

Ex. 1 calculate P/V Ratio from the following

variable cost ^{Per unit} (VC) = ~~₹30~~ ₹20

Selling price per unit (S) = ₹30

Fixed cost (FC) = ₹1200

$$C = S - V$$

$$= 30 - 20$$

$$= \underline{10}$$

P/V Ratio = $\frac{\text{Contribution}}{\text{Sales}} \times 100$

$$= \frac{10}{30} \times 100$$

$$= \underline{33.33\%}$$

$$= \underline{33.33\%}$$

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Ex. 2 calculate sales when FC is ₹40000, Profit is ₹20000, and break even sales is ₹80000.

$$\rightarrow \text{Break even sales} = \frac{\text{Fixed cost} \times 100}{\text{PIV Ratio}}$$

$$80000 = \frac{40000 \times 100}{\text{PIV Ratio}}$$

$$\text{PIV Ratio} = \frac{40000 \times 100}{80000}$$

$$\text{PIV Ratio} = \underline{\underline{50\%}}$$

$$\begin{aligned} \rightarrow \text{PIV Ratio contribution} - \text{FC} &= \text{Profit} \\ \text{Contribution} &= \text{Profit} + \text{FC} \\ &= 20000 + 40000 \\ &= \text{₹}60000 \end{aligned}$$

$$\rightarrow \text{PIV Ratio} = \frac{\text{contribution} \times 100}{\text{sales}}$$

$$50\% = \frac{\text{₹}60000 \times 100}{\text{sales}}$$

$$\text{sales} = \frac{\text{₹}60000 \times 100}{50\%}$$

$$\text{sales} = \underline{\underline{120000}}$$

Ex. 3 Selling price per unit = ₹ 50
 variable cost = ₹ 30
 Fixed cost = ₹ 150000
 calculate sales to earn profit of ₹ 100000

$$\begin{aligned} \rightarrow C &= S - V \\ &= 50 - 30 \\ &= \underline{20} \end{aligned}$$

$$\begin{aligned} \rightarrow \text{P/V Ratio} &= \frac{\text{contribution}}{S} \times 100 \\ &= \frac{20}{50} \times 100 \\ &= \underline{40\%} \end{aligned}$$

$$\rightarrow \text{sales} = \frac{\text{FC} + \text{Profit}}{\text{P/V Ratio}}$$

$$\begin{aligned} \text{sales} \times \text{P/V Ratio} &= \text{FC} + \text{Profit} \\ \text{sales} \times 40\% &= 150000 + 100000 \\ \text{sales} &= \frac{250000}{40\%} \end{aligned}$$

$$\text{sales} = \underline{\underline{6,25,000}}$$

OR

$$\begin{aligned} \rightarrow \text{Profit} &= [\text{sales} \times \text{P/V Ratio}] - \text{FC} \\ 100000 &= [\text{sales} \times 40\%] - 150000 \\ \text{sales} \times 40\% &= 150000 + 100000 \\ \text{sales} &= \frac{250000}{40\%} \end{aligned}$$

$$\text{sales} = \underline{\underline{6,25,000}}$$

Ex. 4 calculate break even point

Year	sales	Profit
2013	50000	5000
2014	60000	7000
	10000	2000

$$\begin{aligned} \text{PIV ratio} &= \frac{\text{change in profit}}{\text{change in sales}} \times 100 \\ &= \frac{2000}{10000} \times 100 \\ &= \underline{\underline{20\%}} \end{aligned}$$

considering 2013 as base

$$\begin{aligned} \text{PIV ratio} &= \frac{\text{contribution}}{\text{sales}} \\ 20\% &= \frac{\text{contribution}}{50000} \\ 10000 &= \text{contribution} \end{aligned}$$

$$\begin{aligned} \text{contribution} &= \text{FC} + \text{Profit} \\ 10000 &= \text{FC} + 5000 \\ \text{FC} &= 10000 - 5000 \\ \text{FC} &= \underline{\underline{5000}} \end{aligned}$$

$$\begin{aligned} \text{BEP} &= \frac{\text{FC}}{\text{PIV Ratio}} \\ &= \frac{5000}{20\%} \\ &= \underline{\underline{25000}} \end{aligned}$$

