6.2 Systems of Linear Inequalities

* Graphs on graph paper

* Sidenote: isolating y...

$2 < 3$

multiply by 6:
$12 < 18$

divide by (-2):
$-4 > -6$
↑
Inequality switches

*When you multiply or divide an inequality by a negative number, the inequality changes direction.

Writing Inequalities

Nov. 18/15

Ex: A sports store has a net value of $100 on every pair of skis, and $120 on every snowboard. The goal is to have a net value/revenue of more than $600/day.

a) Write an inequality to represent this situation

*Assign variables: x = # of skis sold y = # of snowboards sold

$100x + 120y > 600$
↑ "more than"

b) Isolate y:

$100x + 120y > 600$
$-100x \quad -100x$

$\frac{120y}{120} > \frac{-100x}{120} + \frac{600}{120}$

$y > -\frac{5}{6}x + 5$

c) Graph on calculator

Window: $x\min = 0$ (# of skis)
$x\max = 7$
$y\min = 0$ (# of snowboards)
$y\max = 7$

- shade above
- shade below
↓ price order

Ex2: Betsy and Flynn work at Dairy Queen. If Betsy works 3 times as many hours as usual, and Flynn works twice the number of hours as usual, together they still work less than 25 hours.

a) Write inequality:

x = Betsy's usual hours y = Flynn's usual hours

$3x+2y<25$

b) Isolate y:

$3x+2y<25$

$-3x \quad -3x$

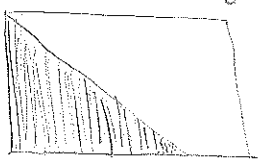
$\frac{2y}{2} < \frac{-3x+25}{2}$

$y < -\frac{3}{2}x + 12.5$

c) Graph

Xmin = 0 (change) Ymin = 0 (change)

Xmax = 25, 13 Ymax = 25, 13



d) Give 2 possible combinations of hours:

(4,2) → Betsy works 4 hrs. Flynn works 2 hrs.

(2,9) → Betsy 2 hrs, Flynn 9 hrs