$\leq \, \geq$

True   True   False   True

256 > 312

Name: _____   Date: _____

False   **UNIT 3 DAY 1: INEQUALITIES**   False   True

So far we have concentrated on solving equations. Remember, all solving an equation consisted of was finding values of the variable that made the two expressions equal (in other words made the equation **true**). We can also judge the **truth value** of a statement that is in the form of an inequality.

Exercise #1: For each inequality, state whether it is true or false.

(a) $7 > 3$ (b) $0 < 10$ (c) $9 > 12$ (d) $4 \leq 4$

1) $\times 4$ $80 > 20$ $-80 < -20 \rightarrow$ **TRUE**

2) $\div 2$ (e) $2 \geq 7$ $40 > 10$ (f) $35 < 4.1$ $-40 < -10$ (g) $256.0 > 312$ (h) $1,978 \leq 2,042$

3) $\times 10$ $400 > 100$ $-400 < -100$

It is quite easy for most students to judge an inequality when the numbers are positive. It becomes more difficult when negative numbers are involved.

$20 > 5$ And this? $-20 < -5$

Brain Food: Is this true?

1) times -4 $-80 > -20$ $80 < 20$

        $20 > 5$ And This? $-20 < -5$

2) $\div -2$ $40 > 10$ $-40 < -20$

3) $\times -10$ $-400 > 100$ $40 < 20$

When we multiply OR divide by a NEGATIVE # we Flip the [Inequality]

E.g.) $> \, < \, \geq \, \leq$

lefthand → less than

Exercise #5: For each of the following inequalities, determine if it is true or false at the given value of the replacement variable.

(a) $2x + 4 > 4x - 1$ for $x = 1$

$$2x + 4 > 4x - 1$$
$$-2x \quad\quad -2x$$
$$4 > 2x - 1$$
$$+1 \quad\quad +1$$
$$\frac{5}{2} > \frac{2x}{2}$$
$$2.5 > x$$
$$x < 2.5$$

(b) $2x + 4 > 4x - 1$ for $x = ?$

$$2x + 4 > 4x - 1$$
$$-4x \quad\quad -4x$$
$$-2x + 4 > -1$$
$$-4 \quad\quad -4$$
$$\frac{-2x}{-2} > \frac{-5}{-2}$$
$$x < 2.5$$

we start reading with x

?

Flip the Sign $\left[\begin{matrix} < & > \\ \le & \ge \end{matrix} \right]$

When we divide or multiply by a negative