Ex. 5 margin of safety & Profit ratio
 ratio are 40% & 50% respectively.
 If sales is Rs. 1200000 calculate
 profit & Break even point.

$$\rightarrow \text{margin of safety} = 1200000 \times 40\% \\ = \underline{\underline{480000}}$$

$$\text{margin of safety} = \text{Total sales} - \text{Break even Point}$$

$$480000 = 1200000 - \text{BEP}$$

$$\text{BEP} = 1200000 - 480000$$

$$\text{BEP} = \underline{\underline{7,20,000}}$$

$$\text{MOS} = \frac{\text{Profit}}{\text{P/V ratio}}$$

$$480000 = \frac{\text{Profit}}{50\%}$$

$$\text{Profit} = 480000 \times 50\%$$

$$\text{Profit} = \underline{\underline{2,40,000}}$$

Ex. 6 calculate selling price per unit of
 break even point reduce by
 1000 unit.

$$\text{Variable expenses (cost) per unit} = ₹ 28$$

$$\text{Selling Price " " " " } = ₹ 41$$

$$\text{FC} = ₹ 97500$$

$$\rightarrow \text{Contribution} = S - V \\ = 41 - 28 \\ = \underline{\underline{13}}$$

$$\begin{aligned} \text{BEP (unit)} &= \frac{FC}{\text{contribution per unit}} \\ &= \frac{97500}{13} \\ &= \underline{7,500} \text{ units} \end{aligned}$$

$$\begin{aligned} \text{New BEP in units} &= 7500 - 1000 \\ &= 6500 \text{ units} \end{aligned}$$

$$\begin{aligned} \text{New BEP in units} &= \frac{FC}{\text{contribution per unit}} \\ 6500 &= \frac{97500}{\text{contribution/unit}} \\ \text{contribution/unit} &= \frac{97500}{6500} \end{aligned}$$

$$\text{New contribution per unit} = \underline{\underline{Rs. 15}}$$

$$C = S - V$$

$$185 = S - 28$$

$$S = 28 + 15$$

$$\underline{\underline{S = Rs. 43}}$$

Ex. 7 Profit volume ratio of company is 50%. margin of safety is 40%. calculate net profit and break even point if sales volume is Rs. 10,00,000.

$$\rightarrow \text{P/V ratio} = 50\%$$

$$\text{MOS} = 40\%$$

$$\text{Total sales} = 10,00,000$$

$$\text{MOS} = 40\% \times 1000000 \\ = 400000$$

$$\text{MOS} = \frac{\text{Profit}}{\text{PIV ratio}}$$

$$400000 = \frac{\text{Profit}}{50\%}$$

$$\text{Profit} = 400000 \times 50\%$$

$$\text{Profit} = \underline{200000}$$

$$\text{MOS} = \text{Total sales} - \text{Break even point} \quad (\text{sales point})$$

$$400000 = 1000000 - \text{BEPis}$$

$$\text{BEPis} = 1000000 - 400000$$

$$\text{BEPis} = \underline{600000}$$

I. m.p. 7 - marks

Ex. 8 A company manufactures, ^{sales,} articles at RS. 10 per unit. ~~net~~

VC RS. 6 " "

FC RS. 4000

calculate i) PIV ratio ii) BES iii) MOS if total sales is RS. 15000.

iv) sales required to even profit of RS. 5000. v) Amount of profit when sales is RS. 15000.

