Name: _____ Date: _____

Warmup Graph the solution to

$$y > \frac{2}{5}x - 3$$

$y = mx + b$

m: slope

b: y-intercept

↑ +2 ← vertical change

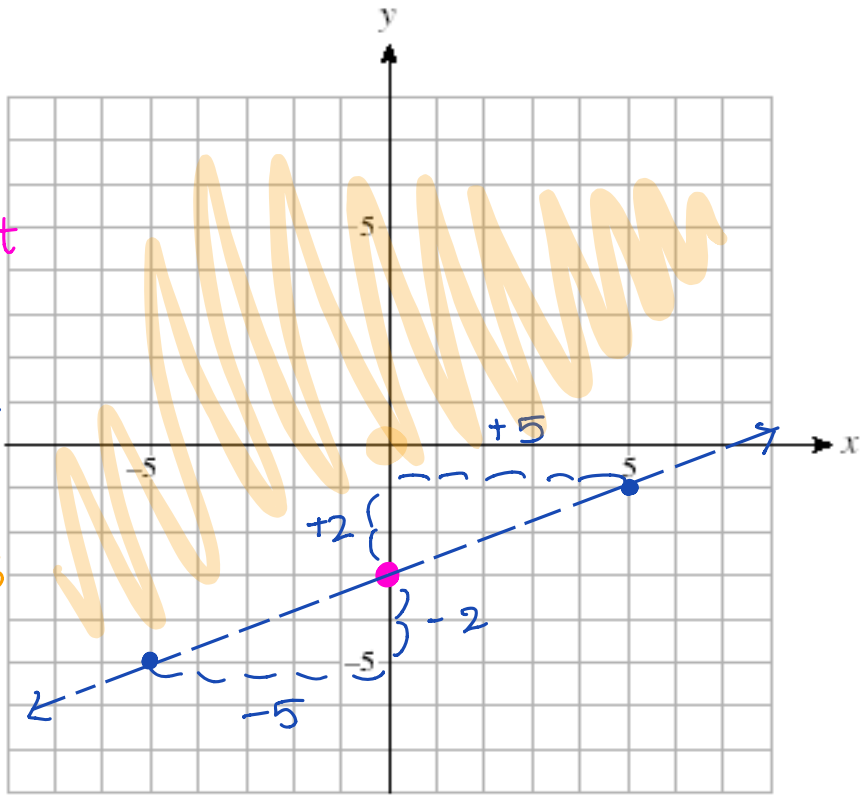
→ +5 ← horizontal change.

$= \frac{-2}{-5}$ ← ↓

$0 > \frac{2}{5}(0) - 3$

$0 > 0 - 3$

$0 > -3$



Recall Number sets:

a. Natural Numbers $\mathbb{N}$

Counting numbers (positive, no fractions, no decimals, no zero.)

b. Whole Numbers $\mathbb{W}$ $\mathbb{W}$

only positive, no fractions or decimals.

c. Integers $\mathbb{Z}$ $\mathbb{Z}$

no fractions or decimals

d. Real Numbers $\mathbb{R}$

decimals, fractions, positives, negatives, ...

Everything

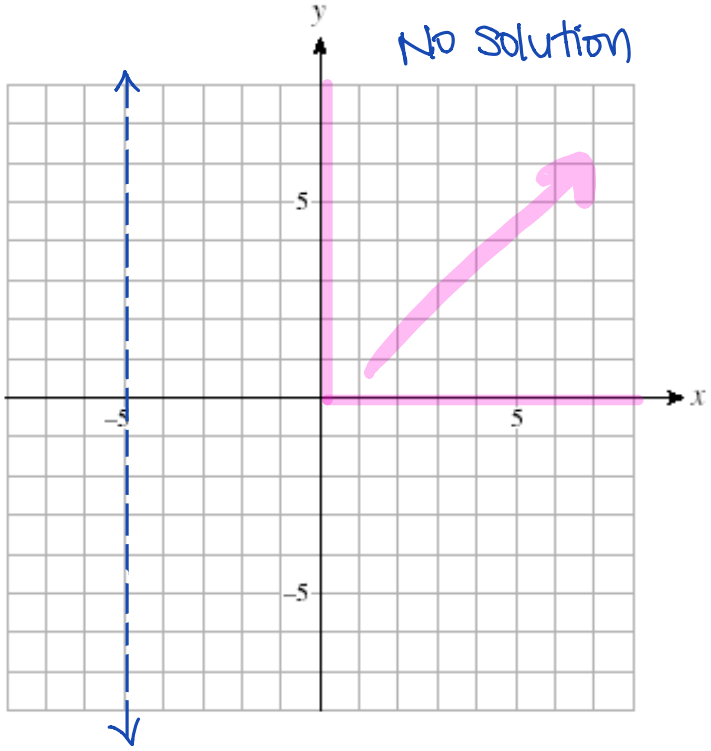
Example Graph each of the following inequalities:

