

Nadia Dansani

Assignment 2

Akpan 64018

9/18/2022

1.

a.

A = Number of collegiate backpacks made

B = Number of mini backpacks

C = function to determine maximum profit

b. Objective Function

$$32a+24b=c$$

c. Constraints

Number of collegiate backpacks available for sale  $\leq 1000$

Number of mini backpacks available for sale  $\leq 1200$

Material needed for collegiate backpack = 3

Material needed for mini backpack = 2

Total material available each week  $\leq 5000$

How fast workers can complete each bag

It takes 45 minutes to make a collegiate bag

It takes 40 minutes to make a mini backpack

After converting them to part of an hour and multiplying the amount of laborers, and the hours they are available the function below shows the amount of time the bags cannot exceed in production.

$$.75A+.66B\leq 1400$$

$$3a+2B\leq 5000$$

d.

Maximize  $32A+24B$

$$A+B\leq 1000$$

$$A+B\leq 1200$$

$$.75a+.66b\leq 1400$$

$$3a+2b\leq 5000$$

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2.

a.

$A_1$  = Large product at Plant A

$A_2$  = Medium product at Plant A

$A_3$  = Small product at Plant A

$B_1$  = Large product at Plant B

$B_2$  = Medium product at Plant B

$B_3$  = Small Product at Plant B

$C_1$  = Large Product at Plant C

$C_2$  = Medium Product at Plant C

$C_3$  = Small Product at Plant C

b.  $420A_1 + 360A_2 + 300A_3 + 420B_1 + 360B_2 + 300B_3 + 420C_1 + 360C_2 + 300C_3$  = Maximize profit