Multi-Product Breakeven & P/V Charts

1. Advan Ltd produces three products, namely X, Y, Z. The details of X, Y and Z are given as follows:

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| --- | --- | --- | --- |
|  | **X** | **Y** | **Z** |
| Demand | 200 units | 200 units | 400 units |
| Selling price/unit | $20 | $25 | $18 |
| Variable cost/unit | $10 | $13 | $12 |
| Annual fixed cost | $5000 |  |  |

***Required***

Calculate breakeven point and draw breakeven & P/V chart assuming:

1. Products X, Y and Z are sold in constant mix of 2:2:4, and
2. Products X, Y and Z are sold in highest c/s ratio first.

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| **9.** |  |  |

Limiting Factor Decisions

**Example – Limiting Factor Decision (Single Limiting Factor)**

Neal Ltd produces two products using the same machinery. The hours available on this machine are limited to 5000. Information regarding the two products is detailed below:

Products (Per unit data) M N

Selling price ($) 40 30

Variable Cost ($) 16 15

Fixed Cost ($) 10 8

Profit ($) 14 7

Machine hours 8 3

Budgeted sales (units) 600 500

**Required**

Calculate the maximum profit that may be earned.

**Example – Two Potential Limiting factors**

Lucky manufactures and sells three products, X, Y and Z, for which budgeted sales demand, unit selling prices and unit variable costs are as follows.

X Y Z

Budgeted sales demand (Units) 550 500 400

Sales price per unit ($) 16 18 14

Material cost ($) 8 6 2

Labour cost ($) 4 6 9

Unit contribution ($) 4 6 3

The organisation has existing inventory of 250 units of X and 200 units of Z, which it is quite willing to use up to meet sales demand. All three products use the same direct materials and the same type of direct labour. In the next year, the available supply of materials will be restricted to $4,800 (at cost) and

the available supply of labour to $6,600 (at cost).

**Required**

Determine what product mix and sales mix would maximise the organisation's profits in the next year.

**Example – Make or Buy Decision**

Clemence Ltd produces a number of components, two of which he is considering in buying in, components X and Y.

Cost of making ($) X y

Variable 14 28

Fixed 4 4

Total 18 32

Purchase Price (From outside supplier) 17 25

**Required**

**Determine whether Clemence Ltd should produce or buy in the components X and Y.**

**Example – Linear Programming**

A company makes two products (R and S), within three departments (X, Y and Z). Production times per unit, contribution per unit and the hours available in each department are shown below:

Product R Product S

Contribution/unit $4 $8

Hours/unit Hours/unit Capacity (hours)

Department X 8 10 11000

Department Y 4 10 9000

Department Z 12 6 12000

**Required**

What is the optimum production plan in order to maximize contribution?