Go over last nights HW CP 121
Pass back/Go over Quizzes
Do examples of linear programming
HW: CP 122
A manufacturer of Sony CD players makes a profit of $20 on a deluxe model and $25 on a standard model. The company wishes to produce at least 30 deluxe models and at least 100 standard models per day. To maintain high quality, the daily production should not exceed 175 CD players. How many of each type should be produced daily in order to maximize profit? Identify the variables, give the equation for the objective quantity, list the constraints, graph, and solve.

Variables: 
\[ x = \text{# of deluxe models to produce daily} \]
\[ y = \text{# of standard models to produce daily} \]

Profit Equation (objective function):
\[ P = 20x + 25y \]

Constraints:
\[ x + y \leq 175 \]
\[ x \geq 30 \]
\[ y \geq 100 \]

Critical Points:
(30, 100)
(30, 145)
(75, 100)

Substitute the values from the critical points into the objective function:
(30, 100) \[ \Rightarrow 20(30) + 25(100) = 3100 \]
(30, 145) \[ \Rightarrow 20(30) + 25(145) = 4225 \]
(75, 100) \[ \Rightarrow 20(75) + 25(100) = 4000 \]

Conclusion:
Sony should produce 30 deluxe models and 145 standard models to maximize their daily profit at $4225.
Example 2:

7. The Chatfield volleyball team holds a bake sale to raise money. The chocolate chip cookies sell for $1.00 a dozen and the sugar cookies sell for $1.50 a dozen. They will bake up to 20 dozen chocolate chip cookies, and up to 40 dozen sugar cookies, but no more than 50 dozen cookies, total. Also, the number of sugar cookies is less than or equal to four times the number of chocolate chip cookies. How many of each kind should the team bake in order to make the most money?

Variables:

\[ x = \text{\# of dozens of CC cookies} \]
\[ y = \text{\# of dozens of sugar cookies} \]

Profit Equation (objective function):

\[ P = 1x + 1.5y \]

Constraints:

\[ x \leq 20 \]
\[ y \leq 40 \]
\[ \frac{x}{4} \leq y \leq 40 \]
\[ x + y \leq 50 \]

Critical Points:

\[ (10,40), (20,0), (20,30), (0,0) \]

Conclusion:

\[ P = 1x + 1.5y \]
\[ 1(10) + 1.5(40) = 70 \]
\[ 1(20) + 1.5(0) = 20 \]
\[ 1(20) + 1.5(30) = 65 \]
\[ 1(0) + 1.5(0) = 0 \]

To maximize their profit at $70, the CSH VBall team should make 10 dozen CC cookies and 40 dozen sugar cookies.
HW: CP 122