

Chapter #12 – Marginal Costing

CHAPTER 12

MARGINAL COSTING

Category	MARGINAL COSTING VS. ABSORPTION COSTING
1	

Illustration 1

Wonder Ltd. manufactures a single product, ZEST. The following figures relate to ZEST for a one-year period:

Activity Level	50%	100%
Sales and production (units)	400	800
Sales (₹ lakhs)	8.00	16.00
Production costs (₹ lakhs):		
- Variable	3.20	6.40
- Fixed	1.60	1.60
Selling and distribution costs (₹ lakhs):		
- Variable	1.60	3.20
- Fixed	2.40	2.40

The normal level of activity for the year is 800 units. Fixed costs are incurred evenly throughout the year, and actual fixed costs are the same as budgeted. There were no stocks of ZEST at the beginning of the year.

In the first quarter, 220 units were produced and 160 units were sold.

Required:

- COMPUTE the fixed production costs absorbed by ZEST if absorption costing is used?
- CALCULATE the under/over-recovery of overheads during the period?
- CALCULATE the profit using absorption costing?
- CALCULATE the profit using marginal costing?

[Answer: ₹ 44,000; ₹ 4,000 Over; ₹ 40,000; ₹ 28,000]

Illustration 2

XYZ Ltd. has a production capacity of 2,00,000 units per year. Normal capacity utilisation is reckoned as 90%. Standard variable production costs are ₹ 11 per unit. The fixed costs are ₹ 3,60,000 per year. Variable selling costs are ₹ 3 per unit and fixed selling costs are ₹ 2,70,000 per year. The unit selling price is ₹ 20.

In the year just ended on 30th June, 20X4, the production was 1,60,000 units and sales were 1,50,000 units. The closing inventory on 30th June was 20,000 units. The actual variable production costs for the year were ₹ 35,000 higher than the standard.

- CALCULATE the profit for the year
 - by absorption costing method and
 - by marginal costing method.
- EXPLAIN the difference in the profits.

[Answer: ₹ 2,59,375; ₹ 2,39,375; Stock Valuation]

Illustration 3

ABC Ltd. can produce 4,00,000 units of a product per annum at 100% capacity. The variable production costs are ₹ 40 per unit and the variable selling expenses are ₹ 12 per sold unit. The budgeted fixed production expenses were ₹ 24,00,000 per annum and the fixed selling expenses were ₹ 16,00,000. During the year ended 31st March, 2014, the company worked at 80% of its capacity.

The operating data for the year are as follows:

Production	3,20,000 units
Sales @ ₹ 80 per unit	3,10,000 units
Opening stock of finished goods	40,000 units

Fixed production expenses are absorbed on the basis of capacity and fixed selling expenses are recovered on the basis of period.

You are required to prepare Statements of Cost and Profit for the year ending 31st March, 2014:

- (a) On the basis of marginal costing
- (b) On the basis of absorption costing

[Answer: ₹ 46,80,000; ₹ 47,40,000]

Illustration 4

Mega Company has just completed its first year of operations. The unit costs on a normal costing basis are as under:

	(₹)
Direct material 4 kg @ ₹ 4	16.00
Direct labour 3 hrs @ ₹ 18	54.00
Variable overhead 3 hrs @ ₹ 4	12.00
Fixed overhead 3 hrs @ ₹ 6	18.00

Selling and administrative costs:

Variable	₹ 20 per unit
Fixed	₹ 7,60,000

During the year the company has the following activity:

Units produced	24,000
Units sold	21,500
Unit selling price	₹ 168
Direct labour hours worked	72,000

Actual fixed overhead was ₹ 48,000 less than the budgeted fixed overhead. Budgeted variable overhead was ₹ 20,000 less than the actual variable overhead. The company used an expected actual activity level of 72,000 direct labour hours to compute the predetermine overhead rates.

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Required:

- (a) Compute the unit cost and total income under:
 - (i) Absorption costing
 - (ii) Marginal costing
- (b) Under or over absorption of overhead.
- (c) Reconcile the difference between the total income under absorption and marginal costing.

