1. Suppose you manage n factories, each producing s_i amount of goods for $i = 1, 2, \ldots, n$. These goods need to be shipped to m destinations, each having a demand d_i for $i = 1, 2, \ldots, m$, and our goal is to move the goods from the factories to the destinations so as to satisfy the demand. However, there is a cost associating to moving the goods: for moving a unit good from factory i to destination j, the cost involved is c_{ij}. Our goal is to decide the amount of quantities to be shipped from each factory to each destination such that the demand is satisfied, and the overall cost is minimized. We assume that the goods are divisible (so the quantity shipped does not have to be an integer), and that the shipping is directly to the respective destinations (meaning there is no routing involved).

   (a) Formulate the problem above as an LP, and write a `CVX/CVXPY` code to compute the quantities shipped.

   (b) Find the optimal transportation strategy for the following costs, supply and demands:

Factory	D1	D2	D3	D4	D5	Total Supply
Factory 1	8	6	10	9	8	40
Factory 2	9	12	13	7	5	50
Factory 3	14	9	16	5	2	45
Total Demand	45	20	30	30	10	