

4.2 Solving Inequalities by (+) or (-) 11/6 p.5

● EQ: How can we solve a 1-Step inequality by using the opposite operation.

* boundary value: the # or value that separates solutions from non-solutions.

$$y > \textcircled{3} \leftarrow \text{boundary value}$$

* open circle: Boundary value is NOT a solution. $> <$

* closed circle: Boundary value IS a solution. $\geq \leq$

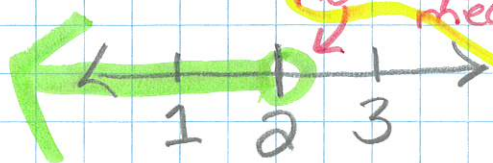
① Ex. 1

$$\textcircled{x} - 5 < -3 \downarrow$$

$+5 \uparrow$

$$x < +2$$

no "equal to" line means open circle



① Step 1: Add 5 to both sides.

② Step 2: ✓ the solution by substitution.

$$2 - 5 = -3 \quad \checkmark$$
$$-3 = -3$$

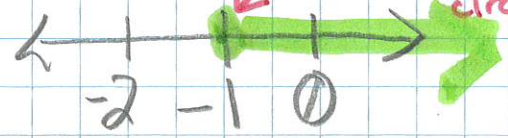
③ Step 3: Graph

Ex. 2

$$\uparrow 13 \leq x + 14$$
$$\downarrow -14$$

$$-1 \leq x$$

"equal to" line means closed circle



① Step 1: Subtract 14 from both sides.

② Step 2: check the solution w/ substitution

$$13 \leq -1 + 14$$
$$13 = 13 \quad \checkmark$$

③ Step 3: Graph

Ex. 3

You are 5'9" tall & want to be an astronaut. Nasa's height restriction is 6'3". What is the most you can grow? $\leftarrow g$ is how much U can grow.

Height Now + How much U can grow a maximum of 6'3"

$$5'9" + g \leq 6'3"$$

$$\cancel{5'9"} + g \leq 6'3"$$
$$\cancel{-5'9"} \quad \cancel{-5'9"} \quad -5'9"$$

① Step 1: Subtract 5'9" from both sides

$$g \leq$$

Method 1
Change all to inches

$$\cancel{6'9"} + g \leq 75"$$
$$\cancel{-6'9"} \quad \cancel{-6'9"} \quad -6'9"$$

$$g \leq 6"$$

$$5 \text{ ft} \cdot 12 = 60"$$
$$60" + 9" = 69"$$

$$6 \text{ ft} \cdot 12 = 72"$$
$$72" + 3" = 75"$$