[Answer to (a)(i): ₹ 100.83; ₹ 3,02,083]

[Answer to (a)(ii): ₹ 82.83; ₹ 2,57,083]

[Answer to (b): Fixed- ₹ 48,000 over; Variable- ₹ 20,000 under]

[Answer to (c): ₹ 45,000 difference]

Category	BREAK-EVEN SALES & MARGIN OF SAFETY
2	

Illustration 5

You are given the following particulars:

1. Fixed cost ₹ 1,50,000
2. Variable cost ₹ 15 per unit
3. Selling price is ₹ 30 per unit

CALCULATE:

- (a) Break-even point
- (b) Sales to earn a profit of ₹ 20,000

[Answer: 10,000 units; ₹ 3,40,000]

Illustration 6

An Indian soft drink company is planning to establish a subsidiary company in Bhutan to produce mineral water. Based on the estimated annual sales of 40,000 bottles of the mineral water, cost studies produced the following estimates for the Bhutanese subsidiary:

Particulars	Total Annual costs (₹)	% Variable
Material	2,10,000	100%
Labour	1,50,000	80%
Factory Overheads	92,000	60%
Administration Expenses	40,000	35%

The Bhutanese production will be sold by manufacturer's representatives who will receive a commission of 8% of the sale price. No portion of the Indian office expenses is to be allocated to the Bhutanese subsidiary. You are required to

- (a) COMPUTE the sale price per bottle to enable the management to realize an estimated 10% profit on sale proceeds in Bhutan.
- (b) CALCULATE the break-even point in rupees sales as also in number of bottles for the Bhutanese subsidiary on the assumption that the sale price is ₹ 14 per bottle.

[Answer: ₹ 15; ₹ 4,48,000]

Illustration 7

A company has three factories situated in north, east and south with its Head Office in Mumbai. The management has received the following summary report on the operations of each factory for a period:

Zone	Sales		Profit	
	Actual	Over/(Under) Budget	Actual	Over/(Under) Budget
North	1,100	(400)	135	(180)
East	1,450	150	210	90
South	1,200	(200)	330	(110)

CALCULATE for each factory and for the company as a whole for the period:

- (a) the fixed costs.
- (b) break-even sales.

[Answer: ₹ 1,350; ₹ 2,500]

Illustration 8

A company sells its product at ₹ 15 per unit. In a period, if it produces and sells 8,000 units, it incurs a loss of ₹ 5 per unit. If the volume is raised to 20,000 units, it earns a profit of ₹ 4 per unit. CALCULATE break-even point both in terms of Value as well as in units.

[Answer: 12,000 units; ₹ 1,80,000]

Illustration 9

The product mix of a Gama Ltd. is as under:

Particulars	Product M	Product N
Units	54,000	18,000
Selling price	₹ 7.50	₹ 15.00
Variable cost	₹ 6.00	₹ 4.50

FIND the break-even points in units, if the company discontinues product 'M' and replace with product 'O'. The quantity of product 'O' is 9,000 units and its selling price and variable costs respectively are ₹ 18 and ₹ 9. Fixed Cost is ₹ 15,000.

[Answer: 1,000 units; 500 units]

Illustration 10

Mr. X has ₹ 2,00,000 investments in his business firm. He wants a 15 per cent return on his money. From an analysis of recent cost figures, he finds that his variable cost of operating is 60 per cent of sales, his fixed costs are ₹ 80,000 per year.

Show COMPUTATIONS to answer the following questions:

- (a) What sales volume must be obtained to break even?
- (b) What sales volume must be obtained to get 15 per cent return on investment?

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- (c) Mr. X estimates that even if he closed the doors of his business, he would incur ₹ 25,000 as expenses per year. At what sales would he be better off by locking his business up?

[Answer: (i) ₹ 2,00,000; (ii) ₹ 2,75,000; (iii) ₹ 1,37,500]

Illustration 11

A company earned a profit of ₹ 30,000 during the year 20X4. If the marginal cost and selling price of the product are ₹ 8 and ₹ 10 per unit respectively, FIND OUT the amount of margin of safety.

