

1.) Back Savers Model

- a. Decision Variables: C = Collegiate
M = Mini
- b. Objective Function: Max $32C + 24M$
ST
- c. Constraints: $3C + 2M \leq 5000$ sq ft
 $45C + 40M \leq 84,000$ minutes
 $C \leq 1000$
 $M \leq 1200$
- d. C = 1000
M = 975

$$3(1000) + 2(975) = 4,950 \text{ sq ft}$$

$$45(1000) + 40(975) = 84,000 \text{ minutes}$$

$$32(1000) + 24(975) = \$55,400$$

2.) Weigelt Corporation Model

- a. Decision Variables: L1 = Large made in plant 1
M1 = Medium made in plant 1
S1 = Small made in plant 1
L2 = Large made in plant 2
M2 = Medium made in plant 2
S2 = Small made in plant 2
L3 = Large made in plant 3
M3 = Medium made in plant 3
S3 = Small made in plant 3
- b. Max $420(L1+L2+L3) + 360(M1+M2+M3) + 300(S1+S2+S3)$
ST
 $20L1 + 15M1 + 12S1 \leq 13000$
 $20L2 + 15M2 + 12S2 \leq 12000$
 $20L3 + 15M3 + 12S3 \leq 5000$
 $(L1+L2+L3) \leq 900$
 $(M1+M2+M3) \leq 1200$
 $(S1+S2+S3) \leq 750$
 $(L1+M1+S1)/(750) = (L2+M2+S2)/(900) = (L3+M3+S3)/(450)$
 $L1-3, M1-3, S1-3 \geq 0$