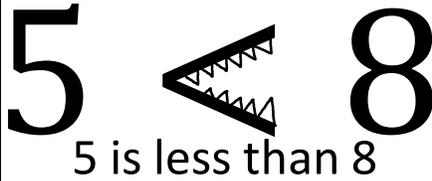# M9 - 9.0 - Inequalities Review

The Alligator Eats the Bigger Thing

$$5 < 8$$

5 is less than 8

5 is less than 8
$$5 < 8$$

8 is greater than 5
$$8 > 5$$

Greater than: $>$
Greater than or equal to: $\geq$
Less than: $<$
Less than or equal to: $\leq$
Does not equal: $\neq$

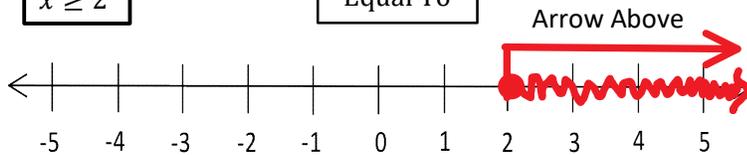7 is less than or equal to 7. $7 \leq 7$

Equal To $\geq \leq$

9 is greater than or equal to 7. $9 \geq 7$

Sketching Inequalities

$\leq, \geq$ ● Closed Dot
Equal To
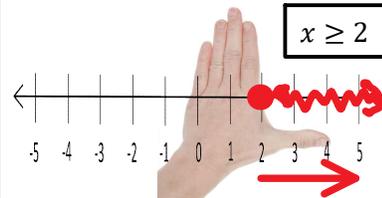
$x \geq 2$

Arrow Above

OR Shade the Line

Steps:

Put a **Closed Dot** at 2 on the Number Line $x = 2$ $x \geq 2$

Draw a Line with an Arrow to the Right $x > 2$

$x \geq 2$

Left Hand
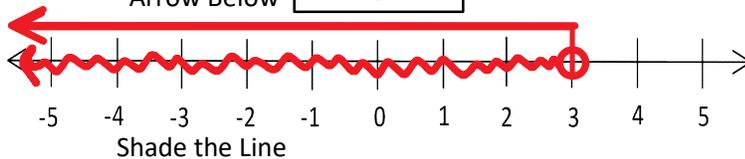Thumb Points Greater Than

$x \geq 2$ Interval Notation $[2, \infty)$

Equal To [ ] [Square Brackets]

$<, >$ ○ Open Dot
Not Equal to
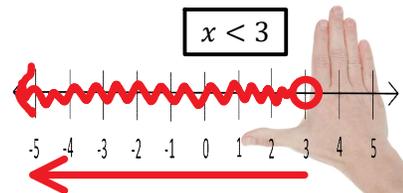
$x < 3$

Arrow Below

Shade the Line

Steps:

Put an **Open Dot** at 3 on the Number Line $x < 3$ $x < 3$

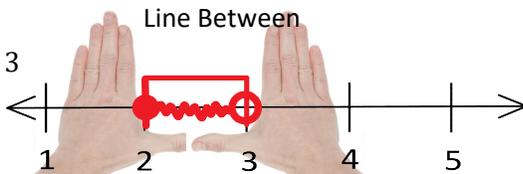Draw a Line with an Arrow to the Left $x < 3$

$x < 3$

Right Hand
Thumb Points Less Than

$x < 3$ Interval Notation $(-\infty, 3)$

Not Equal to ( ) (Round Brackets)

Between

$x \geq 2 \quad x < 3$

Line Between

Shade Between

$2 \leq x < 3$

Side by Side in Order* $x \geq 2 \quad x < 3$
Mirror Left $2 \leq x \quad x < 3$

Bring Together $2 \leq x < 3$

Smaller #, Less Than, Variable, Less Than, Bigger #

Interval Notation

[2,3)

$-x \leq 4$

$-x \leq 4$ Divide by a Negative
$x \geq -4$ Change Direction of Sign

Proofs

$-x \leq 4$
$+x \quad +x$
$\overline{\quad 0 \leq 4 + x}$
$-4 \quad -4$ Add x
$\overline{-4 \leq x}$ Subtract 4
$x \geq -4$ Mirror

$-4 \leq x$
$x \geq -4$ Bring it Over Mirror

Mirror

$a \longrightarrow b$ Points to b
$b \longleftarrow a$ Points to b