Check whether the given ordered pair is a solution of
$2x + 3y \geq 5$.

Ex 1: $(0, 1)$
            $x \ y$

$2(0) + 3(1) \geq 5$
$0 + 3$
$\quad\quad 3 \geq 5$ False
Not a Solution

Ex 2: $(4, -1)$
            $x \ y$

$2(4) + 3(-1) \geq 5$
$8 - 3 \geq 5$
$\quad\quad 5 \geq 5$ True
A solution

Graphing a Linear Inequality.

Step 1: Think about the inequality as an equal sign, long enough to get 2 points for the graph.

Step 2: Decide how to connect

$< \quad >$	$\leq \quad \geq$ SOLID
like an open circle DASHED	like a closed circle
$\leftarrow - - - - \rightarrow$	$\longleftarrow\longrightarrow$

Step 3: Pick a point to decide the shading.
• The pt. has to be on one side of the line
• $(0,0)$ if possible
• Test the pt. in the equation

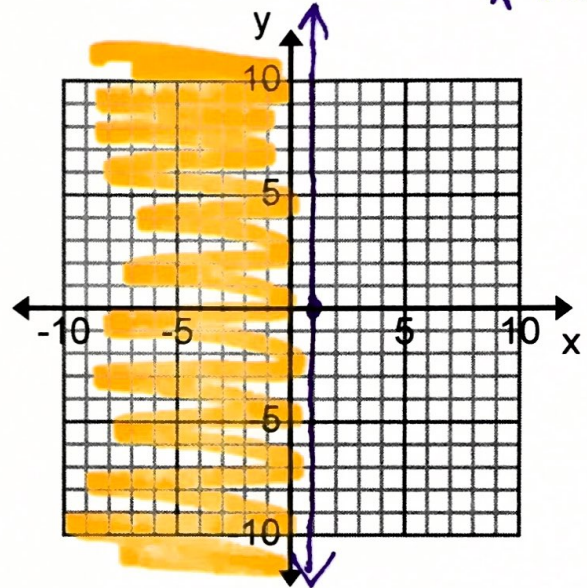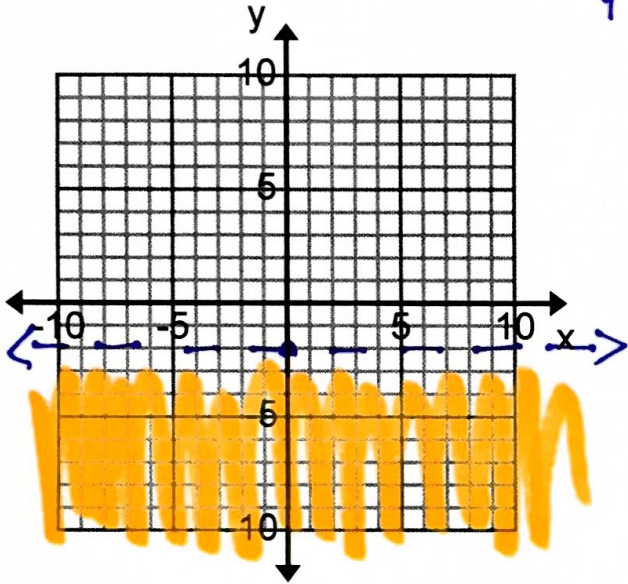True → Shade over the pt.
False → Shade the other side

Graph the following inequalities in a coordinate plane.

Ex 3: $y < -2$ *horizontal hits the y-axis*

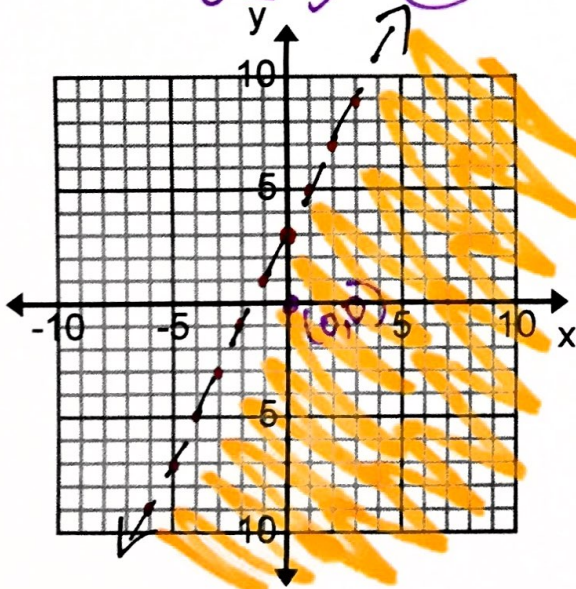**Ex 4:** $x \le 1$ *vertical hits the x-axis*

Ex 5: $y < 2x + 3$ $y = 2x + 3$

$(0,0)$ $0 < 2(0) + 3$

$0 < 3$ (T)

Ex 6: $2x - 5y \ge 10$ $2(0) - 5(0) \ge 10$ $0 \ge 10$ (F)

$\quad -2x \qquad\qquad -2x$
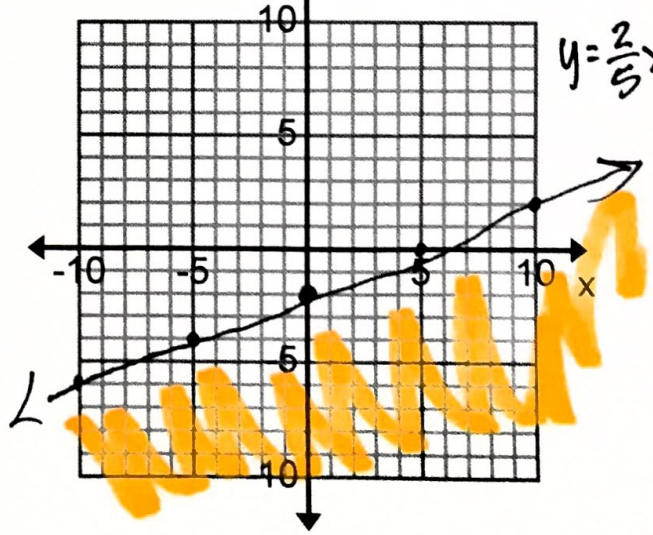
$$\frac{-5y}{-5} \ge \frac{-2x + 10}{-5}$$

$y = \frac{2}{5}x - 2$

Ex. 7: You and your family have gone to a football game. Your mom sends you to the concession stand to get food for everyone. Nachos cost $3 and hamburgers cost $4. You spend $60 at the concession stand.

$x = $ Nachos $y = $ Hamburgers

a. Write an equation to represent this situation.

$$3x + 4y = 60$$

Standard form

b. List three different combinations of nachos and hamburgers you could have purchased.

ORDERED PAIR

$(20, 0)$ $(12, 6)$ $(8, 9)$
Nach. Ham. Nach. Ham. Nach. Ham.

Ex. 8: You open a savings account with $500. The bank tells you that they will give you an interest rate of 3.5% annually. Write an equation to represent this situation.

0.035

$$y = 500(1 + 0.035)^t$$

$$y = a(1 + r)^t \qquad y = a(1 - r)^t$$

Growth

Decay

Ex. 9: You start a hike with your friends 10 miles away from home. You and your group hike at a rate of <u>6 miles per hour.</u> Write an equation to represent this situation.

CROC

$$y = mx + b$$

$$y = 6x + 10$$