

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

Ex 1:  $(0, 1)$   
 $\begin{matrix} x & y \end{matrix}$

$$2(0) + 3(1) \geq 5$$

$$0 + 3$$

$$3 \geq 5 \quad \text{False}$$

Ex 2:  $(4, -1)$   
 $\begin{matrix} x & y \end{matrix}$

$$2(4) + 3(-1) \geq 5$$

$$8 - 3 \geq 5$$

$$5 \geq 5$$

True

### Graphing a Linear Inequality.

Step 1: Pretend that the ineq.  $\langle \rangle$  is an  $=$ , but only to help us graph the line.

Step 2: Decide how to connect the dots:

$\langle \rangle$  DASHED LINE

$\leftarrow \text{---} \text{---} \text{---} \text{---} \text{---} \text{---} \rightarrow$   
 OPEN

$\leq \geq$  SOLID

$\leftarrow \text{---} \text{---} \text{---} \text{---} \text{---} \text{---} \rightarrow$   
 CLOSED

Step 3: Where to shade?

- Pick a point NOT on the line.  $(0, 0)$  if you can.
- Plug in the point.

True

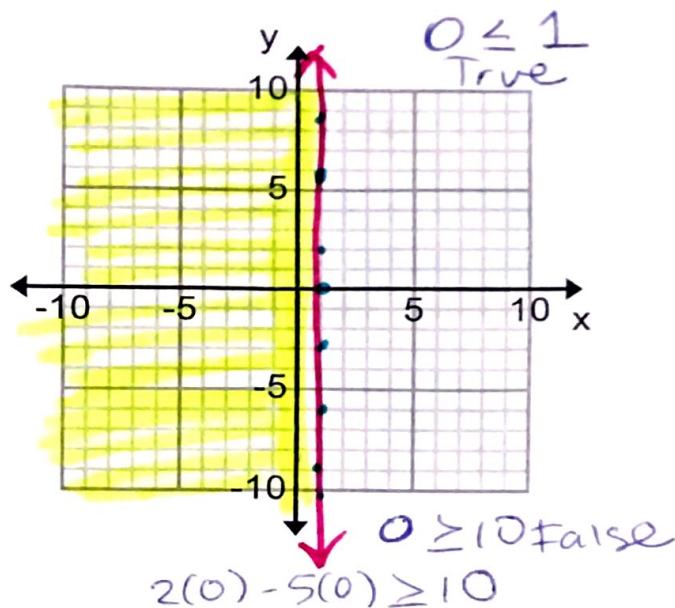
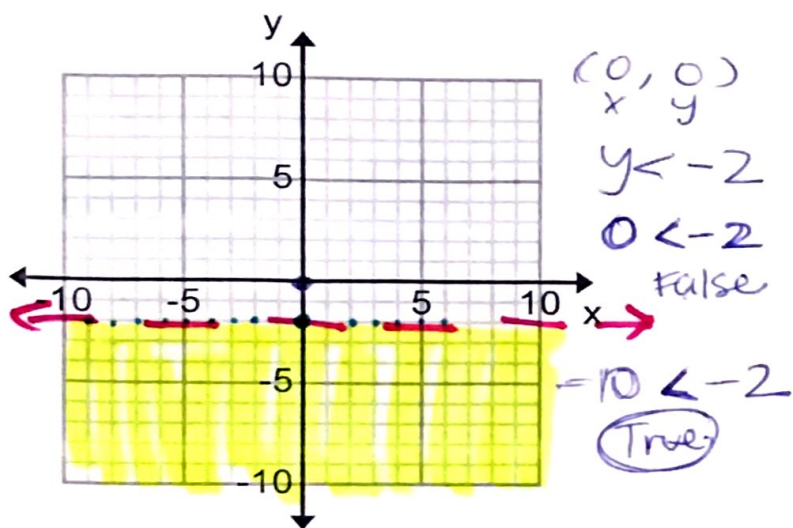
Shade the side  
 of the line  
 where the point  
 is.

False

Shade the  
 other side.