$$c = P - V = 10 - 6 = 4$$

$$\rightarrow \text{i) PIV Ratio} = \frac{C}{S} \times 100$$

$$= \frac{4}{10} \times 100$$

$$= \underline{40\%}$$

$$2) BES = \frac{FC}{PIV \text{ Ratio}}$$

$$= \frac{4000}{40\%}$$

$$= \underline{RS 10,000}$$

$$3) MOS = \text{Total sales} - BES$$

$$= 15000 - 10000$$

$$= \underline{RS 5000}$$

$$4) \text{ sales} = \frac{F + P}{PIV}$$

$$15000 = \frac{4000 + P}{40\%}$$

$$6000 P = 4000 + P 5000$$

$$P = 6000 - 4000$$

$$P = RS 2000$$

$$\text{Sales} = \underline{RS 22,500}$$

5) OR

$$\text{Profit} = [\text{Sales} \times PIV \text{ Ratio}] - FC$$

$$5000 = [\text{Sales} \times 40\%] - 4000$$

$$5000 + 4000 = \text{Sales} \times 40\%$$

$$\frac{9000}{40\%} = \text{Sales}$$

$$\text{Sales} = \underline{RS 22,500}$$

$$5) \text{ sales} = \frac{F + P}{PIV}$$

$$15000 = \frac{4000 + P}{40\%}$$

$$\begin{aligned}
 15000 \times 40\% &= 4000 + P \\
 6000 &= 4000 + P \\
 6000 - 4000 &= P \\
 P &= 2000
 \end{aligned}$$

Ex: g X limited provide following information for the year:

1st half of the year
~~sales~~ sales ₹ 45000
 TC ₹ 40000

2nd half of the year
~~sales~~ sales ₹ 50000
 TC ₹ 43000

There is no change in FC & VC
 calculate PV ratio, FC & BES.

	sales	TC	Profit (S-T)
1) Profit - First half of year			
2) First half of year	45000	40000	5000
Second half of year	50000	43000	7000
Difference	5000		2000

$$\begin{aligned}
 \text{PV ratio} &= \frac{\text{change in Profit}}{\text{change in sales}} \times 100 \\
 &= \frac{2000}{5000} \times 100 \\
 &= 40\%
 \end{aligned}$$

considering 2nd half as base
 PV ratio = $\frac{C}{S} \times 100$

$$40\% = \frac{C}{50000} \times 100$$

$$C = 50000 \times 40\% = 20000$$

$$C = F + P$$

~~$$20000 = F + 7000$$~~

$$F = 20000 - 7000$$

$$F = \text{Rs } 13000$$

$$\therefore \text{FC of whole year} = 13000 \times 2 \\ = \text{Rs } \underline{\underline{26000}}$$

$$\text{BEP} = \frac{\text{FC}}{\text{P/V Ratio}} \\ = \frac{26000}{40\%} \\ = \text{Rs } \underline{\underline{65000}}$$

P.M.P.

Ex. 10

calculate the following assuming that FC remain same for both periods the sales & Profit as under:

Particulars	1 st half of year	2 nd half of year
Sales	RS 10,30,000	RS 20,46,000
Profit	RS 41,400	RS. 84,600

calculate: 1) P/V ratio 2) BEP 3) Amount of profit or loss if sales were 70000
4) Amount of sales to earn profit of RS 105000.

Particulars	1 st half year	2 nd half year	Diff
Sales	RS 10,30,000	RS 120,46,000	1016000
Profit	RS 41,400	RS 84,600	43,200
Diff.	988600	1461400	

$$\text{PIV ratio} = \frac{\text{change in profit}}{\text{change in sales}} \times 100$$

$$= \frac{43200}{216000} \times 100$$

2nd half year base

$$\text{PIV ratio} = \frac{C}{S} \times 100$$

$$20\% = \frac{C}{12,46,000} \times 100$$

$$C = 12,46,000 \times 20\%$$

$$C = \underline{2,49,200}$$

$$C = F + P$$

$$2,49,200 = F + 84,600$$

$$F = 2,49,200 - 84,600$$

$$F = \underline{1,64,600}$$

$$\text{FC of whole year} = 1,64,600 \times 2$$

$$= \underline{3,29,200}$$

$$\text{BEP} = \frac{\text{FC}}{\text{PIV ratio}}$$

$$= \frac{3,29,200}{20\%}$$

$$= \underline{16,46,000}$$

$$\text{Profit/Loss} = [\text{Sales} \times \text{PIV ratio}] - \text{FC}$$

$$= [12,46,000 \times 20\%] - 3,29,200$$

$$= 2,49,200 - 3,29,200$$

$$= -84,600 \quad [-24,600]$$

$$= \underline{[-1,89,200]}$$

$$\begin{aligned}
 \text{Sales} - \text{Profit} &= [\text{Sales} \times \text{PIV ratio}] - \text{FC} \\
 10,50,000 &= [\text{Sales} \times 20\%] - 3,29,200 \\
 10,50,000 + 3,29,200 &= \text{Sales} \times 20\% \\
 13,79,200 &= \text{Sales} \times 20\% \\
 \text{Sales} &= \frac{13,79,200}{20\%} \\
 \text{Sales} &= \underline{\underline{68,96,000}}
 \end{aligned}$$

Ex. 11 From the following information calculate BEP, Turnover [~~per~~ Sales], required to earn profit of Rs. 36000, m/s.