[Answer: ₹ 1,50,000]

Illustration 12

A Ltd. maintains margin of safety of 37.5% with an overall contribution to sales ratio of 40%. Its fixed costs amount to ₹ 5 lakhs.

CALCULATE the following:

- Break-even sales
- Total sales
- Total variable cost
- Current profit
- New 'margin of safety' if the sales volume is increased by 7 ½ %.

[Answer: (i) ₹ 12,50,000; (ii) ₹ 20,00,000; (iii) ₹ 12,00,000]

[Answer: (iv) ₹ 3,00,000; (v) ₹ 9,00,000]

Illustration 13

You are given the following data:

Year	Sales (₹)	Profit(₹)
20X8	1,20,000	8,000
20X9	1,40,000	13,000

FIND OUT:

- P/V ratio,
- B.E. Point,
- Profit when sales are ₹ 1,80,000,
- Sales required earn a profit of ₹ 12,000,
- Margin of safety in year 20X9

[Answer: (i) 25% (ii) ₹ 88,000; (iii) ₹ 23,000; (iv) ₹ 1,36,000; (v) ₹ 52,000]

Illustration 14

A company has made a profit of ₹ 50,000 during the year 20X8-X9. If the selling price and marginal cost of the product are ₹ 15 and ₹ 12 per unit respectively, FIND OUT the amount of margin of safety.

[Answer: ₹ 2,50,000]

Illustration 15

A. If margin of safety is ₹ 2,40,000 (40% of sales) and P/V ratio is 30% of AB Ltd, CALCULATE the following:

- 1) Break even sales, and
- 2) Amount of profit on sales of ₹ 9,00,000.

B. X Ltd. has earned a contribution of ₹ 2,00,000 and net profit of ₹ 1,50,000 of sales of ₹ 8,00,000. What is its margin of safety?

[Answer to A(1): ₹ 3,60,000; A(2) ₹ 1,62,000]

[Answer to B: ₹ 6,00,000]

Illustration 16

A company had incurred fixed expenses of ₹ 4,50,000, with sales of ₹ 15,00,000 and earned a profit of ₹ 3,00,000 during the first half year. In the second half, it suffered a loss of ₹ 1,50,000.

CALCULATE:

- (a) The profit-volume ratio, break-even point and margin of safety for the first half year.
- (b) Expected sales volume for the second half year assuming that selling price and fixed expenses remained unchanged during the second half year.
- (c) The break-even point and margin of safety for the whole year.

[Answer to (a): 50%; ₹ 9,00,000; ₹ 6,00,000]

[Answer to (b): ₹ 6,00,000]

[Answer to (c): ₹ 18,00,000; ₹ 3,00,000]

Illustration 17

The following information is given by Star Ltd.:

Margin of Safety	₹ 1,87,500
Total Cost	₹ 1,93,750
Margin of Safety	3,750 units
Break-even Sales	1,250 units

Required:

CALCULATE Profit, P/V Ratio, BEP Sales (in ₹) and Fixed Cost.

[Answer: ₹ 56,250; 30%; ₹ 62,500; ₹ 18,750]

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Illustration 18

PQ Ltd. reports the following cost structure at two capacity levels:

Particulars	(100% capacity)	(75% capacity)
	2,000 units	1,500 units
Production overhead I	₹ 3 per unit	₹ 4 per unit
Production overhead II	₹ 2 per unit	₹ 2 per unit

If the selling price, reduced by direct material and labour is ₹ 8 per unit, what would be its break-even point?

[Answer: 1,000 units]

Illustration 19

A Company sells two products, J and K. The sales mix is 4 units of J and 3 units of K. The contribution margins per unit are ₹ 40 for J and ₹ 20 for K. Fixed costs are ₹ 6,16,000 per month. Compute the break-even point.

[Answer: 11,200 units; 8,400 units]

Illustration 20

MFN Limited started its operation in 2012 with the total production capacity of 2,00,000 units. The following data for two years is made available to you:

	2012	2013
Sales units	80,000	1,20,000
Total cost (₹)	34,40,000	45,60,000

There has been no change in the cost structure and selling price and it is expected to continue in 2014 as well. Selling price is ₹ 40 per unit.

