**Problem 1 – Arizona Plumbing**

Arizona Plumbing, which makes, among other products, a full line of bathtubs must decide which of its factories should supply which of its warehouses. Relevant data for Arizona Plumbing are presented in Table 1 and Table 2. Table 1 show, for example, that it costs Arizona Plumbing $5 to ship one bathtub from its Des Moines factory to its Albuquerque warehouse, $4 to Boston, and $3 to Cleveland. Likewise, we see in Table 2 the capacities of Arizona Plumbing factories in Des Moines, Evansville, and Fort Lauderdale as well as the demands for warehouses in Albuquerque, Boston and Cleveland.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  | To | | |
|  |  | Albuquerque | Boston | Cleveland |
|  | Des Moines | 5 | 4 | 3 |
| From | Evansville | 8 | 4 | 3 |
|  | Fort Lauderdale | 9 | 7 | 5 |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Demand |  |  | Capacity |
| Albuquerque | 300 |  | Des Moines | 100 |
| Boston | 200 |  | Evansville | 300 |
| Cleveland | 200 |  | Fort Lauderdale | 300 |

Formulate and solve the LP to find the least-cost means of shipping supplies from the factories to the warehouses.

**Problem 2 – Widgetco**

Widgetco manufactures widgets at two factories, one in Memphis and one in Denver. The Memphis factory can produce as 150 widgets, and the Denver factory can produce as many as 200 widgets per day. Widgets are shipped by air to customers in LA and Boston. The customers in each city require 130 widgets per day. Because of the deregulation of airfares, Widgetco believes that it may be cheaper first fly some widgets to NY or Chicago and then fly them to their final destinations. The cost of flying a widget are shown next. Widgetco wants to minimize the total cost of shipping the required widgets to customers.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **NY** | **Chicago** | **LA** | **Boston** | **Supply** |
| **Memphis** | $8 | $13 | $25 | $28 | 150 |
| **Denver** | $15 | $12 | $26 | $25 | 200 |
| **NY** | $0 | $6 | $16 | $17 | 350 |
| **Chicago** | $6 | $0 | $14 | $16 | 350 |
| **Demand** | 350 | 350 | 130 | 130 |  |