Constraints in Decision Making - Larry's Labor Day Bash

Larry is planning a huge Labor Day party that he does every year for his friends and family. He has $100 set aside to spend on food for the party. He is trying to decide how many pounds of chicken to buy and how many steaks to buy. The chicken sells for $2 a pound, while the steaks sell for $5 per steak

1) Write an equation using 2 variables to represent Larry's purchasing decision. Define your variables.
c = pounds of chicken s = number of steaks

$2c + 5s \leq 100$

2) Use your equation to figure out how many steaks he can buy if he gets 20 pounds of chicken.

$2(20) + 5s \leq 100$ $40 + 5s \leq 100$ $5s \leq 60$ $s \leq 12$

He can buy at least 12 steaks.

3) How many pounds of chicken can he get if he buys 10 steaks?

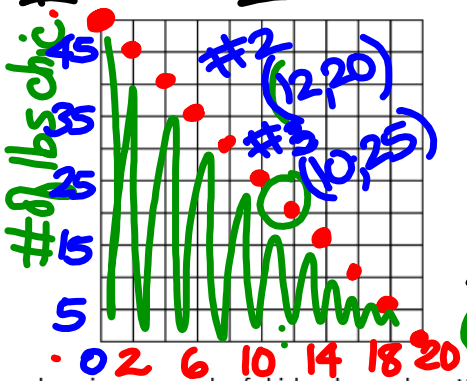
$2c + 5(10) \leq 100$ $2c \leq 50$ $c \leq 25$

He can buy at least 25 lbs of chicken.

4) Solve your equation in terms of the pounds of chicken, c.

$2c + 5s \leq 100 - 5s$
$-5s \quad -5s$
$\frac{2c}{2} \leq \frac{-5s}{2} + \frac{100}{2}$

5) Graph the equation you just came up with in problem #4.



$C \leq \frac{-5}{2}s + 50$ (6)

$y \leq \frac{-5}{2}x + 50$

$0 \leq 50$

6) Find the minimum and maximum pounds of chicken he can buy. Write your answer as an inequality in terms of c, the pounds of chicken.

# of steaks

$0 \leq C \leq 50$

7) Find the minimum and maximum number of steaks he can buy. Write your answer as an inequality in terms of s, the number of steaks.

$0 \leq S \leq 20$

8) Identify the points representing your answers to problems 2 and 3 on your graph.