You are required to calculate:

- Break-Even Point (in units)
- Profit at 75% of the total capacity in 2014

[Answer: 1,00,000 units; ₹ 6,00,000]

Category	P/V RATIO & APPLICATION
3	

Illustration 21

If P/V ratio is 60% and the Marginal cost of the product is ₹ 20. CALCULATE the selling price?

[Answer: ₹ 50]

Illustration 22

The ratio of variable cost to sales is 70%. The break-even point occurs at 60% of the capacity sales. Find the capacity sales when fixed costs are ₹ 90,000. Also COMPUTE profit at 75% of the capacity sales.

[Answer: ₹ 5,00,000; ₹ 22,500]

Illustration 23

A company has a P/V ratio of 40%. COMPUTE by what percentage must sales be increased to offset: 20% reduction in selling price?

[Answer: 2 times]

Illustration 24

PQR Ltd. has furnished the following data for the two years:

	20X3	20X4
Sales	₹ 8,00,000	?
Profit/Volume Ratio (P/V ratio)	50%	37.5%
Margin of Safety sales as a % of total sales	40%	21.875%

There has been substantial savings in the fixed cost in the year 20X4 due to the restructuring process. The company could maintain its sales quantity level of 20X3 in 20X4 by reducing selling price.

You are required to CALCULATE the following:

- (a) Sales for 20X4 in Value,
- (b) Fixed cost for 20X4,
- (c) Break-even sales for 20X4 in Value.

[Answer: ₹ 6,40,000; ₹ 5,00,000; ₹ 1,87,500]

Illustration 25

	(₹)
A. DETERMINE profit, when:	
sales	2,00,000
Fixed Cost	40,000
BEP	1,60,000
B. DETERMINE sales, when:	
fixed cost	20,000
Profit	10,000
BEP	40,000

[Answer: ₹ 10,000; ₹ 60,000]

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Illustration 26

An automobile manufacturing company produces different models of Cars. The budget in respect of model 007 for the month of March, 20X9 is as under:

Budgeted Output: 40,000 Units

Particulars	₹ In lakhs	₹ In lakhs
Net Realisation		2,10,000
Variable Costs:		
Materials	79,200	
Labour	15,600	
Direct expenses	<u>37,200</u>	1,32,000
Specific Fixed Costs	27,000	
Allocated Fixed Costs	<u>33,750</u>	<u>60,750</u>
	Total Costs	1,92,750
	Profit	<u>17,250</u>
	Sales	<u>2,10,000</u>

CALCULATE:

- Profit with 10 percent increase in selling price with a 10 percent reduction in sales volume.
- Volume to be achieved to maintain the original profit after a 10 percent rise in material costs, at the originally budgeted selling price per unit.

[Answer: ₹ 25,350 lakhs; 44,521 units]

Illustration 27

A single product company sells its product at ₹ 60 per unit. In 20X8, the company operated at a margin of safety of 40%. The fixed costs amounted to ₹ 3,60,000 and the variable cost ratio to sales was 80%.

In 20X9, it is estimated that the variable cost will go up by 10% and the fixed cost will increase by 5%.

- FIND the selling price required to be fixed in 20X9 to earn the same P/V ratio as in 20X8.
- Assuming the same selling price of ₹ 60 per unit in 20X9, FIND the number of units required to be produced and sold to earn the same profit as in 20X8.

[Answer: ₹ 66; 85,834 units]

Illustration 28

A company produces single product which sells for ₹ 20 per unit. Variable cost is ₹ 15 per unit and Fixed overhead for the year is ₹ 6,30,000.

Required:

- (a) Calculate sales value needed to earn a profit of 10% on sales.
- (b) Calculate sales price per unit to bring BEP down to 1,20,000 units.
- (c) Calculate margin of safety sales if profit is ₹ 60,000.

