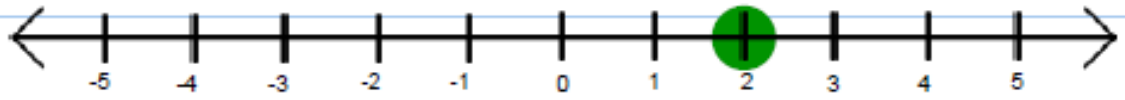
Graphing Solutions

Equation solutions - a point (a solid dot)

A solid circle states that the solution is the dot's value.

$5 + x = 7$



$x = 2$

Inequality solutions - a point (solid or open) & an arrow

Solid dot: - solution includes that exact value
- used with $\leq$ and $\geq$

Open dot: - solution **does not** include that exact value
- used with $<$ and $>$

Left arrow: - solution includes all values less
- used with $<$ and $\leq$ Only when 'x' is on the left!

Right arrow: - solution includes all values greater
- used with $>$ and $\geq$ Only when 'x' is on the left!

Examples:

$x \leq 3$

Solution includes x=3 and every value less than 3.

Solving One-Step Inequalities

Solve and graph the following inequality.

$a+5\geq 11$

Steps

1) Ignore the $>, <, \geq, or \leq$ and solve like you would if it were an =

a) Goal: get variable by itself (remove items on the same side as the variable)
b) Perform inverse(opposite) operation to remove the #s on the same side as the variable
c) To keep the equation balanced, whatever you did to one side, you must do to the other side
d) Check by plugging in your answer! (Check with the = sign)

$a+5\geq 11$

$a + 5 = 11$

$-5 \quad -5$

$a = 6$

Check:

$a + 5 = 11$

$6 + 5 = 11$

$11 = 11$ ✓

2) Rewrite the solution with $>, <, \geq, or \leq$ (not =) in your answer

$a = 6 \longrightarrow a \geq 6$

3) Represent all possible solutions by graphing on a number line

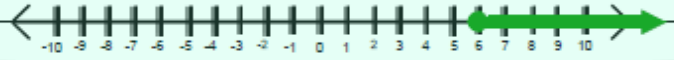
REMEMBER:

● ≤ ≥

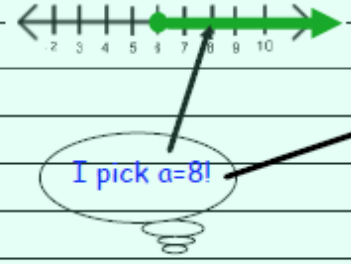
○ < >

<≤ ≥>

Only when 'x' is on the left!



4) Pick a value from the graph to check and be sure you shaded in the correct direction (check with the $>, <, \geq, or \leq$ sign)



Graph Check:

$a+5\geq 11$

$8 + 5 \geq 11$

$13 \geq 11$ ✓

...what would happen if I picked 2 or 4 or 5?

$a+5\geq 11$

$2 + 5 \geq 11$

$7 \geq 11$ ✗