

# Assignment 10

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Download all python codes from

<https://github.com/CRAMYATULASI/ASSIGNMENT10/tree/main/ASSIGNMENT10/CODES>

Latex-tikz codes from

<https://github.com/CRAMYATULASI/ASSIGNMENT10/tree/main/ASSIGNMENT10>

## 1 QUESTION No. 2.45

A manufacturer produces three products x,y,z which he sells in two markets. Annual sales are indicated below:

Products	x	y	z
Market-I	10000	2000	18000
Market-II	6000	20000	8000

- 1) If unit sale prices of x,y and z are ₹2.50, ₹1.50 and ₹1.00 respectively, find the total revenue in each market with the help of matrix algebra.
- 2) If the unit cost of the above three commodities are ₹2.00, ₹1.00 and 50 paise respectively. Find the gross profit.

## 2 SOLUTION

Let the sales of the product x,y and z per market be denoted by matrix A

$$\begin{pmatrix} x & y & z \\ 10000 & 2000 & 18000 \\ 6000 & 20000 & 8000 \end{pmatrix} \begin{pmatrix} \text{Market-I} \\ \text{Market-II} \end{pmatrix} \quad (2.0.1)$$

- 1) Let the unit sale price of the products x,y and z per market be denoted by matrix B

$$\mathbf{B} = \begin{pmatrix} 2.50 \\ 1.50 \\ 1.00 \end{pmatrix} \quad (2.0.2)$$

Total Revenue in Market-I and Market-II

$$\mathbf{AB} = \begin{pmatrix} 10000 & 2000 & 18000 \\ 6000 & 20000 & 8000 \end{pmatrix} \begin{pmatrix} 2.50 \\ 1.50 \\ 1.00 \end{pmatrix} \quad (2.0.3)$$

$$= \begin{pmatrix} 46000 \\ 53000 \end{pmatrix} \quad (2.0.4)$$

- 2) Let the unit cost price of the products x,y and z per market be denoted by matrix C

$$\mathbf{C} = \begin{pmatrix} 2.00 \\ 1.00 \\ 0.50 \end{pmatrix} \quad (2.0.5)$$

Total cost of Market-I and Market-II

$$\mathbf{AC} = \begin{pmatrix} 10000 & 2000 & 18000 \\ 6000 & 20000 & 8000 \end{pmatrix} \begin{pmatrix} 2.00 \\ 1.00 \\ 0.50 \end{pmatrix} \quad (2.0.6)$$

$$= \begin{pmatrix} 31000 \\ 36000 \end{pmatrix} \quad (2.0.7)$$

∴ Gross Profit = Total revenue - Total cost

$$\mathbf{AB} - \mathbf{AC} = \begin{pmatrix} 46000 \\ 53000 \end{pmatrix} - \begin{pmatrix} 31000 \\ 36000 \end{pmatrix} \quad (2.0.8)$$

$$= \begin{pmatrix} 15000 \\ 17000 \end{pmatrix} \quad (2.0.9)$$

∴ Total profit in Market-I = 15000

Total profit in Market-II = 17000

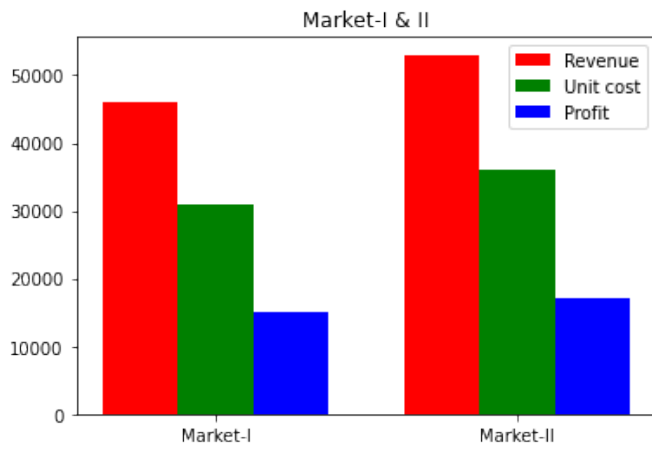


Fig. 2.1: Revenue,Sales & Profit Of Market-I & II