The problem for the advertisers is to maximize the product's exposure, subject to budgetary limitations, as follows:

$$\max_{Space_{ij}} Exposure \equiv \sum_{ij} Space_{ij} \cdot Impact_{ij}$$

$$\text{s.t. } \sum_{ij} Space_{ij} \cdot P_{ij} \leq Budget$$

where $Exposure$ is the exposure of the product that the advertiser wants to maximize, $Space_{ij}$ is the advertiser's decision variable on which newspaper to advertise in (i), where the advertisement will be placed within the newspaper (j), and what the size of the advertisement will be (in square inches). The illustration model assumes that the advertised product's exposure is a linear multiplication of advertising space ($Space$) and influence ($Impact$). The Lagrangian (L) of (1) is:

$$L = \sum_{ij} Space_{ij} \cdot Impact_{ij} - \lambda(\sum_{ij} Space_{ij} \cdot P_{ij} - Budget)$$

Taking the derivative of L with regard to both the $Space_{ij}$ decision variable and λ, and comparing it to zero yield:

(1) $$\sum_{ij} Space_{ij} \cdot P_{ij} = Budget <= Impact_{ij} = \lambda P_{ij}$$

Equation (2) shows that in order to maximize exposure, the advertiser must use his entire budget at the relative price per area unit (P_{ij}), which in turn reflects the advertising impact ($Impact_{ij}$).