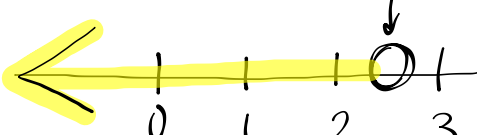


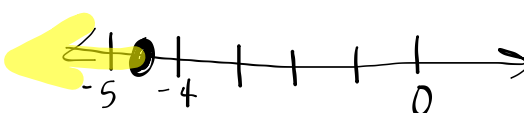
3.3: Solving inequalities using multiplication and division

When you multiply by a positive number you do NOT change the signs.

When you multiply or divide by a negative number you MUST flip the sign.

$$\begin{array}{r} \text{EX.) } 2x + 3 < 8 \\ -3 \quad -3 \\ \hline 2x < 5 \\ x < \frac{5}{2} \approx 2.5 \end{array}$$


A number line with tick marks at 0, 1, 2, and 3. An open circle is drawn at 2.5, and a yellow arrow points to the left from this circle, representing the solution set $x < 2.5$.

$$\begin{array}{r} \text{EX.) } -4x - 6 \geq 12 \\ +6 \quad +6 \\ \hline -4x \geq 18 \\ \xrightarrow{\text{neg}} \frac{-4x}{-4} \geq \frac{18}{-4} \leftarrow \text{negative} \\ x \leq \frac{-9}{2} \approx -4.5 \end{array}$$


A number line with tick marks at -5, -4, and 0. A closed circle is drawn at -4.5, and a yellow arrow points to the left from this circle, representing the solution set $x \leq -4.5$.