

## Example, Section 3.9 (Production Process)

(Exercise 4, p. 98)

Chemco produces three products (1, 2, 3). Each pound of raw material costs \$25. It undergoes processing and yields 3 oz of product 1 and 1 oz of product 2. It costs \$1 and takes 2 hours of labor to process each pound of raw material. Each oz of product 1 can be used in one of three ways:

- It can be sold for \$10 per oz
- It can be processed into 1 oz of product 2. This requires 2 hours of labor and costs \$1
- It can be processed into 1 oz of product 3. This requires 3 hours of labor and costs \$2.

Each oz of product 2 can be used in one of two ways:

- It can be sold for \$20 per oz
- It can be processed to make 1 oz of product 3. This requires 1 hour of labor and costs \$6.

Product 3 is sold for \$30 per oz. The maximum number of oz of each product that can be sold: Product 1- 5,000. Product 2- 5,000. Product 3- 3,000. A maximum of 25,000 hours of labor are available. Determine how Chemco can maximize profit.

## Example, Section 3.10 (Multiperiod Problems)

(Exercise 3, p. 104)

James Beard bakes cheesecakes and Black Forest cakes. During any month, he can bake at most 65 cakes. The costs per cake and the demands for cake, which must be met on time, are listed below. It costs 50 cents to hold a cheesecake and 40 cents to hold a Black Forest cake in inventory for a month. Formulate an LP to minimize the total cost of meeting the next three months' demands.

		Demand	Cost/Cake
• Month 1:	Cheesecake	40	3.00
	Black Forest	20	2.50
• Month 2:	Cheesecake	30	3.40
	Black Forest	30	2.80
• Month 3:	Cheesecake	20	3.80
	Black Forest	10	3.40

Here is the solution in LINDO:

LP OPTIMUM FOUND AT STEP 4

OBJECTIVE FUNCTION VALUE

1) 464.5000

VARIABLE	VALUE	REDUCED COST
C1	40.000000	0.000000
C2	30.000000	0.000000
C3	20.000000	0.000000
B1	25.000000	0.000000
B2	35.000000	0.000000
B3	0.000000	0.100000
I1	0.000000	0.000000
I2	0.000000	0.200000
I3	0.000000	4.300000
L1	5.000000	0.000000
L2	10.000000	0.000000
L3	0.000000	3.700000