Models: Collegiate => X_1
Mini => X_2

limits: 5000 ft^2/week of Nylon
1000/week of collegiates Sold
1200/week of Minis Sold
35 laborers each working 40 hrs/week. = 1400 hrs/week.

Weekly Production:

	Materials	Labour	Unit Profit
X_1	$3ft^2$	45 min	$32
X_2	$2ft^2$	40 min	$24

	Product Materials (per unit) X_1	X_2	Production Limits
Nylon	$3ft^2$	$2ft^2$	$5000\ ft^2$
Labour	0.75 hrs	0.667 hrs	1400 hrs
Profit per batch	$32	$24	

Constraints: $\therefore$ Max $Z = 32X_1 + 24X_2$

$3X_1 + 2X_2 \leq 5000$

$0.75X_1 + 0.667X_2 \leq 1400$

$X_1 \leq 1000$

$X_2 \leq 1200$

a) Decision Variables: X_1 , X_2 which are collegiate & Mini backpacks respectively.

b) Objective function: Maximize profit which is $Z = 32X_1 + 24X_2$
Such That (S.T.):

Constraints: $3X_1 + 2X_2 \leq 5000$; $X_1 \geq 0$

LP formulation: $0.75X_1 + 0.667X_2 \leq 1400$; $X_2 \geq 0$

$X_1 \leq 1000$

$X_2 \leq 1200$