Fixed overhead = Rs. 1,60,000

VC per unit = Rs. 2

Selling price " " = Rs. 18

$$\begin{aligned}
 \rightarrow C &= S - V \\
 &= 18 - 2 \\
 &= \underline{\underline{16}}
 \end{aligned}$$

$$\begin{aligned}
 \text{PIV ratio} &= \frac{C}{S} \times 100 \\
 &= \frac{16}{18} \times 100 \\
 &= \underline{\underline{88.88\%}}
 \end{aligned}$$

$$\begin{aligned}
 \text{i) BEP} &= \frac{\text{FC}}{\text{PIV ratio}} \\
 &= \frac{1,60,000}{88.89\%} \\
 &= \frac{\text{Rs. } 1,60,000}{0.8889} \\
 &= \underline{\underline{Rs. 179998}}
 \end{aligned}$$

$$\begin{aligned}
 \text{Profit} &= [\text{Sales} \times \text{P/V ratio}] - \text{FC} \\
 36000 &= [\text{Sales} \times 88.89\%] - 1,60,000 \\
 36000 + 1,60,000 &= \text{Sales} \times 88.89\% \\
 \frac{1,96,000}{88.89\%} &= \text{Sales} \\
 \text{Sales} &= \text{Rs } 2,20,497
 \end{aligned}$$

$$\begin{aligned}
 \text{MOS} &= \text{Total Sales} - \text{BES} \\
 &= 2,20,497 - 1,79,997 \\
 &= 40,499
 \end{aligned}$$

$$\begin{aligned}
 \text{MOS} &= \frac{\text{Profit}}{\text{P/V ratio}} \\
 &= \frac{36000}{88.89\%} \\
 &= \text{Rs } 40,499
 \end{aligned}$$

Ex. 12 ~~ABC~~ ABC limited provide info

Year	Sales	Profit
2011	Rs 300000	Rs 30000
2012	Rs 360000	Rs 42,000

calculate

1) P/V ratio, 2) BEP 3) Profit if sales is Rs. 2,70,000 4) sales if MOS is Rs 60,000.

Year	Sales	Profit
2011	300000	30000
2012	360000	42000
Diff	Rs 60000	Rs 12,000

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$$\begin{aligned}
 1) \text{ PIV ratio} &= \frac{\text{change in profit}}{\text{change in sales}} \times 100 \\
 &= \frac{12000}{60000} \times 100 \\
 &= \underline{\underline{20\%}}
 \end{aligned}$$

$$2) \text{ Profit} = [\text{Sales} \times \text{PIV ratio}] - FC$$

3) 1st year as a base

$$\text{PIV ratio} = \frac{C}{S} \times 100$$

$$20\% = \frac{C}{300000} \times 100$$

$$\begin{aligned}
 C &= 300000 \times 20\% \\
 C &= \underline{\underline{60,000}}
 \end{aligned}$$

$$C = FC + \text{Profit}$$

$$60000 = FC + 30000$$

$$FC = 60000 - 30000$$

$$FC = \underline{\underline{30000}}$$

$$\text{BEP} = \frac{FC}{\text{PIV ratio}}$$

$$= \frac{30000}{20\%}$$

$$= \text{Rs. } \underline{\underline{1,50,000}}$$

$$\begin{aligned}
 3) \text{ Profit} &= [\text{Sales} \times \text{PIV ratio}] - FC \\
 \text{Profit} &= [2,70,000 \times 20\%] - 30000 \\
 &= 54,000 - 30000 \\
 &= \underline{\underline{24,000}}
 \end{aligned}$$

