## 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
$x \geq 5$ means that $x$ can be: 5 or more
$x<-1$ means that $x$ can be $\_$anything less than -1 $\qquad$ . $x$ CANNOT be $\qquad$ !


## To Graph a Number on a number line:

1. Start at the number on the number line.
2. Place a closed (filled in) circle if $\geq$ or $\leq$. This means that the number is included in the solution.

Place an open circle if $>$ or <. This means the number is not included in the solution.
3. Draw an arrow pointing to all of the other possibilities (Hint: If the variable is on the left, then the arrow points the same way as the inequality sign)

## Graph the following inequalities on a number line:

Ex: Graph $x<3$.


Ex: Graph $x \geq-1$


Ex: Graph $5 \geq x$ (if you read this starting with $x$, it would say that $x$ is less than or equal to 5)


## Solving inequalities using addition and subtraction:

1. Solve like a normal equation (use inverse operations)
2. Graph the solution on a number line


## Solve and graph solution on a number line:

Ex: $x-9 \leq 3$
$x \leq 12$
Ex: $p-9.2<5$
$p<14.2$
Ex: $-1 \geq m-\frac{1}{2}$
$-1 / 2 \geq m$
Ex: $9 \geq x+7$
Ex: $y+5.5>6$
$2 \geq x$

$$
y>0.5
$$

Ex: You are checking a bag at an airport. Bags can weigh no more than 50 pounds. Your bag weighs 16.8 pounds. Find the possible weights $w$ (in pounds) that you can add to the bag.

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\begin{aligned}
16.8+x & \leq 50 \\
x & \leq 33.2
\end{aligned}
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