

1. A cooperative society of farmers has 50 hectares of land to grow two crops A and B. The profits from crops A and B per hectare are estimated as Shs 10,500,000 and Shs 9,000,000 respectively. To control weeds, a liquid herbicide has to be used for crops A and B at the rate of 20 litres and 10 litres per hectare, respectively. Further not more than 800 litres of herbicide should be used in order to protect fish and wildlife using a pond which collects drainage from this land. Keeping in mind that the protection of fish and other wildlife is more important than earning profit respectively. Task:

- (a) Write mathematical statements that show the relation between the hectare of land to be allocated to crop A and B respectively
- (b) Show the feasible region of the relation on the Cartesian plane
- (c) How much land should be allocated to each crop so as to maximize the total profit?
- (d) Do you agree with the message that the protection of wildlife is utmost necessary to preserve the balance in environment?

2. Your uncle owns a small bakery and plans to bake two types of loaves of bread: whole wheat bread and white bread. Due to the bakery's oven capacity, your uncle can bake at most 15 loaves of bread in a day. He wants to bake at least 3 loaves of whole wheat bread. Additionally, he wants to bake more whole wheat bread than white bread because it is more popular among his customers. The selling prices are as follows:

Whole wheat bread is sold at Shs 6500 per loaf.

White bread is sold at Shs 5000 per loaf.

To cover his costs and make a profit, your uncle needs to earn more than Shs 30,000 from the sales each day. Task:

- (a) Write mathematical statements that show the relation between the whole wheat bread and white bread.
- (b) Show the feasible region of the relation on the Cartesian plane.
- (c) How many loaves of each type should your uncle bake in order to make the maximum profit?
- (d) What is the minimum number of loaves he can bake and still make a profit?