Suppose that the number of units b_i of a product sold by a company in the district i of a town depends upon the population a_{i1} (in thousands) of the district and the per capita income a_{i2} (in dollars). Suppose the following table shows the sale in five districts, as well as the corresponding population and per capita income:

District i	Sales b_i	Population a_{i1}	Per Capita Income a_{i2}
1	162	274	2450
2	120	180	3254
3	223	375	3802
4	131	205	2838
5	67	86	2347

The company wants to use this table to predict future sales. For some reason the CEO believes that the relationship between b_i, a_{i1}, and a_{i2} is linear, i.e.,

$$b_i = x_1 + a_{i1}x_2 + a_{i2}x_3$$

with some appropriate parameters x_1, x_2, and x_3.

1. Estimate the parameters by the least squares technique.
2. What is the meaning of the parameters?
3. Decide if the CEO's vision on this model is reasonable.
4. Predict the sale at a region with population 20 and per capita income 5000 as well as at a region with population 400 and per capita income 1000.