Transportation Problem

Goods are produced at m different supply centers $i = 1, 2, ..., m$.
The supply produced at supply center i is S_i, $i = 1, 2, ..., m$.
The demand for the good comes from n different demand centers, d_j $j = 1, 2, ..., n$.
Cost of shipping one unit from supply center i to demand center j is c_{ij}.
Variables x_{ij} define the number of units shipped from supply center i to demand center j.

Feasibility condition

$$\sum_{j=1}^{n} d_j \leq \sum_{i=1}^{m} S_i$$

Math Formulation

$$\sum_{i=1}^{m} \sum_{j=1}^{n} c_{ij} \cdot x_{ij} \tag{1}$$

$$\sum_{j=1}^{n} x_{ij} \leq S_i \qquad i = 1, 2, ..., m \tag{2}$$

$$\sum_{i=1}^{m} x_{ij} = d_j \qquad j = 1, 2, ..., n \tag{3}$$

$$x_{ij} \geq 0 \qquad i = 1, 2, ..., m, \ j = 1, 2, ..., n \tag{4}$$

In this problem you can also assume that variables x_{ij} take on integer values (and non-negative ones), it depends on the good you are dealing with.