KUNAL SHARMA

ASSIGNMENT 1

1. **Decision Variables:**

   The decision variables are X1 and X2. X1 represents Collegiate and X2 represents Mini.

2. **Objective Function:**

   The objective is to maximize the profits of the Back Savers company.

   $Z_{max}=32X1+24X2$

3. **Constraints:**

   As, Back Savers have contract and receives 5000 square foot of nylon shipment each week and as the sales forecasts indicate that at most 1000 Collegiate and 1200 Minis can be sold per week.

   $3X1+2X2<=5000$

   $X1<=1000$

   $X2<=1200$

   There are 35 laborers available. Constraints of Labor in minutes.

   $45X1+40X2<=35*40*60$ min/week

   $45X1+40X2<=84000$ min/week

   Also, Collegiate and Mini must be greater than 0.

   $X1>=0, X2>=0$

4. **Full Mathematical Formulation:**

   Maximize the $Z=32X1+24X2$

   $3X1+2X2<=5000$

   $45X1+40X2<=84000$

   $X1<=1000$

   $X2<=1200$

   $X1>=0,$

   $X2>=0$