$$\begin{aligned} \text{Profit} &= [\text{Sales} \times \text{P/V ratio}] - \text{FC} \\ 60,000 &= [\text{Sales} \times 20\%] - 30,000 \\ 60,000 + 30,000 &= \text{Sales} \times 20\% \\ \text{Sales} &= \frac{90,000}{20\%} \end{aligned}$$

$$\text{Sales} = \underline{\underline{\text{Rs. } 4,50,000}}$$

$$\begin{aligned} \text{MOS} &= \text{TS} - \text{BES} \\ &= 4,50,000 - 1,50,000 \\ &= \underline{\underline{3,00,000}} \\ &= \underline{\underline{\text{Rs. } 3,00,000}} \end{aligned}$$

10A

$$\begin{aligned} \text{MOS} &= \frac{\text{Profit}}{\text{P/V ratio}} \\ &= \frac{60,000}{20\%} \\ &= \underline{\underline{3,00,000}} \end{aligned}$$

Ex. 13 FC = ₹13,000

VC = ₹15,000

Profit = ₹2,000

TC = ₹28,000

Sales = ₹30,000

calculate 1) BEP 2) forecast Profit to earn sales revenue of ₹50,000. 3) Extra sales volume to earn profit of ₹10,000

$$\begin{aligned} \rightarrow C &= S - V \\ &= 30,000 - 15,000 \\ &= \underline{\underline{\text{Rs. } 15,000}} \end{aligned}$$

$$\text{P/V ratio} = \frac{C}{S} \times 100$$

$$= \frac{15000}{30000} \times 100$$

$$= \underline{50\%}$$

$$1) \text{ BEP} = \frac{\text{FC}}{\text{P/V ratio}}$$

$$= \frac{13000}{50\%}$$

$$= \underline{\underline{Rs 26,000}}$$

$$2) \text{ Profit} = [\text{Sales} \times \text{P/V ratio}] - \text{FC}$$

$$= [50000 \times 50\%] - 13000$$

$$= 25000 - 13000$$

$$= \underline{\underline{Rs 12,000}}$$

$$3) \text{ Profit} = [\text{Sales} \times \text{P/V ratio}] - \text{FC}$$

$$10000 = [\text{Sales} \times 50\%] - 13000$$

$$\text{Sales} = \frac{13000 + 10000}{50\%}$$

$$\text{Sales} = \frac{23000}{50\%}$$

$$\text{Sales} = \underline{\underline{Rs 46,000}}$$

Ex. 14 A company requires a contribution margin of 37.5% with an overall contribution ratio of 40%. FC = ₹ 500,000 calculate 1) BEP 2) TS 3) Total VC 4) Profit

"If P/V ratio = 40%, then 60% is VC"
 VC = 60% of sales
 = 60% of sales
 = 60% of 2000000
 = 1200000

$$\begin{aligned} \text{J} \text{ BES} &= \frac{\text{FC}}{\text{P/V ratio}} \\ &= \frac{500000}{40\%} \\ &= \text{Rs } 12,50,000 \end{aligned}$$

7 MOS = 37.5% of sales suppose

$$\begin{aligned} \text{MOS} &= \text{Sales BES} \\ 37.5\% \times \text{Sales} &= \text{Sales} - 12,50,000 \\ \frac{37.5}{100} \times \text{Sales} &= \text{Sales} - 12,50,000 \end{aligned}$$

$$\begin{aligned} 0.375 \text{ sales} - \text{Sales} &= -12,50,000 \\ + 0.625 \text{ sales} &= +12,50,000 \\ \text{Sales} &= \frac{12,50,000}{0.625} \end{aligned}$$

$$\text{Sales} = 20,00,000$$

If P/V ratio = 40%, then 60% is VC.

$$\begin{aligned} 3) \text{ VC} &= 60\% \text{ of sales} \\ &= 60\% \text{ of } 2000000 \\ &= \text{Rs } 1200000 \end{aligned}$$

$$\begin{aligned} 4) \text{ C} &= \text{S} - \text{V} \\ &= 2000000 - 1200000 \\ &= 800000 \end{aligned}$$

$$\begin{aligned} \text{C} &= \text{FC} + \text{P} \\ 800000 &= 500000 + \text{P} \\ 800000 - 500000 &= \text{P} \\ \text{P} &= \text{Rs } 300,000 \end{aligned}$$

