## Question 1.

[	В	С	D	E	F	G	Н	1
1								
2	Back Sav	ers ers			Collegiate		Mini	
3				Variable:	С		M	
4	Total Employees:	35.00		Max Units Sold / Week:	1,000.00		1,200.00	
5	Hours worked per week:	40.00		Labor Units to Produce 1 unit:	45 m		40 m	
6	Total Hours Worked / Week:	1,400.00		Unit Profit:	32.00		24.00	
7				Total Fabric needed to produce 1 unit:	3 sq. ft		2 sq. ft	
8	Recieves 5,000 Sq.ft nylon / we	eek						
q								

A	В	С	D	E	F G H I
	Questions:				
_					
	A. Decision Variables:	C = number of Collegiate	units made per	week	
		M = number of Mini unit	s made per weel	k	
		T			
	B. Objective Fuction:	<b>⊣</b>		quantity of backpac	ks for each different product to
		produce each week for m			
L		\$32C + \$24M = Max Profit	Value		
	C. Constraints:	A total number of hours	worked cappet	avecad the number	availble, which is 1,400 hours for each week
	C. CONSTIAINTS.	A. total number of nours		exceed the number a nverted to hours = (3,	
H				overted to hours = (2)	
┝			(3/4)C + (2/3)M		S) TOT W
┢			(3/4/6 : (2/3/14)	1,400 110013	
Н		B. total amount of nylon	used cannon ex	ceed the number av	ailble which is 5,000 sq. ft for each week.
r			3C + 2M <= 5,00		
Г			,		
ı		C. Do not exceed sales p	rojections.		
ı			C<= 1,000 units		
Г			M<= 1,200 units	5	
			_		
	D. Full mathematical formu	lation for this LP problem			
L		Let	C = number of (	Collegiate units mad	le per week
L			M = number of	Mini units made pe	r week
L					
L		Maximize total Profit = \$3	32C + \$24M		
H					
H		subject to			
H		Raw Material (Nylon)		•	
H			(3/4)C + (2/3)M		
H		Sales Forecast	C <= 1,000 units		
H			M <= 1,200 unit	S	
H		and C >= 0 , M >= 0			

## Question 2.

4	A B	С	D	E	F	G	Н	I
				V	Vei	gelt Corp		
							Storage	Sales
		Max Capacity	Available			Profit Margin	Requirement	Forecast /
		/ day	Storage / day			by Size	s / unit	day
	Plant 1	750	13,000 sq. ft		L	420	20 sq. ft	900
	Plant 2	900	12,000 sq. ft		М	360	15 sq. ft	1,200
	Plant 3	450	5,000 sq. ft		S	300	12 sq. ft	750

A B C D E F G H   J K L M   M   M   M   M   M   M   M   M   M													
11 Questions:  A Decision Variables  X $_{PS}$ = number of units to produce in plant P and size S  P = 1,2,3 (3 different plants)  S = 1,2,3 (Size of product large, medium, small)  18 B. LP Model  Max Profit =	∡  A	В	С	D	E	F	G	Н	1	J	K	L	М
12 A. Decision Variables $X_{ps} = \text{number of units to produce in plant P and size S}$ 14 P = 1,2,3 (3 different plants)  S = 1,2,3 (Size of product: large, medium, small)  16 S = 1,2,3 (Size of product: large, medium, small)  18 Max Profit =	10												
13	11 Qu	uestions:											
14	12	A. Decision	Variables										
15	13				X <sub>PS</sub>	= ni	ımber of un	its to produce i	n plant P an	d size S			
16 S = 1,2,3 (Size of product: large, medium, small)  17 B. LP Model  18 Max Profit =   19 20	14												
17 B. LP Model  18	15			P = 1,2,3 (3	differer	nt plant	s)						
18	16			S = 1,2,3 (S	ize of pr	oduct: l	arge, medit	ım, small)					
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