

Previous Year CBSE Problems with Solutions

Problem 3:

A manufacturer considers that men and women workers are equally efficient and so he pays them at the same rate. He has 30 and 17 units of workers (male and female) and capital respectively; which he uses to produce two types of goods A and B. To produce one unit of A, 2 workers and 3 units of capital are required while 3 workers and 1 unit of capital is required to produce one unit of B. If A and B are priced at ₹100 and ₹120 per unit respectively, how should he use his resources to maximise the total revenue? Form the above as an LPP and solve graphically.

Do you agree with this view of the manufacturer that men and women workers are equally efficient and so should be paid at the same rate?

Solution:

Let x units of the goods A and y units of goods B be produced to maximise the total revenue.

	Workers	Capital (in units)	Revenue per unit (in ₹)
Goods A	2	3	100
Goods B	3	1	120
Total units	30	17	

The LPP is given by

$$\text{Maximise } Z = 100x + 120y$$

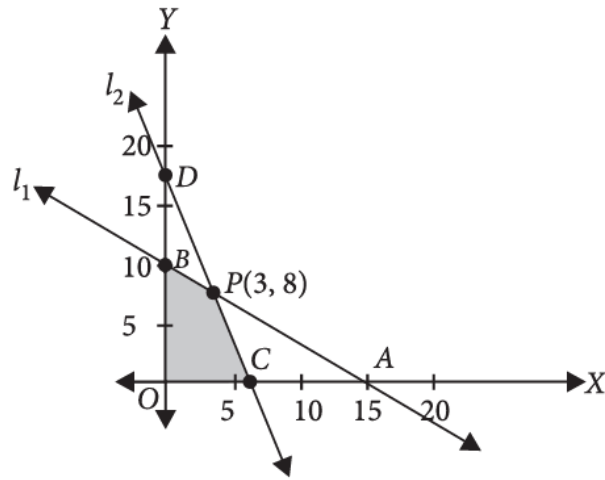
Subject to the constraints

$$2x + 3y \leq 30, 3x + y \leq 17, x \geq 0, y \geq 0$$

To solve LPP graphically, we convert the inequations into equations.

$$l_1 : 2x + 3y = 30, l_2 : 3x + y = 17 \text{ and } x = 0, y = 0$$

These lines meet at $P(3, 8)$.



The feasible region $OCPB$ has been shaded.

The corner points of the feasible region are $O(0, 0)$, $C(5.6, 0)$, $P(3, 8)$, $B(0, 10)$

Corner Points	Value of $Z = 100x + 120y$
$O(0, 0)$	0
$C(5.6, 0)$	560
$P(3, 8)$	1260 (Maximum)
$B(0, 10)$	1200

Clearly, the maximum revenue is obtained at $P(3, 8)$, *i.e.*, when 3 units of good A and 8 units of good B are produced.

Yes, I agree with the view of the manufacturer. Men and women workers should be equally paid so that they can do their work efficiently and accurately.