Break Even Point

A business firm is said to be break even, when its total sales equal to its total cost. It is the point where there is no profit or no loss. At this point the contribution of the firm will be equal to its fixed expenses. The break even point can be calculated by using the following formula

BEP (in units) = $\frac{\text{Fixed expenses}}{\text{Selling price per unit-Variable cost per unit}}$

(Or)

$\frac{\text{Fixed expenses}}{\text{Contribution per unit}}$

BEP (in value) = $\frac{FXS}{S-V}$

Sales to be made to get a desired amount of profit (in units):

$\frac{\text{Fixed expenses + Desired amount of Profit}}{\text{Selling price per unit-Variable cost per unit}}$

Sales to be made to get a desired amount of profit (in value): = $\frac{(F+P)S}{S-V}$

Margin of safety = Present sales –Break event sales

1. Find out fixed expenses

Sales	Rs.240000/-
Direct material	Rs.80000/-
Direct labour	Rs.50000/-
Variable over heads	Rs. 20000/-
Profit	Rs. 50000/-

2. Find out break event point

Fixed expenses	Rs.150000
Selling price per unit	Rs.15
Variable cost per unit	Rs. 10

3. Find out break event point

Fixed expenses	Rs.160000
Selling price per unit	Rs.40
Variable cost per unit	Rs. 8

4. Find out break even point

Sales	Rs.600000
Fixed expenses	Rs.150000
Variable expenses:	
Direct material	Rs. 200000
Direct labour	Rs. 120000
Other	Rs. 80000.

5. Find out BEP in units & in value

Selling price per unit Rs.40
Variable cost
Factory overheads Rs.22
Selling overheads Rs.3
Fixed overheads
Factory overheads -160000
Selling 20000

Find out the no. of units to be sold to get a profit Rs. 120000

6. Calculate BEP and also find out the sales to be made to get a profit of Rs.120000

Sales Rs.600000
Variable Expenses Rs.375000
Fixed Expenses Rs.180000

7. Find out BEP in units and also in value.

Fixed expenses Rs.720000
Variable expenses per unit Rs. 25/-
Selling price per unit Rs. 40
Find out the no. of units to be sold to get a profit Rs.480000

8. If sales are 10000 units and selling price 20 per unit, variable cost per unit and fixed cost is 80000. Find out BEP in units and sales revenue. What is profit earned? What should be the sales for earning profit Rs.60000

9. XYZ companies has supplying you the following information

No. of units sold -20,000 Units
Fixed cost - 2,40,000
Variable per unit – 15/-
Selling price 30/-
Find out 1) BEP in units 2) Margin of safety 3) Sales to get a profit of 200000
4. Verify the results in all the above cases

10. From the following data calculate the break even point

Fixed cost Rs.9,000
Selling price per Unit Rs.5/-
Variable cost per unit Rs.3/-
Suppose the price reduced to Rs.2/- per unit. What would you say about the break even position?

11. from the following data find out BEP.

Variable cost Rs.15/- per unit
Fixed expenses Rs.54000
Selling price Rs.20/-perunit
What should be the selling price if the company wants to reduce BEP level to 6000 units?

12. Find out BEP and sales to be made to get a profit of Rs 36000

Fixed expenses Rs.180000
Variable cost Rs.2/-perunit
Sales Rs.20/- per unit
What is the margin of safety when the profit of Rs.36000/-

13. Find out BEP in units and value

Fixed expenses = 10000
Variable cost = 3/-per unit
Selling price = 5/- per unit
Find out margin of safety when the production is 8000 units

14. A high-tech rail can carry a max.of 36000 passengers per anum at a fair of Rs 400 . The variable cost per passenger is Rs. 180 while the fixed costs are Rs.250000/- per annum. Find the BEP interms of no.of passengers and also interms of fare collection.

15. Find out BEP and margin of safety

	2009	2010
Sales	100000	240000
F.E	20000	40000

V.E 60000 120000

16. Fixed cost Rs.50000/-
Selling price Rs. 50/- per Unit
Variable cost Rs.25/- per Unit
Present level of production 3500 units
Calculate BEP in units & value and also find out the margin of safety. What is the change in BEP and margin of safety if fixed expenses increase from Rs. 50000 to 60000.

17. ABC Ltd manufactures only one product X.The following cost data is available for two successive years

Particulars	2001 Rs	2002 Rs
Sales	30000	50000
Fixed expenses	5000	10000
Variable expenses	15000	20000

The Director wants information about break even point and Margin of safety.

PROFIT VOLUME RATIO (P/V RATIO):

It is the relation ship between the contribution and sales. The % of contribution to sales is called profit volume ratio (P/V ratio)

P/V ratio = $\frac{c}{s} or \frac{s-v}{s} or \frac{F+P}{S}$

If the express in percentage:

P/V Ratio = $\frac{c}{s} X100 \ or \ \frac{S-V}{S} X100 \ or \ \frac{F+P}{S} X100$

BEP on based on P/V ratio = $\frac{F}{Pvratio}$

To get a desired amount of profit = $\frac{F+Dp}{P/v \text{ ratio}}$

To find out contribution =Sales (P/v ratio)

Margin of safety = Present sales –BEP sales = $\frac{\text{Pr}ofit}{Pvratio}$

18. Find out the P/V ratio, BEP sales to a profit of Rs.160000
S.P Rs.40/- per unit
Variable Cost:
Direct material Rs.10/-
Direct labour Rs.7/-
Overheads 100%on labour
Fixed expenses Rs.64000/-

19. Find out the P/V ratio.
Sales Rs 40000
Variable Cost Rs 24000
Fixed Cost Rs 8000

20. From the following data calculate 1) P/V ratio, 2) profit when sales are Rs 20000, 3)New break even point sales are reduced by 20%
Fixed cost Rs.4,000
Break even sales Rs 10000.

