In a bakery

Difficulty level: beginner

Keywords

- Production
- Linear Programming
- Graphical method

Problem description

Every morning, a baker makes some Genovese focaccia and some classic Margherita pizza. A kilogram of pizza requires 10 minutes and 40 minutes for the dough to be prepared and baked, respectively. Instead, to produce a kilogram of focaccia, 1 hour of preparation and 1 hour and 20 minutes of baking, respectively, are needed. Since the baker also has to prepare other products, he cannot spend more than 6 hours preparing the dough of the focaccia and the pizza and baking them. Assume that the baker is able to sell all the focaccia and pizza he makes. The selling prices for the focaccia and the pizza are 3 €/Kg and 8 €/Kg, respectively.

Tasks

1. Identify the variables, the constraints, and the objective function of the problem.
2. What is the most profitable daily production?
3. What if the times available to prepare the dough and to bake it are three and five hours respectively, and the selling price for the focaccia and the pizza are 8 €/Kg and 3 €/Kg, respectively? How would the model and the optimal solution change?