To solve inequalities, you have many methods that you could use:

**Balancing the Inequality**

This method is one based on whatever you do to one side of the inequality you must do to the other in order to keep it balanced. Think of each side as if it were on a balance scale. You are trying to get the variable by itself.

Example: \(-3x - 8 < x + 4\)

Step 1: Complete the distributive property by taking the number on the outside of the parentheses and multiplying it by both numbers inside the parentheses. In this problem, there is no distributive property. So we continue on.

Step 2: Find the like terms in the problem.
Like terms must be on the same side of the equals sign to combine. In this problem, there are no like terms, so we continue on.

Step 3: Cancel out a variable using the inverse operation. Remember whatever you do to one side of the equation; you must also do to the other.

\[
\begin{align*}
-3x - 8 &< x + 4 \\
-x &< x \\
-4x - 8 &< 4
\end{align*}
\]

Step 4: Continue solving as you normally would using the steps learned in previous lessons.

\[
\begin{align*}
-4x - 8 &< 4 \\
+8 &< 8 + 8 \\
-4x &< 12 \\
-4 &< -4 \\
x &< -3
\end{align*}
\]
**Working with Inequalities Signs**

After solving the inequality, either algebraically or using the arrow method, ask yourself the following questions:

To solve the problem, (looking at the bottom arrow if using the arrow method), did I:

- Multiply by a negative number? no
- Divide by a negative number? yes
- Switch the side the variable was on? no

Each time you answer yes to one of the above questions, you must flip the inequality sign so that it faces in the opposite direction.

We answered yes to one of the questions above; therefore, we have to reverse the inequality sign at one time making our answer: \( x > -3 \).