Year	Sales	Profit/Loss
2018	Rs. 200000	-10,000 [10000 - (-10000)]
2019	Rs. 400000	10,000 [10000 + 10000]
	Rs. 200000	Rs. [20,000] T=20000

calculate 1) BEP/BES 2) sales to even profit of Rs. 150000 3) Profit when sales is Rs. 300000.

$$\begin{aligned} \text{1) PLV ratio} &= \frac{\text{change in Profit}}{\text{change in sales}} \times 100 \\ &= \frac{20000}{200000} \times 100 \\ &= 10\% \end{aligned}$$

PLV ratio taking a second year as a base

$$\text{PLV ratio} = \frac{S - V}{S} \times 100$$

$$10\% = \frac{400000 - V}{400000} \times 100$$

$$400000 \times 10\% = 400000 - V$$

$$40000 - 400000 = -V$$

$$V = 3,60,000$$

$$10\% = \frac{C}{400000} \times 100$$

$$C = 40000$$

$$C = F + P$$

$$40000 = F + 10000$$

$$40000 - 10000 = F$$

$$FC = 30000$$

$$C = S - V = 400000 - 3,60,000 = 40000$$

$$C = FC + P$$

$$40000 = FC + 10000$$

$$FC = 40000 - 10000$$

$$FC = 30,000$$

$$\begin{aligned} \text{BEP/BES} &= \frac{FC}{\text{PLV ratio}} \\ &= \frac{30000}{10\%} \\ &= \text{RS. } 300000 \end{aligned}$$

$$\begin{aligned} 5) \text{ Profit} &= [\text{Sales} \times \text{PLV ratio}] - FC \\ 50000 &= [\text{Sales} \times 10\%] - 30000 \end{aligned}$$

$$15000 + 30000 = \text{Sales} \times 10\%$$

$$\text{Sales} = \frac{35000}{10\%} = \frac{30000}{10\%} + \frac{45000}{10\%}$$

$$\text{Sales} = \text{RS. } 3,50,000 \quad \text{RS. } 3,00,000 \quad \text{RS. } 4,50,000$$

$$\begin{aligned} 3) \text{ Profit} &= [\text{Sales} \times \text{PLV ratio}] - FC \\ &= [300000 \times 10\%] - 30000 \\ &= 30000 - 30000 \\ &= 0 \end{aligned}$$

<u>Ex. 16</u>	Year	Sales	Profit/Loss
	2018	200000	-10000
	2019	400000	

Ex. 16 calculate break BEP & sales value from the following information.

- direct material cost per unit ₹ 8
- direct labour cost per unit ₹ 5
- Fix overhead ₹ 24,000
- variable overheads 60% of direct labour
- selling price per unit ₹ 25
- trade discount 4% if sales are 20% above the BEP volume determine

$$\begin{aligned}
 &= 60\% \text{ of DL} \\
 &= 60\% \text{ of } 5 \\
 &= \text{Rs } 3^*
 \end{aligned}$$

the net profit.

$$\begin{aligned}
 \rightarrow \text{Total VC} &= \text{DM} + \text{DL} + \text{M} \\
 &= 8 + 5 + 3 \\
 &= \text{Rs } 16
 \end{aligned}$$

$$SP = ₹ 25$$

$$FC = ₹ 24000$$

$$C = S - V = 25 - 16 = \text{Rs } 9$$

$$\text{P/V ratio} = \frac{C}{S} \times 100$$

$$= \frac{9}{25} \times 100$$

$$= \text{Rs } 36\%$$

$$\text{BEP} = \frac{FC}{\text{P/V ratio}}$$

$$= \frac{24000}{36\%}$$

$$36\%$$

$$= \text{Rs } 66,667$$

$$\text{New sales} = \text{BEP} + 20\%$$

$$= 66667 + 20\%$$

$$= \text{Rs } 80000$$

$$\text{BEP sales} = \frac{F + P}{\text{P/V}}$$

$$80000 = \frac{24000 + P}{36\%}$$

$$36\%$$

$$\begin{aligned}
 80000 \times 36\% &= 24000 + P \\
 28800 &= 24000 + P \\
 P &= 28800 - 24000 \\
 P &= \underline{\underline{Rs. 4,800}}
 \end{aligned}$$

Ex 17 dealer in garment industry supply following information.
 number of shirts sold annually 24000.

