Lesson 9. Multiperiod Models

Example 1. Priceler manufactures sedans and wagons. The demand for each type of vehicle in the next three months is:

	Sedans	Wagons
Month 1	1100	600
Month 2	1500	700
Month 3	1200	500

Assume that the demand for both vehicles must be met exactly each month. Each sedan costs $2000 to produce, and each wagon costs $1500 to produce. Vehicles not sold in a given month can be held in inventory. To hold a vehicle in inventory from one month to the next costs $150 per sedan and $200 per wagon. During each month, at most 1500 vehicles can be produced. At the beginning of month 1, 200 sedans and 100 wagons are available. Formulate a linear program that can be used to minimize Priceler's costs during the next three months.

- First, let's write a linear program <u>without</u> sets and parameters, so we can understand the problem better.

- Now, let's write a parameterized linear program.

Example 2. During the next three months, the Bellman Company must meet the following demands for their line of advanced GPS navigation systems:

Month 1	Month 2	Month 3
1200	1400	2200

It takes 1 hour of labor to produce 1 GPS system. During each of the next three months, the following number of regular-time labor hours are available:

Month 1	Month 2	Month 3
1200	1300	1000

Each month, the company can require workers to put in up to 500 hours of overtime. Workers are only paid for the hours they work. A worker receives $10 per hour for regular-time work and $15 per hour for overtime work. GPS systems produced in a given month can be used to meet demand in that month, or put into a warehouse. Holding a GPS system in the warehouse from one month to the next costs $2 per GPS system. Formulate a linear program that minimizes the total cost incurred in meeting the demands of the next three months.