1st hr

Problem 1

Fordson High School is having a dance to fundraise money for cancer research. Student tickets are $30 and any guest may be admitted for $50. They are having the dance at a local rec center. The rec center is $3000 to rent for the night, so they have to make at least that much to break even. At least 40 Fordson students must buy tickets for the dance to happen. How many students and guests must go to the dance to make money for cancer research?

at least = or more

UNKNOWN

GIVEN
- Student tickets: $30
- Guest tickets $50
- $3000 at least/or more (MONEY)
- At Least 40 students (STUDENTS)

UNKNOWN

I. Define your variables.

x: Students & y: guests

more than one

EQUATION

II. Write a system of linear inequalities to model this.

MONEY: 30 • # of students + 50 • # of guests → more than or equal to 3000

$$30x + 50y \geq 3000$$

$$50y \geq -30x + 3000$$

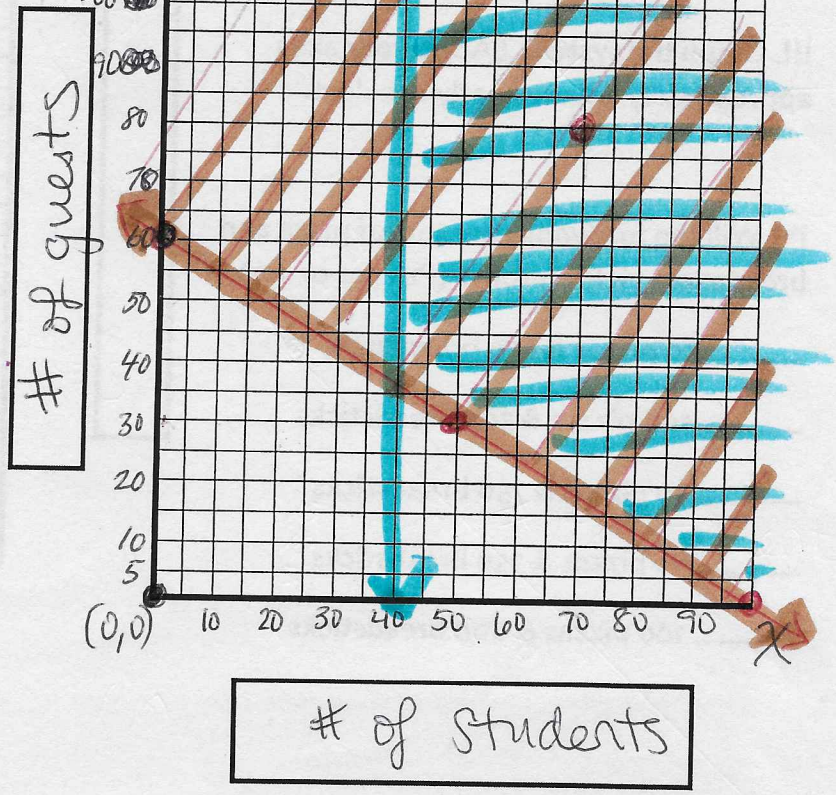
$$y \geq -\frac{30}{50}x + 60$$

solid up

STUDENTS: $x \geq 40$

# of students at least 40

III. Graph the system. LABEL your axes appropriately. Shade neatly in colors.



IV. Will the following amounts of students and guests yield a profit? (Put yes or no)

YES ____ 70 students & 80 guests

YES ____ 110 students & 20 guests

NO ____ 50 students & 20 guests

NO ____ 60 students & 10 guests

YES ____ 120 students & 120 guests

Problem 2

Hungry Howie's is having a monthly special. Pizzas are on sale for $5 and bread is on sale for $3. They have to make at least $1500 this week to break even from the sale. They only have the ingredients to make 150 pizzas, so they can't sell any more than that.

I. Define your variables.

x: pizzas ($5) & y: bread ($3)