[Answer: ₹ 42,00,000; ₹ 20.25; 25%]

Illustration 29

A company has fixed cost of ₹ 90,000, Sales ₹ 3,00,000 and Profit of ₹ 60,000.

Required:

- (a) Sales volume if in the next period, the company suffered a loss of ₹ 30,000.
- (b) What is the margin of safety for a profit of ₹ 90,000?

[Answer: ₹ 1,20,000; ₹ 1,80,000]

Illustration 30

Product Z has a profit-volume ratio of 28%. Fixed operating costs directly attributable to product Z during the quarter II of the financial year 2013-14 will be ₹ 2,80,000.

Calculate the sales revenue required to achieve a quarterly profit of ₹ 70,000.

[Answer: ₹ 12,50,000]

Illustration 31

Following information are available for the year 2013 and 2014 of PIX Limited:

Year	2013	2014
Sales	₹ 32, 00,000	₹ 57, 00,000
Profit/ (Loss)	(₹ 3,00,000)	₹ 7, 00,000

Calculate

- (a) P/V ratio,
- (b) Total fixed cost, and
- (c) Sales required to earn a Profit of ₹ 12,00,000.

[Answer: 40%; ₹ 15,80,000; ₹ 69,50,000]

Illustration 32

MNP Ltd sold 2,75,000 units of its product at ₹ 37.50 per unit. Variable costs are ₹ 17.50 per unit (manufacturing costs of ₹ 14 and selling cost ₹ 3.50 per unit). Fixed costs are incurred uniformly throughout the year and amount to ₹ 35,00,000 (including depreciation of ₹ 15,00,000). There are no beginning or ending inventories.

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Required:

- Estimate breakeven sales level quantity and cash breakeven sales level quantity.
- Estimate the P/V ratio.
- Estimate the number of units that must be sold to earn an income (EBIT) of ₹ 2,50,000.
- Estimate the sales level achieve an after-tax income (PAT) of ₹ 2,50,000. Assume 40% corporate Income Tax rate.

[Answer to (i): 1,75,000 units ; 1,00,000 units]

[Answer to (ii): 53.33%]

[Answer to (iii): 1,87,500 units]

[Answer to (iv): ₹ 73,43,750]

Illustration 33

The P/V Ratio of Delta Ltd. is 50% and margin of safety is 40%. The company sold 500 units for ₹ 5,00,000. You are required to calculate:

- Break-even point, and
- Sales in units to earn a profit of 10% on sales

[Answer: 300 units ; 375 units]

Illustration 34

The following figures are related to LM Limited for the year ending 31st March, 2014 :

Sales	24,000 units @ ₹ 200 per unit;
P/V Ratio	25% and
Break-even Point	50% of sales.

You are required to calculate:

- Fixed cost for the year
- Profit earned for the year
- Units to be sold to earn a target net profit of ₹ 11,00,000 for a year.
- Number of units to be sold to earn a net income of 25% on cost.
- Selling price per unit if Break-even Point is to be brought down by 4,000 units.

[Answer to (i): ₹ 6,00,000]

[Answer to (ii): ₹ 6,00,000]

[Answer to (iii): 34,000 units]

[Answer to (iv): 60,000 units]

[Answer to (v): ₹ 225]

Illustration 35

SHA Limited provides the following trading results:

Year	Sale (₹)	Profit
2012-13	25,00,000	10% of Sale
2013-14	20,00,000	8% of Sale

You are required to calculate:

- (a) Fixed Cost
- (b) Break Even Point
- (c) Amount of profit, if sale is ₹ 30,00,000
- (d) Sale, when desired profit is ₹ 4,75,000
- (e) Margin of Safety at a profit of ₹ 2,70,000

*[Answer to (i): ₹ 2,00,000]
 [Answer to (ii): ₹ 11,11,111]
 [Answer to (iii): ₹ 3,40,000]
 [Answer to (iv): ₹ 37,50,000]
 [Answer to (v): ₹ 15,00,000]*

Category	BREAK-EVEN CHART & PROFIT GRAPH
4	

Illustration 36

You are given the following data for the year 20X7 of Rio Co. Ltd:

Variable cost	60,000	60%
Fixed cost	30,000	30%
Net profit	10,000	10%
Sales	1,00,000	100%

FIND OUT

- (a) Break-even point,
- (b) P/V ratio, and
- (c) Margin of safety.

