6.1: Solving Inequalities Using Addition and Subtraction

Goals:

***Graph inequalities on a number line**

- Decide if the circle is open or closed
- Decide which direction the arrow should point

***Solve one-step inequalities using addition and subtraction**

For each example below, list five numbers that x could be:

$x \geq 5$ means that x could be: 5, 6, 7, 8, 9, etc…

$x < -1$ means that x could be: −2, −3, −4, −5, −6, etc…

To Graph a Number on a number line:

1. Start at the number of the solution

2. Put an open or closed circle.
   Choose an open circle ○ if the inequality is:

   Choose a closed circle ● if the inequality is:

3. Draw an arrow pointing to all other possible numbers that the variable could be.

Graph the following inequalities on a number line:

Ex: Graph $x < 3$.

Ex: Graph $x \geq -1$

Ex: Graph $5 \geq x$
Rewrite as $x \leq 5$ to graph.

Solving inequalities using addition and subtraction:

Ex: $x - 1 > 2$

$+1 \quad +1$

$x > 3$

Solve and graph solution on a number line:

Ex: $x - 9 \leq 3$

$+9 \quad +9$

$x \leq 12$

Ex: $p - 9 < 5$

$+9 \quad +9$

$p < 14$

Ex: $-1 \geq m - 2$

$+2 \quad +2$

$1 \geq m$

$m \leq 1$

Ex: $9 \geq x + 7$

$-7 \quad -7$

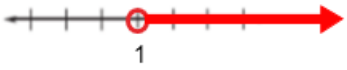
$2 \geq x$

$x \leq 2$

Ex: $y + 5 > 6$

$-5 \quad -5$

$y > 1$



Ex: You are checking a bag at an airport. Bags can weigh no more than 50 pounds. Your bag currently weighs 16.8 pounds and you plan on adding w pounds to your bag in travel items.

a) Write an inequality to represent the situation.

$16.8 + w \leq 50$

b) Find the possible weights w that you can add to the bag.

$16.8 + w \leq 50$

$-16.8 \quad -16.8$

$w \leq 33.2$