SP per shirt ~~Rs. 800~~

variable cost per shirt ~~Rs. 600~~

Fix overheads are as under
 salary ~~Rs. 240000~~, general cost ~~Rs. 80000~~
 advertisement cost Rs. 300000.

calculate 1) BEP in amount & in units 2) assume that 30000 ^{shirt} were sold during the year & find out net profit 3) Assume that in the next year no additional staff salary of Rs. 100000 will be incurred & the price of shirt will increase by 15%. what should be the BEP in units & in amount.

→ No. shirts sold = 24000 shirts

SP / unit = Rs. 800

VC / unit = Rs. 600

Total FC = staff salary + general cost + advertisement cost.

$$\begin{aligned}
 &= 2,40,000 + 80,000 + 3,00,000 \\
 &= \underline{\underline{Rs. 4,00,000}}
 \end{aligned}$$

$$C = S - V$$

$$= 800 - 600$$

$$= \underline{\underline{RS. 200}}$$

$$P/V \text{ ratio} = \frac{C}{S} \times 100$$

$$= \frac{200}{800} \times 100$$

$$= \underline{\underline{25\%}}$$

$$i) \text{ BEP} = \frac{FC}{C}$$

[units] contribution per unit

$$= \frac{40,00,000}{200}$$

$$= \underline{\underline{20000 \text{ units}}}$$

BEP

$$= \frac{FC}{P/V \text{ ratio}}$$

[Amount]

P/V ratio

$$= \frac{40,00,000}{25\%}$$

25%

$$= \underline{\underline{RS. 1,60,00,000}}$$

$$\text{Margin} = \frac{\text{Total Sales} - \text{BEP in unit}}{\text{in units}}$$

$$= 24000 - 20000$$

$$= \underline{\underline{4000 \text{ units}}}$$

$$5224000$$

$$\times 400$$

$$= 1920000$$

Margin
[Amount]

$$= \frac{\text{Profit}}{\text{Total Sales} - \text{BEP in Amount}}$$

$$= \frac{192,00,000}{1,60,00,000}$$

$$= \underline{\underline{RS. 32,00,000}}$$

$$\text{Sales in Rs.} = 3000 \times 300 \\ = 900000$$

$$\begin{aligned} \text{Profit} &= [\text{Sales} \times \text{PV ratio}] - \text{FC} \\ &= [900000 \times 25\%] - 400000 \\ &= 225000 - 400000 \\ &= -175000 \end{aligned}$$

$$\begin{aligned} \text{3) FC} &= 41,00,000 \\ \text{GP} &= \text{Rs } 800 + 20\% \\ &= \text{Rs } 920 \\ \text{VC} &= \text{Rs } 19.600 \\ C &= 5 - 1 \\ &= 920 - 600 \\ &= \text{Rs } 320 \end{aligned}$$

$$\begin{aligned} \text{PV ratio} &= \frac{C}{S} \times 100 \\ &= \frac{320}{920} \times 100 \\ &= 34.78\% \end{aligned}$$

$$\begin{aligned} \text{BE Pion} &= \frac{\text{FC}}{\text{contribution per unit}} \\ &= \frac{41,00,000}{320} \\ &= 12812.5 \therefore \underline{12813 \text{ units}} \end{aligned}$$

$$\begin{aligned} \text{BE Pion} &= \frac{\text{FC}}{[\text{Amount}] \times \text{PV ratio}} \\ &= \frac{41,00,000}{34.78\%} \\ &= \text{Rs } 11788084 \end{aligned}$$

Q. 18 Following is the information of a limited.

Days	Sales	Profit
Total of		
Monday	20000	42000
change	30000	18000

calculate JGES & Profit/Loss on sales of Rs. 60000 which occurred on Wednesday.