Also DRAW a break-even chart showing contribution and profit.

[Answer: ₹ 75,000; 40%; ₹ 25,000]

Illustration 37

A. You are given the following data for the coming year for a factory.

Budgeted output	8,00,000 units
Fixed expenses	₹ 40,00,000
Variable expenses per unit	₹ 100
Selling price per unit	₹ 200

DRAW a break-even chart showing the break-even point.

B. If price is reduced to ₹ 180, what will be the new break-even point?

[Answer: 40,000 units; 50,000 units]

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Illustration 38

PREPARE a profit graph for products A, B and C and find break-even point from the following data:

Products	A	B	C	Total
Sales (₹)	7,500	7,500	3,750	18,750
Variable cost (₹)	1,500	5,250	4,500	11,250
Fixed cost (₹)	---	---	---	5,000

[Answer: ₹ 12,500]

Category	MISCELLANEOUS
5	

Illustration 39

Arnav Ltd. manufacture and sales its product R-9. The following figures have been collected from cost records of last year for the product R-9:

Elements of Cost	Variable Cost portion	Fixed Cost
Direct Material	30% of Cost of Goods Sold	--
Direct Labour	15% of Cost of Goods Sold	--
Factory Overhead	10% of Cost of Goods Sold	₹ 2,30,000
General & Administration Overhead	2% of Cost of Goods Sold	₹ 71,000
Selling & Distribution Overhead	4% of Cost of Sales	₹ 68,000

Last Year 5,000 units were sold at ₹ 185 per unit. From the given data find the followings:

- Break-even Sales (in rupees)
- Profit earned during last year
- Margin of safety (in %)
- Profit if the sales were 10% less than the actual sales.

[Answer: ₹ 6,90,882; ₹ 1,25,000; 25.31%; ₹ 75,600]

Illustration 40

Maxim Ltd. manufactures a product "N-joy". In the month of August 2014, 14,000 units of the product "N-joy" were sold, the details are as under:

	(₹)
Sale Revenue	2,52,000
Direct Material	1,12,000
Direct Labour	49,000
Variable Overheads	35,000
Fixed Overheads	28,000

A forecast for the month of September 2014 has been carried out by the General manger of Maxim Ltd. As per the forecast, price of direct material and variable overhead will be increased by 10% and 5% respectively.

Required to calculate:

- (a) Number of units to be sold to maintain the same quantum of profit that made in August 2014.
- (b) Margin of safety in the month of August 2014 and September 2014.

[Answer: 18,212 units; ₹ 1,26,000; ₹ 1,63,902.44]

Illustration 41

Maryanne Petrochemicals Ltd. is operating at 80 % capacity and presents the following information:

Break-even Sales	₹ 400 crores
P/V Ratio	30 %
Margin of Safety	₹ 120 crores

Maryanne's management has decided to increase production to 95 % capacity level with the following modifications:

- (a) The selling price will be reduced by 10%.
- (b) The variable cost will be increased by 2% on sales
- (c) The fixed costs will increase by ₹ 50 crores, including depreciation on additions, but excluding interest on additional capital.

Additional capital of ₹ 100 crores will be needed for capital expenditure and working capital.

Required:

- (a) Indicate the sales figure, with the working, that will be needed to earn ₹ 20 crores over and above the present profit and also meet 15% interest on the additional capital.
- (b) What will be the revised
 - (i) Break-even Sales
 - (ii) P/V Ratio
 - (iii) Margin of Safety

[Answer to (a): ₹ 860.71 crores]

[Answer to (b): ₹ 660.71 crores; 28%; ₹ 200 crores]

Illustration 42

Zed Limited sells its product at ₹ 30 per unit. During the quarter ending on 31st March, 2014, it produced and sold 16,000 units and suffered a loss of ₹ 10 per unit. If the volume of sales is raised to 40,000 units; it can earn a profit of ₹ 8 per unit.

