

AGEC 622 LP Homework

1. Take the Feed problem formulated as

and solve it again with

- a. One additional unit of bag storage
- b. Forcing one unit of production of the pig feed

Compare the changes in the objective function to the bag storage shadow price and the reduced cost for pig feed.

2. Cargall Grain Company wishes to ship goods from four country elevators locations to two port locations. The distances between places and the amount of goods available at each elevator are given below:

Elevator Supply	Goods in Inventory	Distance to Port	
		A	B
1	500	1020	1125
2	300	1500	1350
3	200	2100	1750
4	300	1070	1090

Cost of shipping is \$.10 per mile per 100 units shipped

Cargall has had its analysts make demand projections and has obtained the estimate

Port	Quantity to be Sold
A	550
B	750

Formulate a LP problem to determine the least cost method of moving the goods.

3. Hot dog supply purchases 3 raw ingredients and combines them to produce a product. The two products must meet certain specifications regarding fat content, protein and fiber. The relevant data are

Composition				
Ingredient	Cost (\$/cwt)	Fat %	Protein %	Taste
Hog scraps	45	28	29	28
Cow scraps	50	27	29	20
Cellulose filler	12	5	9	2

Demand				
Max Fat %	Min Protein	Min taste	Sales volume (cwt)	
24	20	15	1	

- Formulate a LP problem to determine the least cost mix for the feed.
- Take any one of the problems above specify how the assumptions in overhead set 2 apply to the problem citing one specific example of each case.
 - Suppose you are consulting with an investor to determine how much of 4 stocks to buy. From previous years' experience, the investor has observed the following data on returns per five hundred dollars invested from each of the four stocks:

Obs	Stock 1	Stock 2	Stock 3	Stock 4
1	45.00	45.00	65.00	20.00
2	60.00	70.00	38.00	21.00
3	18.00	28.00	70.00	25.00
4	-30.00	42.00	102.00	18.00
5	52.00	15.00	20.00	20.00
6	60.00	40.00	15.00	28.00
7	41.00	30.00	17.00	20.00
8	16.00	19.00	66.00	22.00

The stock prices are each \$200.

The investor has 500,000 to invest. Formulate the investor's problem using the E-V criterion.