

MODULE 2 - THE LP MODEL

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1. COMPANY - (BLACK SAVERS)

- COLLEGIATE
- MINI

MADE FROM RIP RESISTANT NYLON FABRIC

BLACK SAVERS CONTRACT

* NYLON - 5000 SQ
EACH WEEK



COLLEGiate REQUIRES 3 SF

MINI 2 SF

SALES FORECAST

1,000 COLLEGIATE

1,200 MINI

CAN BE SOLD PER WEEK

LABOR

EACH COLLEGIATE REQUIRES 45 MIN
TO MAKE - \$32 PROFIT

EACH MINI REQUIRES 40 MIN - \$24 PROFIT

35 LABORS = 40
HOURS

* MANAGEMENT WISHES TO KNOW WHAT QUANTITY TO PRODUCE

A. DECISION VARIABLES

COLLEGIATE = x_1

MINI = x_2



B. OBJECTIVE FUNCTION

MAXIMIZE

$$Z = 32x_1 + 24x_2$$

\$32 PROFIT

\$24 PROFIT

C. CONSTRAINTS

MATERIAL (NYLON) - 5,000 SQ PER WEEK

$$3x_1 + 2x_2 \leq 5000$$

COLLEGiate MINI

SALES CONSTRAINTS

$$x_1 \leq 1,000 \text{ COLLEGiate}$$

$$x_2 \leq 1,200 \text{ MINI}$$

CAN BE SOLD
PER
WEEK

LABOR CONSTRAINTS

$$35 \text{ LABORS} \times 40 \text{ HOURS} = 1400 \text{ HOURS}$$

$$1400 \text{ HOURS} \times 60 = 84,000 \text{ MIN}$$

$$45x_1 + 40x_2 \leq 84,000 \text{ MIN}$$

COLLEGiate MINI

NON-NEGATIVE

$$x_1 \geq 0$$

$$x_2 \geq 0$$

D. FULL EQUATION

$$\text{MAXIMIZE } Z = 32x_1 + 24x_2$$

$$3x_1 + 2x_2 \leq 5000$$

$$45x_1 + 40x_2 \leq 84,000$$

$$x_1 \leq 1,000$$

$$x_2 \leq 1,200$$

$$x_1 \geq 0$$

$$x_2 \geq 0$$