Assignment 3

Sri Seshadri

8/5/2018

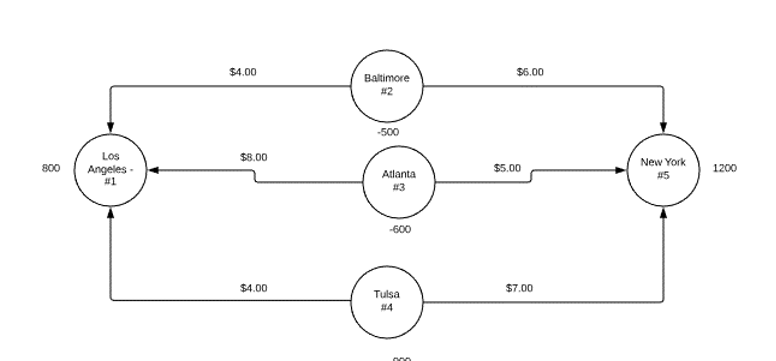
# Problem 1

Here there are two scenarios that will be inspected using Integer Linear Programming (ILP) to model total cost. Scenario 1 - plant in Baltimore, Scenario 2 - plant in Seattle.

## Scenario 1

### Formulation:

The model is formulated as a network flow model as shown in the figure below, where nodes 1 through 5 are Los Angeles, Baltimore, Atlanta, Tulsa and New York respectively



#### Decision variables:

Let be the flow from node to where and

are the decision variables.

#### Other variables

Let be the cost variable for distribution of toys between Let be the supply at and be the demand at . is denoted with a negative number and the as positive number for modeling as a network flow problem.

#### Objective function

=

#### Constraints:

Since the supply equals the demand ( ), the model will be constrained as .

The constraints in explicit form are:

where where

Where Where Where

and are integers

### ASME Modeling

Figures 1 and 2 show the model set up in ASPE

Problem 1 ASPE formulation

Problem 1 ASPE formulation

Problem 1 ASPE Model setup

Problem 1 ASPE Model setup

### Scenario 1 Results

The Total cost for a plant in Baltimore was $9900

## Scenario 2

Problem 1 ASPE formulation

Problem 1 ASPE formulation