
For all numbers a, b, and c, **1.** if c is positive and $a < b$, then $ac < bc$; if c is positive and $a > b$, then $ac > bc$; **2.** if c is negative and $a < b$, then $ac > bc$; if c is negative and $a > b$, then $ac < bc$.	For all numbers a, b, and c, **1.** if c is positive and $a < b$, then $\frac{a}{c} < \frac{b}{c}$; if c is positive and $a > b$, then $\frac{a}{c} > \frac{b}{c}$; **2.** if c is negative and $a < b$, then $\frac{a}{c} > \frac{b}{c}$; if c is negative and $a > b$, then $\frac{a}{c} < \frac{b}{c}$.

State the number by which you multiply each side to solve each inequality. Indicate whether the direction of the inequality symbol reverses.

1. $4s < 24$ **2.** $-9k > 2$ **3.** $-5\frac{1}{3} > 2n$ **4.** $\frac{7}{3} < -\frac{1}{9}n$

Solve each inequality. Then check your solution.

5. $77 < 12r$ **6.** $-5c > 2$ **7.** $25g \geq -100$ **8.** $\frac{n}{-50} > 22$

9. $0.24 < 0.6w$ **10.** $-2.51 \leq \frac{2h}{-4}$ **11.** $\frac{2a}{7} \geq -6$ **12.** $-\frac{1}{3} < \frac{2p}{9}$

Define a variable, write an inequality, and solve each problem. Then check your solution.

13. Four times a number is no more than 108.

14. A number divided by 5 is at least -10.