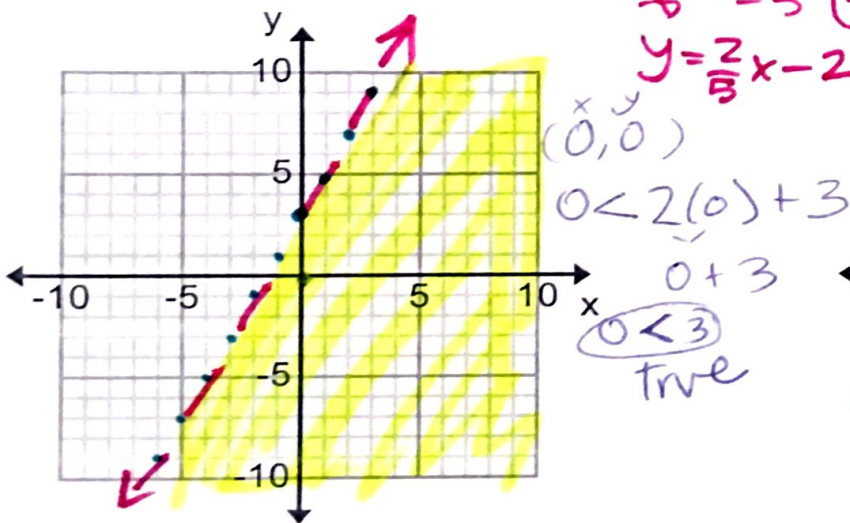
Graph the following inequalities in a coordinate plane.

Ex 3:  $y < -2$  (Cross the y axis) Ex 4:  $x \leq 1$  x axis  
 $y = -2$  Horizontal  $x = 1$  Vertical



Ex 5:  $y < 2x + 3$

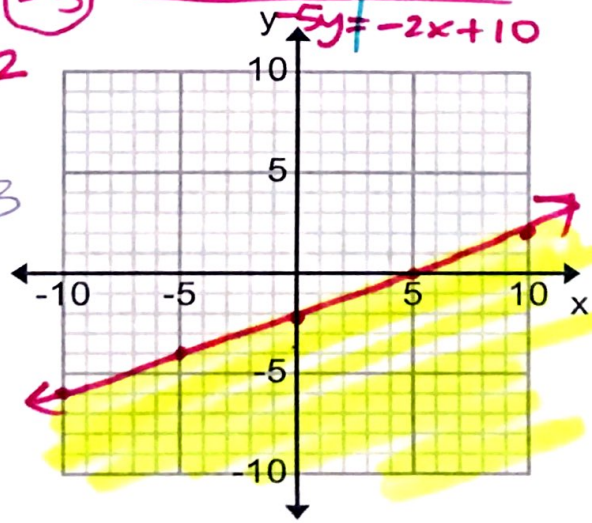
$y = 2x + \frac{3}{b}$   
 $m \quad b$



Ex 6:  $2x - 5y \geq 10$

$$\begin{array}{r} -5y = -2x + 10 \\ \hline -5 \quad -5 \quad -5 \\ \hline y = \frac{2}{5}x - 2 \end{array}$$

$$\begin{array}{r} 2x - 5y = 10 \\ -2x \quad -5y = 10 \\ \hline -5y = -2x + 10 \\ \hline y = -\frac{2}{5}x + 2 \end{array}$$



**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.

$x = \text{nachos}$

$y = \text{Hamburgers}$

a. Write an equation to represent this situation.

standard form:  $3x + 4y = 60$

$24 + 36 = 60 \checkmark$

$12 + 48 = 60 \checkmark$

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

$x = \text{Nachos}$

$(\frac{20}{x}, 0)$   
Nacho Ham.

$(0, \frac{15}{y})$   
Nac. Ham.

$(8, 9)$   
Nacho Ham

$y = \text{Hamb.}$

$(4, 12)$   
Nacho 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.

$y = a(1+r)^t$

$y = a(1-r)^t$

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

$\approx 3.5$

$y = 500(1.035)^t$

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

$y = mx + b$   
6 10

CROC

$y = 6x + 10$