21. The particulars of sales and profits in 400 years in a company were as under

	Sales	Profits
2009	140000	15000
2010	160000	20000

Calculate the following

a) P/V ratio b) BEP c) Sales, to get a profit of Rs.40000/- d) Profit when the sales Rs. 120000.

22. The information in a company in two years which as

	Sales	Profits
2009	2000000	200000
2010	3000000	400000

a) P/V ratio b) BEP c) Sales, to get a profit of Rs.500000/- d) Profit when the sales Rs. 4000000

23. You are given the following information about two companies in the year 2010

Particulars	Company A	Company B
Sales	5000000	5000000
Fixed expenses	1200000	1700000
Variable expenses	3500000	3000000

A friend seeks your advice which company's shares should prefer? Assuming the capital invested is equal for the two company's what is your advice?

24. The P/V ratio of a firm is 50% and the margin of safety is 40%.calculate the break even point, if the sales are Rs 6000000.

25. Find out the amount of fixed expenses from the following particulars.

Sales	Rs 500000	Direct Material	Rs 150000
Direct Wages	Rs 120000	Variable over heads	Rs 30000
Profit	Rs 120000		

26. From the following data calculate Break even point in units & sales.

Fixed cost Rs.300, 000
Variable cost per unit Rs 30/-
Selling price per unit Rs 35/-

27. From the following data calculate 1) calculate Break even point in units, 2) If the selling price is reduced by 10% what will the new breakeven point.

Fixed cost Rs.400000
Variable expenses:
Direct material Rs 6 per unit
Direct Wages Rs 4 per unit.

28. From the following data calculate 1) P/V ratio, 2) profit 3) break even point 4) Margin of safety 5) the volume of sales to earn a profit of Rs 6000

Fixed cost Rs.4,500
Sales Rs 15000.
Variable cost Rs 7500.

29. From the following data calculate Margin of safety. Sales Rs 200000, fixed cost Rs 60000, variable cost Rs 100000.

30. From the following data calculate 1) P/V ratio, 2) Margin of safety 3) sales 4) variable cost.
Fixed expenses Rs 12000
Break even sales Rs 60000
Profit Rs 1000.

31. From the following data calculate
a) P/V ratio
b) Profit when sales are Rs 500000
c) New break even point if the selling price is reduced by 20%
Fixed exp Rs 100000
Break even point Rs 250000.

32. From the following data, calculate break even point and net sales value.
Direct material cost per unit Rs 30
Direct labour cost per unit Rs 10
Variable overheads @ 200% on direct labour
Trade discount 10%
Selling price per unit 100
Fixed over heads 60000
If sales are 20% and 40% above the break even point, determine net profit.

33. From the following data calculate
A) Break even sales
B) No of units that must be sold to earn a profit of Rs 20000 per year
C) What should be the selling price per unit if BEP is brought down to 12000 units

Selling price per unit	Rs 60
Variable manufacturing cost	Rs 33
Variable selling cost	Rs 7
Fixed factor over heads p.a.	Rs 180000
Fixed selling costs p.a.	Rs 84000

34. The following data is obtained from the records of PVR & Co

	Period I	Period II
Sales	650000	850000
Profit	100000	175000

Calculate:
a) P/V ratio b) Break even sales c) Sales to earn a profit of Rs 200000 d) Profit when sales are Rs 1000000 and e) Margin of safety for period II.

35. A Company estimates its fixed cost per the year Rs.800000 and its profit target is Rs.200000 each unit of product is sold at Rs.10/- and variable cost per unit Rs.8/- What sales level must the company achieve in order to realize its profit goal ?

36. You are required to calculate
1. Margin of safety
2. Sales
3. Variable cost
4. Fixed cost Rs.12000
5. Profit Rs.1000
6. Break even sales Rs.60000

37. A Firm manufactures two products namely P&Q the form wants to drop the product Q as it is yielding less contribution per unit and add the product 'R', By adding the product R the new fixed cost is likely to be Rs.250000 and the sales volume will increase to Rs.180000. Consider the following information and suggest whether the firm should be change the product or not.

Existing Product mix :

	Product	selling price per unit	Variable cost per unit	% of sales
1.	P	80	32	60
2.	Q	100	40	40

The total fixed cost during the year Rs.2,00,000/- and sales Rs.1600000

Proposed product mix:

	Product	selling price per unit	Variable cost per unit	% of sales
1.	P	100	40	30
2.	R	120	48	70

38. A firm has two products B&C the particulars of the price per unit, variable cost per unit and the %of sales volume are given below.

	Product	selling price per unit	Variable cost per unit	% of sales
1.	B	40	16	40%
2.	C	50	20	60%

Total fixed cost during the year 1,00,000 and total volume of sales 8,00,000.

The company wants to drop product B as it is yielding less contribution per unit. Instant it wants to add product D.If D is added, the new fixed cost is likely to be 1,25,000, and the sales volume is likely to increase to Rs.900000. The new scenario will be as under

	Product	selling price per unit	Variable cost per unit	% of sales
1.	C	50	20	70
2.	D	60	28	30

Do you recommend the change?

39. If sales are 50,000 units and S.P is 20/- per unit + variable cost is 10/- unit and f.c is 4,00,000/- find out BEP in units and sales revenue . What is profit earned? What `should be the sales per earning a profit of Rs. 3,00,000