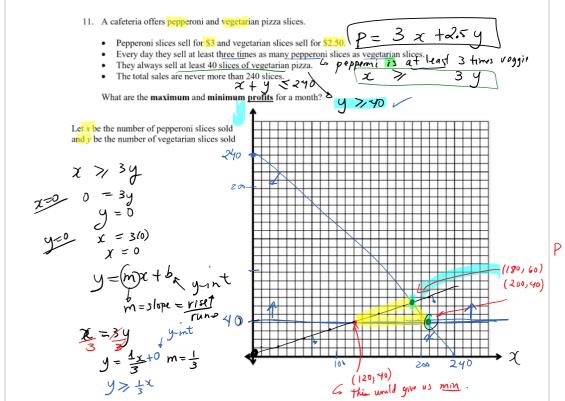10. A butcher shop makes hamburger patties and sausages.

- Hamburger patties sell for $2 and sausage sell for $1.50.
- The butcher noticed that they always sell at least twice as many sausages as hamburger patties
- The butcher never sells more than 100 hamburger patties or 300 sausages.

Let h represent the number of hamburger patties sold.
Let s represent the number of sausages sold.

a) Write a system of linear inequalities to describe the constraints.

b) Write an objective function that represents the profit made from the sale of hamburger patties and sausages.

11. A cafeteria offers pepperoni and vegetarian pizza slices.

- Pepperoni slices sell for $3 and vegetarian slices sell for $2.50.
- Every day they sell at least three times as many pepperoni slices as vegetarian slices.
- They always sell at least 40 slices of vegetarian pizza.
- The total sales are never more than 240 slices.

What are the **maximum** and **minimum profits** for a month?

Let x be the number of pepperoni slices sold
and y be the number of vegetarian slices sold

$$P = 3x + 2.5y$$

$\rightarrow$ pepperoni is at least 3 times veggie

$$x \geqslant 3y$$

$$x + y \leq 240$$

$$y \geqslant 40 \checkmark$$

$$x \geqslant 3y$$

$x = 0$ $0 = 3y$
           $y = 0$

$y = 0$ $x = 3(0)$
           $x = 0$

$y = \boxed{m}x + b \nearrow$ y-int

$m = $ slope $= \dfrac{\text{rise}}{\text{run}}$

$\dfrac{x}{3} = \dfrac{3y}{3}$ y-int

$y = \dfrac{1}{3}x + 0$ $m = \dfrac{1}{3}$

$y \geqslant \dfrac{1}{3}x$

(180, 60)
(200, 40)

$P = 3x + 2.5y$
$= 3(180) + 2.5(60) = \$690$
$= 3(200) + 2.5(40) = \$700$

(120, 40)
$\rightarrow$ this would give us <u>min</u>.