

The Fundraiser Production Plan

The enterprise club makes banana loaves and mandazi trays using at most 12 flour units and 12 oven units. It must choose the plan with greatest profit.

THE MISSION

Recommend one plan: $(6,0)$, $(4,4)$ or $(0,6)$. Show that it is feasible and earns the greatest profit.

Clear situation. Visible reasoning. A decision you can defend.

Before you begin

Name: _____ Class: _____ Date: _____

LEARNING GOALS

define decision variables; write resource constraints; identify feasible points; evaluate an objective function at corner points

The situation

The enterprise club makes banana loaves and mandazi trays using at most 12 flour units and 12 oven units. It must choose the plan with greatest profit.

What information is known, and what must you find?

Build the foundation

FLOUR

$2x + y \leq 12$, because a loaf uses 2 flour units and a tray uses 1.

OVEN

$x + 2y \leq 12$, because a loaf uses 1 oven unit and a tray uses 2.

PROFIT

$P = 6,000x + 5,000y$. Test this rule at every feasible corner.

Explain the big idea in your own words.

Follow the worked reasoning

Axis corners

$P(0,0) = 0$ and $P(6,0) = \text{UGX } 36,000$.

Intersection

$P(4,4) = 6,000(4) + 5,000(4) = \text{UGX } 44,000$.

Final corner

$P(0,6) = \text{UGX } 30,000$. The maximum is UGX 44,000.

Now you try

1. Test whether (3,3) satisfies both constraints.

2. Find the profit at (2,5).

3. Explain why (5,5) is not feasible.

4. Compare the profits at (6,0), (4,4) and (0,6).

Final scenario challenge

YOUR DECISION

Recommend one plan: $(6,0)$, $(4,4)$ or $(0,6)$. Show that it is feasible and earns the greatest profit.

Show your calculations.

Write a recommendation that uses your mathematics as evidence.