at least $1500

150 pizzas at most

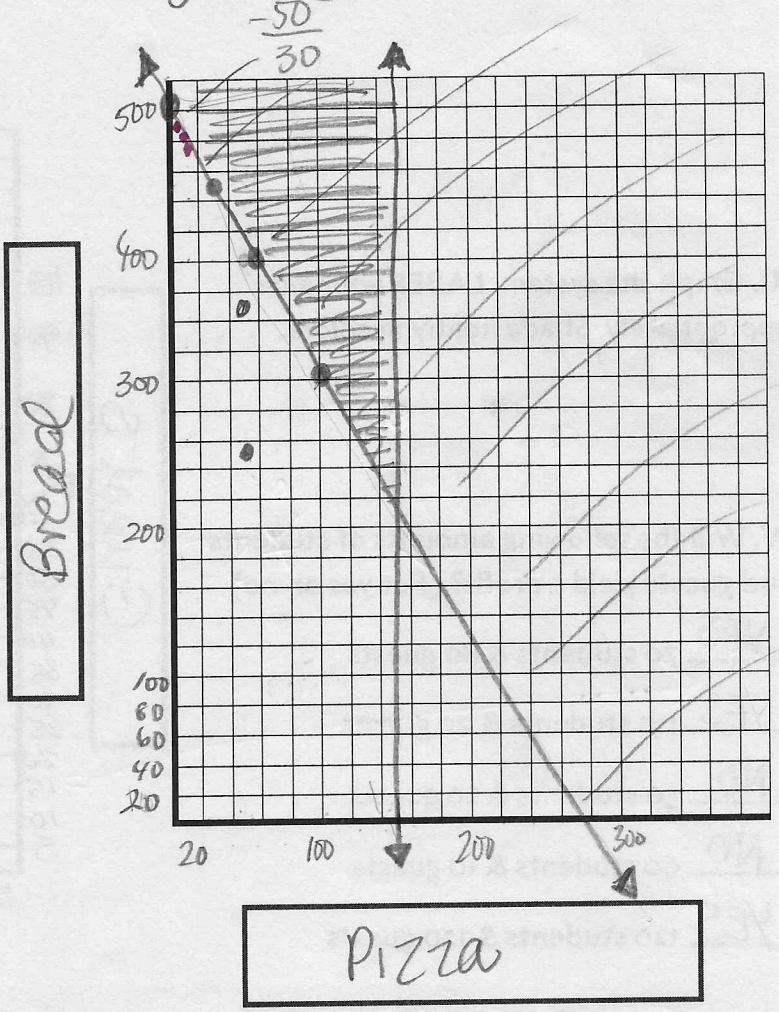
II. Write a system of linear inequalities to model this.

MONEY $5x + 3y \geq 1500 \rightarrow 3y \geq -5x + 1500$

$y \geq -\frac{5}{3}x + 500$

$x \leq 150$

III. Graph the system. LABEL your axes appropriately. Shade neatly in colors.



IV. Will the following amounts of pizza and breadsticks yield a profit? (Put yes or no)

NO 50 pizzas & 250 breadsticks

500 + 900 = 1400 NO

NO 100 pizzas & 300 breadsticks

YES 50 pizzas & 750 breadsticks

NO 50 pizzas & 350 breadsticks

YES 100 pizzas & 600 breadsticks

Problem 3

Starbucks is selling pumpkin spice lattes and scones. A latte is $5 and a scone is $4. They need to make $480 a day in order to stay open. They know they will sell at least 50 pumpkin lattes a day.

How many lattes and scones can they sell and stay open?

I. Define your variables.

x: latte ($5) & y: scone ($4)

at least $480 per day
at least 50 lattes per day

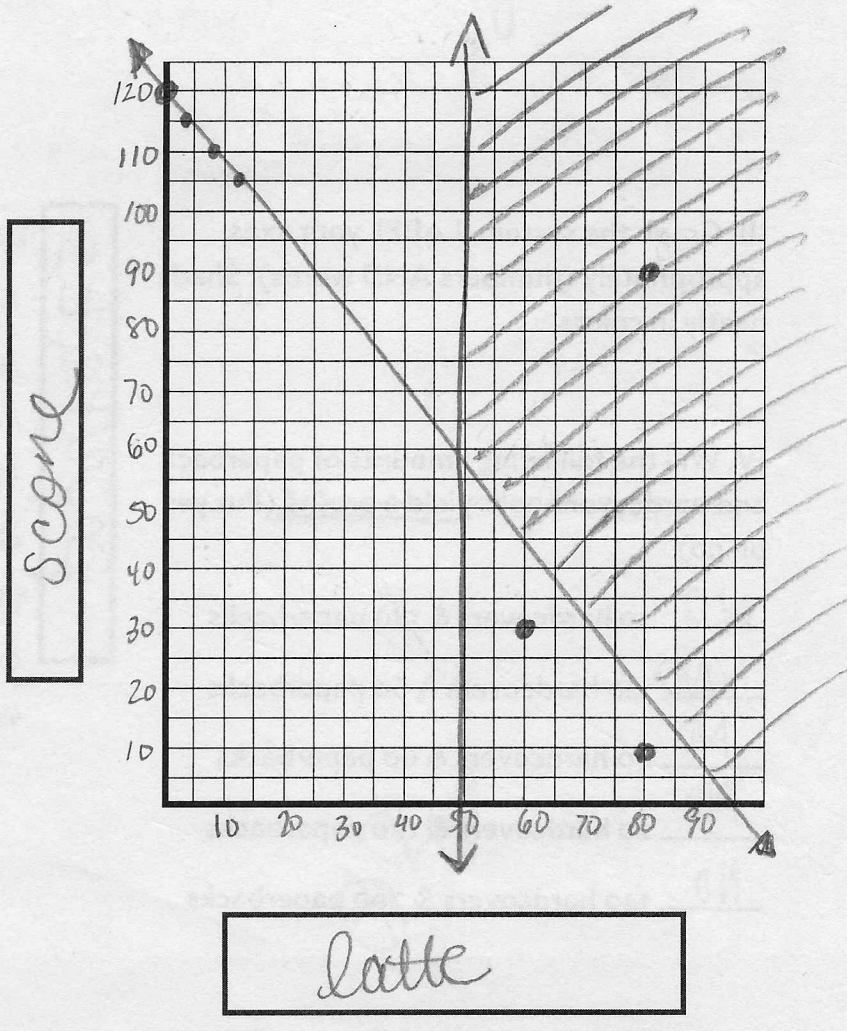
II. Write a system of linear inequalities to model this.

