

Name: Key

Linear Programming Assessment Practice

A store wants to liquidate 210 of its shirts and 100 pairs of pants from last season. They have decided to put together two offers, A and B. Offer A is a package of one shirt and a pair of pants which will sell for \$30. Offer B is a package of three shirts and a pair of pants, which will sell for \$50. The store does not want to sell less than 20 packages of offer A and less than 10 of offer B. How many packages of each do they have to sell to maximize the money generated from the promotion. What is the maximum amount of money they could generate?

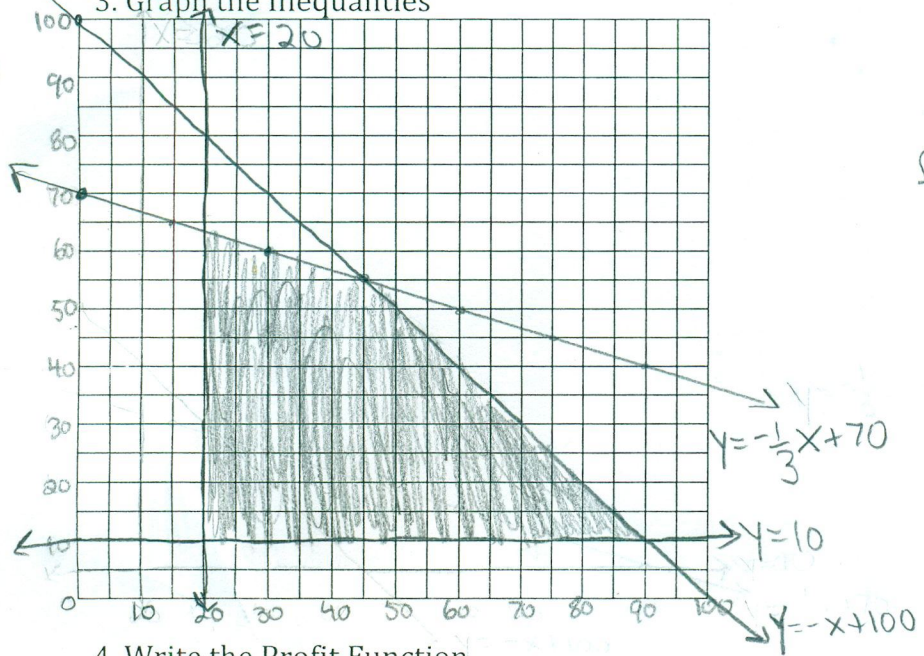
1. Define the variables

$x = \text{offer A}$
 $y = \text{offer B}$

2. Write a system of Inequalities

$x \geq 20$ $x + 3y \leq 210 \rightarrow y \leq -\frac{1}{3}x + 70$
 $y \geq 10$ $x + y \leq 100 \rightarrow y \leq -x + 100$

3. Graph the Inequalities



vertices
 $(20, 10)$ $(20, 63)$
 $(70, 10)$ $(45, 55)$

$f(20, 10) = 30(20) + 50(10) = 1100$
 $f(20, 63) = 30(20) + 50(63) = 3750$
 $f(70, 10) = 30(70) + 50(10) = 2600$
 $f(45, 55) = 30(45) + 50(55) = 4100$

value
1100
3750
2600
4100 \rightarrow max

4. Write the Profit Function

$f(x, y) = 30x + 50y$

5. How many of each should be sold to maximize the money generated? What is the maximum profit?

of package A: 45, # of package B: 55, Profit: \$4100