1.

For this problem, the decision to be made is how many bags to make per each week. The decision variable will be

X1= # of Collegiate

X2= # of mini

Max = 32(x1) + 24(x2)

The first constrain is nylon and number of hours available which will be limited availability.

So, the constrain will be **3(x1) +2(x2) <= 5400 sq ft.**

The second constrain is that unit produced cannot be more than the forecast, which is 1000 and 1200 in this case, let us change minutes to hours and hence, **0.75(x1) + 0.67(x2) <= 1400 hours**

Full formula:

X1 = number of Collegiate

X2= number of Minis

Max= $32(X1) + $24(X2) <= 5400 square feet

Where,

Nylon = 3(x1) + 2(x2) <= 5400 square feet

Labor = 0.75(x1) +0,67(x2) <= 1400 working hours

X1<= 1000

X2<= 1200

X1, X2 >= 0

In this example, the decision variables are:

P1l = Large unit in plant 1,

P1m= medium unit in plant 1,

P1s = small unit in plant 1,

P2l = = Large unit in plant 2,

P2m = medium unit in plant 2,

P2s = small unit in plant 2,

P3l= = Large unit in plant 3,

P3m = medium unit in plant 3,

P3s = small unit in plant 3.

To max out the profit for each day the linear equation will be:

Max= 420P1l + 360P1m + 300P1s + 420P2l + 360P2m + 300P2s

+ 420P3l + 360P3m + 300P3s

Where,

P1l +P1m +P1s <= 750

P2l+P2m+P2s<= 900

P3l+P3m+P3s<= 450

20(P1l) +15(P1m) +12(P1s) <= 13000

20(P2l) +15(P2m) +12(P2s) <= 12000

20(P3l) +15(P3m) +12(P3s) <= 5000

P1l ,P1m ,P1s,P2l,P2m,P2s,P3l,P3m,P3s >= 0