EQUATIONS AND INEQUALITIES

- **Algebraic equations** are mathematical equations that contain a letter or variable, which represents a number.

- **To solve an algebraic equation, inverse operations are used.** Inverse operations are performing the opposite operation to what is being performed in the equation. The inverse operation of addition is subtraction and the inverse operation of subtraction is addition. Multiplication and division are the inverse operations of each other.

- **Inequalities** are mathematical equations that compare two quantities using greater than, >; greater than or equal to ≥; less than, <; and less than or equal to, ≤. Inequalities are also solved by using inverse operations.

- Often a **number line** is used to show inequalities. To show an inequality on the number line, a shaded circle is used to represent that the e means the ans the number s less than th ht, the answer

How to use equations and inequalities:

- **Algebraic equations are solved using the inverse operations.** To solve the equation n - 52 = 38, look to see what operation is being performed in the problem, subtraction. The inverse operation of subtraction is addition. The problem can be solved using the inverse operation of addition as the example shows:

n - 52 = 38
+ 52 +52
n = 90

Since 52 was subtracted in the initial problem, it will be added with inverse operations.

- The rule when dealing with equations is whatever is done to one side of the equation must be done to the other side. So 52 is added to 38 on the other side of the equal sign. When both sides are added, the numbers on the left side of the equation will cancel out, leaving only the n. On the right side of the equation, 38 and 52 are added, giving the answer of 90. Therefore n = 90.

- **Inequalities** are solved the same way as algebraic equations by using inverse operations. The only rule of inequalities that must be remembered is that when a variable is multiplied or divided by a negative number the sign is **reversed**.

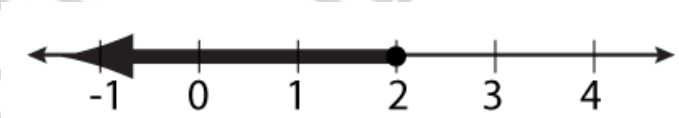
Ex. **x + 3 ≥ 7**
- 3 -3
x ≥ 4

-2x < 28
-2 -2
x > -14
(Notice sign is reversed)

The result is x ≥ 4. This means that x can be any number that mee

- On the

- The inequality x < 2 on the number line would look as follows:



- To write an inequality, translate the words into numbers and signs:

greater than	**>**
greater than or equal to	**≥**
less than	**<**
less than or equal to	**≤**

Try This!

Solve the following equations:

$x - 4 = 16$ $56 + x = 134$ $6x = 84$ $x/7 = 15$

Solve and graph the following inequalities:

$x + 14 \leq 35$ $x - 12 > 42$ $4x < 128$ $x/-2 \geq 18$

Write the