COS 512

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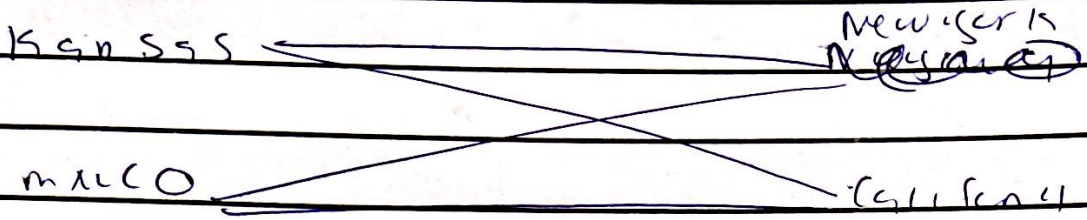
Quiz:

d_i = demand for the month
z_i = number of workers during the month; $z = 30$
y_i = no of carpet made overtime in one month
x_i = no of carpets made during the ith month
h, f_i = workers hired & fired respectively at the beginning of the months
S_i = no of stored carpet at the end of the mth
$S_0 = 0$
$z, y, x_i, h, f, S, so, i \geq 0$ $i = 1, 2, 3 \ldots 12$
Total carpets made:
$S_i = S_{i-1} + x_i - d$; where $i = 1$ = month before
limitation of overtime = $y_i \leq 6z_i$
objective function is to minimize total cost; hence
min $2000 \Sigma z_i + 320 \Sigma h_i + 400 \Sigma f_i + 3 \Sigma S_i + 150 \Sigma y_i$
coefficient are gotten from the question

$x_i = 20 z_i + y_i$
Potential no of workers at each stage of each month
$z_i = z_{i-1} + h_i - f_i$
Number of stored carpets.



Production constraint

$x_{11} + x_{12} \leq 15$

$x_{21} + x_{22} \leq 8$

$x_{11} + x_{21} \leq 10$

$x_{12} + x_{22} \leq 13$

$\min Z = a_{11}x_{11} + a_{12}x_{12} + a_{21}x_{21} + a_{22}x_{22}$

$\min Z = 2x_{11} + 3x_{12} + 4x_{21} + 1x_{22}$

	Capacity
Kansas	15
Mexico	8

	Needs
New York	10
	13

Cost to shipping

	New York	California
Kansas	2	3
Mexico	4	1