Inequalities Involving Multiplication and Division

Multiplication and Division Properties of Inequalities

|  |  |
| --- | --- |
| ***Positive Number*** | ***Negative Number*** |
| You can multiply or divide **both sides** of an inequality by a **positive number** and the **inequality symbol** will remain the **same** | If you multiply or divide **both sides** of an inequality by a **negative number**, you must **reverse** the **inequality** **symbol**  |

Solve each inequality:

1. $\frac{y}{3} \geq 5 \rightarrow \left(3\right)\left(\frac{y}{3}\right) \geq \left(3\right) \left(5\right) \rightarrow y \geq 15$

Inequality 🡪 Use denominator to multiply Inequality 🡪 Solution to Inequality

1. -4x > 52 🡪 $\frac{-4x}{-4} < \frac{52}{-4}$ 🡪 x < -13

Inequality 🡪 Divide Inequality by **negative coefficient** 🡪 Solution to Inequality

\*\*\*\*THE INEQUALITY SYMBOL WAS REVERSED BECAUSE WE DIVIDED BY A NEGATIVE COEFFICIENT\*\*\*\*

Scenario:

**Every month**, **$35** is withdrawn from Leon’s saving account to pay for his gym membership. He has enough savings to withdraw **no more than** **$315**. For how many months can Leon pay for his gym membership?

Step(1): Write the equation

 Let “m” represents the months Leon can pay for gym membership

 35m ≤ 315

Step(2): Solve the inequality

 35m ≤ 315 🡪 $\frac{35m}{35} \leq \frac{315}{35}$ 🡪 m ≤ 9 (pay 9 months)