

## Chapter 4

### *Linear Optimization (Graphical Method)*

#### Exercises

##### 4. 1.

A pension fund has \$30 million to invest. The money is to be divided among Treasury notes, bonds and stocks. The rules for administration of the fund require that at least \$3 million be invested in each type of investment, at least half of the money be invested in Treasury notes and bonds, and the amount invested in bonds not exceed twice the amount invested in Treasury notes. The annual yields for the various investments are 7% for Treasury notes, 8% for bonds, and 9% for stocks.

How should the money be allocated among the various investments to produce the largest return?

Solve the problem graphically.

##### 4. 2.

Suppose the only foods available in your local store are potatoes and meat. The decision about how much of each food to buy is made entirely on dietary and economic considerations. The nutritional and cost informations are given in the following table:

	Per unit of potatoes	Per unit of Steak	Minimum requirements
Units of carbohydrates	3	1	8
Units of vitamins	4	3	19
Units of proteins	1	3	7
Unit cost	25	50	

The problem is to find a diet that meets all minimum nutritional requirements at minimal costs

1. Formulate the problem as a linear optimisation model
2. Solve the model graphically.

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