You are required to calculate:

- (a) Break Even Point in Rupees.
- (b) Profit if the sale volume is 50,000 units.
- (c) Minimum level of production where the company needs not to close the production if unavoidable fixed cost is ₹ 1,50,000.

[Answer: ₹ 7,20,000; ₹ 5,20,000 ; 16,500 units]

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Illustration 43

Maximum Production capacity of KM (P) Ltd. is 28,000 units per month. Output at different levels along with cost data is furnished below:

Particulars of Costs	Activity Level		
	16,000 units	18,000 units	20,000 units
Direct Material	₹ 12,80,000	₹ 14,40,000	₹ 16,00,000
Direct labour	₹ 17,60,000	₹ 19,80,000	₹ 22,00,000
Total factory overheads	₹ 22,00,000	₹ 23,70,000	₹ 25,40,000

You are required to work out the selling price per unit at an activity level of 24,000 units by considering profit at the rate of 25% on sales.

[Answer: ₹ 413.33]

Illustration 44

SK Lit. is engaged in the manufacture of tyres. Analysis of income statement indicated a profit of ₹ 150 lakhs on a sales volume of 50,000 units. The fixed costs are ₹ 850 lakhs which appears to be high. Existing selling price is ₹ 3,400 per unit. The company is considering to revise the profit target to ₹ 350 lakhs. You are required to compute –

- Break- even point at existing levels in units and in rupees.
- The number of units required to be sold to earn the target profit.
- Profit with 15% increase in selling price and drop in sales volume by 10%.
- Volume to be achieved to earn target profit at the revised selling price as calculated in (ii) above, if a reduction of 8% in the variable costs and ₹ 85 lakhs in the fixed cost is envisaged.

[Answer to (a): 42,500 units; ₹ 1,445 lakhs]

[Answer to (b): 60,000 units]

[Answer to (c): ₹ 279.50 lakhs]

[Answer to (d): 42,525 units]

Illustration 45

A company gives the following information:

Margin of Safety	₹ 3,75,000
Total Cost	₹ 3,87,500
Margin of Safety (Qty.)	15,000 units
Break Even Sales in Units	5,000 units

You are required to calculate:

- Selling price per unit
- Profit
- Profit/ Volume Ratio
- Break Even Sales (in Rupees)
- Fixed Cost

[Answer: ₹ 25; ₹ 1,12,500; 30%; ₹ 1,25,000; ₹ 37,500]

Illustration 46

The following are cost data for three alternative ways of processing the clerical work for cases brought before the LC Court System:

Particulars	A	B	C
	Manual (₹)	Semi-Automatic (₹)	Fully-Automatic (₹)
Monthly fixed costs:			
Occupancy	15,000	15,000	15,000
Maintenance contract	---	5,000	10,000
Equipment lease	---	25,000	1,00,000
Variable costs (per report):			
- Supplies	40	80	20
- Labour	₹200	₹60	₹20
	(5 hrs × ₹ 40)	(1 hr × ₹ 60)	(0.25 hr × ₹ 80)

Required

- (a) CALCULATE cost indifference points. Interpret your results.
- (b) If the present case load is 600 cases and it is expected to go up to 850 cases in near future, SELECT most appropriate on cost considerations?

[Answer to (a): ₹ 300; ₹ 550; ₹ 800]

[Answer to (b): C]

Illustration 47

XY Ltd. makes two products X and Y, whose respective fixed costs are F1 and F2. You are given that the unit contribution of Y is one fifth less than the unit contribution of X, that the total of F 1 and F2 is ₹ 1,50,000, that the BEP of X is 1,800 units (for BEP of X, F2 is not considered) and that 3,000 units is the indifference point between X and Y.(i.e. X and Y make equal profits at 3,000 unit volume, considering their respective fixed costs). There is no inventory build up as whatever is produced is sold.

Required

FIND OUT the values F1 and F2 and units contributions of X and Y.

