

Linear Programming

• Meaning →

Linear = like a line

Programming refers to systemic and sequential solution.

Linear means all the variables in the problem will have power 1.

Linear Programming Problem (LPP) :

It is the problem which when solved, we get the best outcome which could be either profit maximisation or cost minimisation.

Essential conditions for LPP :

1. Presence of objective function
2. Presence of constraints
3. Presence of alternatives (minimum 2 alternatives).

There should be finite alternatives.

• Assumptions of Linear Programming Problem :

- 1) Assumption of certainty - All the input information is known to us with certainty.

2.) Additivity -
Similar values can be added.

3.) Proportionality -
All the values follow the rule of proportionality.

4.) Linearity -
All the constraints and objective function should be linear (power should be one.)

5.) Non-negativity -
All the decision variables must have non-negative value.

For solving any LPP, there are 2 methods :

→ Graphical method

→ Simplex method

Q1.) ABC Co. is producing tables & chairs. Each table brings a profit of ₹7 and each chair ₹5.
There are 2 departments -
varnishing and carpeting.
Each table requires 4 hours in varnishing & 2 hours in carpeting.

Each chair requires 3 hours in
varnishing and 1 hour in carpentry.
There are total of 240 hours
available for varnishing and 100 hours
for carpentry.

Find the profit maximising
optimal product mix.