$5x + 4y \geq 480 \rightarrow 4y \geq -5x + 480$

$y \geq \frac{-5}{4}x + 120$

$x \geq 50$

III. Graph the system. LABEL your axes appropriately (numbers AND words). Shade neatly in colors.



IV. Will the following amounts of lattes and scones ~~yield a profit~~ allow them to stay open? (Put yes or no)

YES 80 lattes & 90 scones

NO 60 lattes & 30 scones

YES 120 lattes & 10 scones

NO 80 lattes & 10 scones (400 + 40 = ~~440~~)

YES 110 lattes & 40 scones

Problem 4

Mo is selling books to help pay for repairs for his car. A hard cover book costs $10 and a paperback costs $8. He needs to make at least $1280 for the repairs. He only has 40 paperback books to sell.

How many books does he need to sell to pay for his repairs?

I. Define your variables.

x: hardcover ($10) & y: paperback ($8)

at least $1280
only 40 paperback

II. Write a system of linear inequalities to model this.

$10x + 8y \geq 1280$

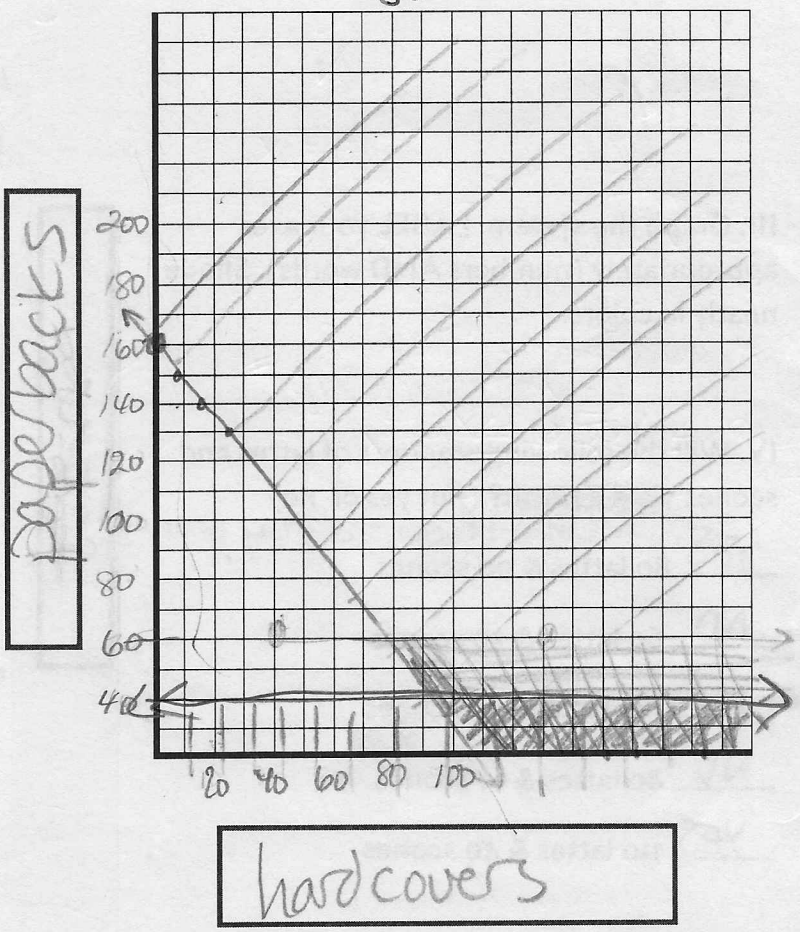
$y \leq 40$

$8y \geq -10x + 1280$

$y \geq -\frac{10}{8}x + 160$

$\left(-\frac{100}{80}\right)$

III. Graph the system. LABEL your axes appropriately (numbers AND words). Shade neatly in colors.



IV. Will the following amounts of paperback and hardcover books ~~yield a profit?~~ (Put yes or no)

NO 20 hardcovers & 180 paperbacks

NO 120 hardcovers & 60 paperbacks

NO 40 hardcovers & 60 paperbacks

NO 20 hardcovers & 100 paperbacks

NO 140 hardcovers & 200 paperbacks