→ Suppose amount

	Sales	Profit
Mon	x	x
Tue	x + 30000	x + 18000
change	30000	18000

Total sales = Monday sales + Tuesday sales

$$20000 = x + x + 30000$$

$$20000 - 30000 = 2x$$

$$17000 = 2x$$

$$x = \frac{17000}{2}$$

$$x = 8500$$

Monday sales = Rs. 85000

Tuesday sales = x + 30000

$$= 85000 + 30000$$

$$= \underline{\underline{Rs. 1,15,000}}$$

Total Profit = Profit of Mon + Profit of Tues.

$$42000 = 0 + x + 18000$$

$$42000 - 18000 = 2x$$

$$x = 24000$$

$$x = \text{Rs. } 12,000$$

Profit of Monday = Rs. 12000

$$\text{Profit of Tuesday} = x + 18000$$

$$= 12000 + 18000$$

PN ratio = $\frac{\text{change in profit}}{\text{change in sales}} \times 100$

$$= \frac{18000}{30000} \times 100$$

$$= 60\%$$

Taking Monday as a base:

$$\text{PN ratio} = \frac{C}{S} \times 100$$

$$60\% = \frac{C}{83000}$$

$$83000$$

$$C = 83000 \times 60\%$$

$$C = \text{Rs. } 51000$$

$$C = F + P$$

$$51000 = F + 12000$$

$$F = 51000 - 12000$$

$$F = \text{Rs. } 39000$$

$$\text{JGEP} = \text{PF}$$

PN ratio

$$= \frac{39000}{60\%}$$

$$60\%$$

$$= \text{Rs. } 65000$$

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$$\begin{aligned}
 \text{Profit / loss} &= [\text{Sales} \times \text{PLV ratio}] - \text{FC} \\
 &= [60000 \times 50\%] - 39000 \\
 &= 30000 - 39000 \\
 &= [-9000]
 \end{aligned}$$

Ex. 19 calculate i) BEP in units & amounts
 ii) Profit when sales is Rs. 1,00,000
 & Rs. 80,000 iii) sales when profit is
 Rs. 30,000

$$\text{FC} = \text{Rs. } 40,000$$

$$\text{VC per unit} = \text{Rs. } 2$$

$$\text{Selling Price per unit} = \text{Rs. } 10$$

$$\begin{aligned}
 \text{PLV ratio} &= C = S - V \\
 &= 10 - 2 \\
 &= 8
 \end{aligned}$$

$$\begin{aligned}
 \text{PLV ratio} &= \frac{C}{S} \times 100 \\
 &= \frac{8}{10} \times 100 \\
 &= \underline{\underline{80\%}}
 \end{aligned}$$

$$\begin{aligned}
 \text{BEP in units} &= \frac{\text{FC}}{\text{contribution per unit}} \\
 &= \frac{40000}{8} \\
 &= \underline{\underline{5000 \text{ units}}}
 \end{aligned}$$

$$\begin{aligned}
 \text{b) BEP in Amt} &= \frac{FC}{\text{PV-ratio}} \\
 &= \frac{40000}{80\%} \\
 &= \underline{\underline{RS. 50,000}}
 \end{aligned}$$

$$\begin{aligned}
 \text{c) Profit} &= [\text{Sales} \times \text{PV-ratio}] - FC \\
 &= [100000 \times 80\%] - 40000 \\
 &= [80000 - 40000] \\
 &= \underline{\underline{RS. 40000}}
 \end{aligned}$$

$$\begin{aligned}
 \text{Profit} &= [\text{Sales} \times \text{PV-ratio}] - FC \\
 &= [80000 \times 80\%] - 40000 \\
 &= 64000 - 40000 \\
 &= \underline{\underline{RS. 24000}}
 \end{aligned}$$

$$\begin{aligned}
 \text{3) Profit} &= [\text{Sales} \times \text{PV-ratio}] - FC \\
 30000 &= [\text{Sales} \times 80\%] - 40000 \\
 30000 + 40000 &= \text{Sales} \times 80\% \\
 \text{Sales} &= \frac{70000}{80\%} \\
 \text{Sales} &= \underline{\underline{RS. 87,500}}
 \end{aligned}$$