a. $\{(x, y)|x + 5 < 0, x \in \mathbb{W}, y \in \mathbb{W}\}$

-5 -5

$x < -5$

No solution

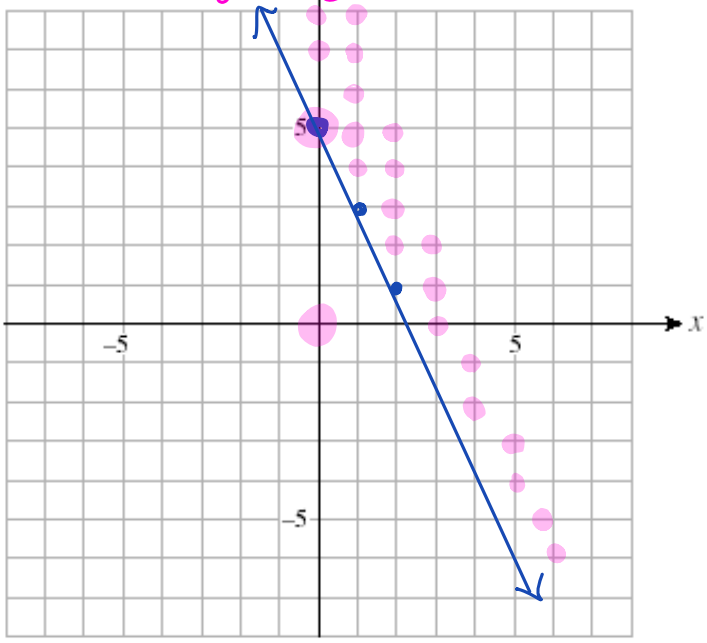


b. $\{(x, y)|y \geq -2x + 5, x \in \mathbb{Z}, y \in \mathbb{Z}\}$

$0 \geq -2(0) + 5$

$0 \geq 0 + 5$

$0 \geq 5$



Example Sam has $30 to buy snacks for his class. Apples cost $0.75 each and muffins are $1.25.

a. Define the variables and write a linear equation to represent the possible combinations of snacks that he can purchase.

Let a = the number of apples being purchased
m = the number of muffins being purchased.