[Answer: ₹ 90,000; ₹ 60,000; ₹ 50; ₹ 40]

Illustration 48

MNP Ltd sold 2,75,000 units of its product at ₹ 37.50 per unit. Variable costs are ₹ 17.50 per unit (manufacturing costs of ₹ 14 and selling cost ₹ 3.50 per unit). Fixed costs are incurred uniformly throughout the year and amounting to ₹ 35,00,000 (including depreciation of ₹ 15,00,000). There is no beginning or ending inventories.

Required:

COMPUTE breakeven sales level quantity and cash breakeven sales level quantity.

[Answer: 1,75,000 units; 1,00,000 units]

Chapter #12 – Marginal Costing

Illustration 49

A company can make any one of the 3 products X, Y or Z in a year. It can exercise its option only at the beginning of each year.

Relevant information about the products for the next year is given below.

Particulars	X	Y	Z
Selling Price (₹ / unit)	10	12	12
Variable Costs (₹ / unit)	6	9	7
Market Demand (unit)	3,000	2,000	1,000
Production Capacity (unit)	2,000	3,000	900
Fixed Costs (₹)	30,000		

Required

COMPUTE the opportunity costs for each of the products.

[Answer: ₹ 6,000; ₹ 8,000; ₹ 8,000]

Illustration 50

M.K. Ltd. manufactures and sells a single product X whose selling price is ₹ 40 per unit and the variable cost is ₹ 16 per unit.

- If the Fixed Costs for this year are ₹ 4,80,000 and the annual sales are at 60% margin of safety, CALCULATE the rate of net return on sales, assuming an income tax level of 40%
- For the next year, it is proposed to add another product line Y whose selling price would be ₹ 50 per unit and the variable cost ₹ 10 per unit. The total fixed costs are estimated at ₹ 6,66,600. The sales mix of X : Y would be 7 : 3. DETERMINE at what level of sales next year, would M.K. Ltd. break even? Give separately for both X and Y the break-even sales in rupee and quantities.

[Answer to (a): 21.6%]

[Answer to (b): 23,145.80 units; 16,202 units or ₹ 6,48,000; 6,944 units or ₹ 3,47,200]

Illustration 51

X Ltd. supplies spare parts to an air craft company Y Ltd. The production capacity of X Ltd. facilitates production of any one spare part for a particular period of time. The following are the cost and other information for the production of the two different spare parts A and B:

	Part A	Part B
Per unit		
Alloy usage	1.6 kgs.	1.6 kgs.
Machine Time: Machine A	0.6 hrs	0.25 hrs.
Machine Time: Machine B	0.5 hrs.	0.55 hrs.
Target Price (₹)	145	115
Total hours available	Machine A 4,000 hours Machine B 4,500 hours	

Alloy available is 13,000 kgs. @ ₹ 12.50 per kg.

Variable overheads per machine hours Machine A: ₹ 80
Machine B: ₹ 100

Required

- (a) IDENTIFY the spare part which will optimize contribution at the offered price.
(b) If Y Ltd. reduces target price by 10% and offers ₹ 60 per hour of unutilized machine hour, CALCULATE the total contribution from the spare part identified above?

[Answer: Spare Part A; ₹ 1,53,345]

Illustration 52

The profit for the year of R.J. Ltd. works out to 12.5% of the capital employed and the relevant figures are as under:

Sales	₹ 5,00,000
Direct Materials	₹ 2,50,000
Direct Labour	₹ 1,00,000
Variable Overheads	₹ 40,000
Capital Employed	₹ 4,00,000

The new Sales Manager who has joined the company recently estimates for next year a profit of about 23% on capital employed, provided the volume of sales is increased by 10% and simultaneously there is an increase in Selling Price of 4% and an overall cost reduction in all the elements of cost by 2%.

Required

FIND OUT by computing in detail the cost and profit for next year, whether the proposal of Sales Manager can be adopted.

[Answer: Sales ₹ 5,72,000; Contribution ₹ 1,51,580; Profit: ₹ 92,780]

[Answer: % on Cap Emp 23.19%; Yes]