Assignment 1 (200 points)
The first question can be as a single or separate document (PDF, Word, etc.) files. The second question should be solved in Excel. Each question is worth 100 points.

Note, in addition to points being taken off for accuracy, points may also be taken off for lack of organization and failure to use Excel formulas and appropriate Cell referencing/addressing within the spreadsheets.

Instructions:

1. Formulation (Do Not Need To Solve):

SteelCo manufactures three types of steel at two different steel mills. During a given month, Mill 1 has 200 hours of blast furnace time available, whereas Mill 2 has 300 hours. Because of differences in the furnaces at each mill, the time and cost to produce a ton of steel differs for each mill and are shown in the following table. Each month, SteelCo must manufacture a total of at least 400 tons of Steel 1, 500 tons of Steel 2, and 300 tons of Steel 3 to meet demand; however, the total amount of Steel 2 manufactured should not exceed the combined amount of Steel 1 and Steel 3. Also, in order to maintain a roughly uniform usage of the two mills, management's policy is that the percentage of available blast furnace capacity (time) used at each mill should be the same. Clearly formulate a linear program (LP) to minimize the cost of manufacturing the desired steel (you do not need to solve in Excel).

	Steel 1		Steel 2		Steel 3	
	Cost ($)	Time (Min)	Cost ($)	Time (Min)	Cost ($)	Time (Min)
Mill 1	10	20	11	22	14	28
Mill 2	12	24	9	18	10	30

2. Flair Furniture [Linear Programming] (Excel Solver):

File: Assignment1.xlsx Tab/Worksheet: Flair Furniture

Formulate (in Excel) and use Excel Solver to solve the Flair Furniture Monthly Plan for tables and chairs. The "word problem" is provided in the Excel file as a text block (can be moved around). Hints are also provided in the Excel file. Use "Simplex LP" in Excel Solver to solve your model.

Leave the optimal solution in Excel. Clearly label variables, constraints, etc. Also, save your Excel file, I should be able to open Solver and see that you entered the formulation correctly.

Check: 680 total products (tables plus chairs) are made in the optimal solution

Bonus (up to 25 points):

Solve Question 2 using R or Python (or another software of your choice). Submit your code and input/output. Note, there are a number of packages available for either R or Python.