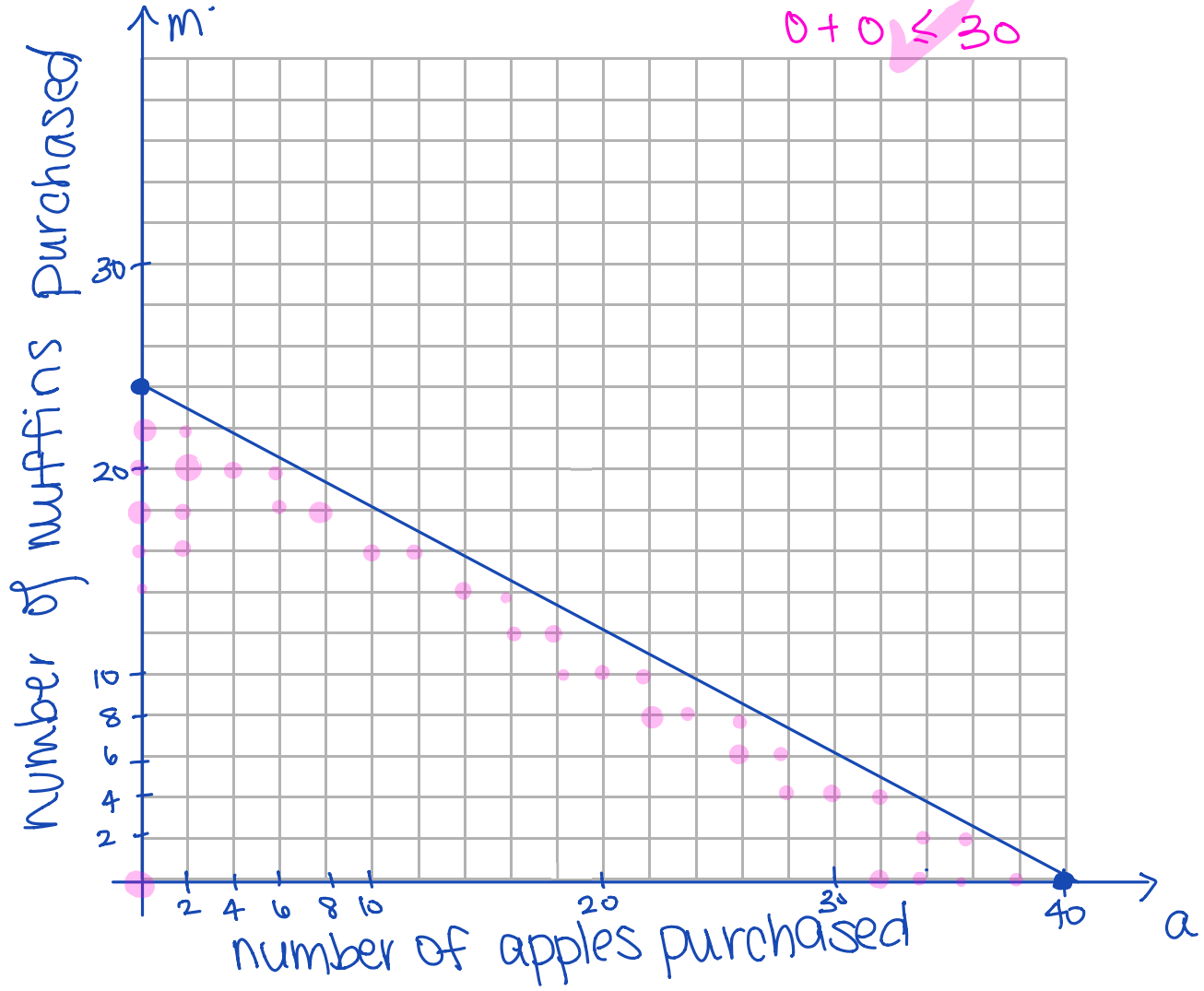
$$0.75a + 1.25m \leq 30$$

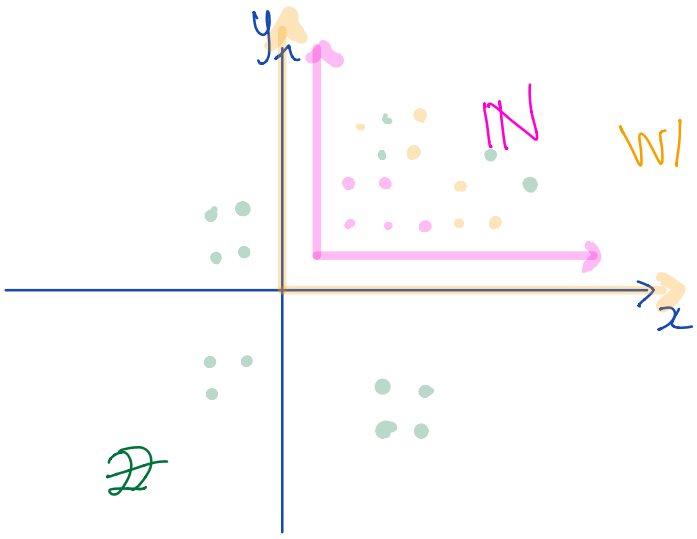
b. Are there any restrictions on the variables? Explain.

$\{0 \leq a, \ a \in W\}$ No portions
$\{0 \leq m, \ m \in W\}$ No negatives

c. Graph your equation and shade the solution region. $0.75a + 1.25m \leq 30$

$0 + 0 \leq 30$




y
N
W
x
Z