↳ Break-even analysis:
↳ aims @ classifying the dynamic relationship b/w total cost and sales volume of a company.
↳ practical app^ns of cost functions
↓
parameters → sales volume, cost & profit.
(use of break-even analysis)
↳ also called "cost-volume-profit analysis"

↳ Break-even point: (B.E.P.)
→ No-profit-no-loss point
→ point when total revenue = total cost & net income = 0.
→ Sales reaches such a point → break-even point.

↳ Uses of break-even analysis:
↳ Company executives for → profit forecasting &
→ alternative business mgmt decisions.

↳ Determination of B.E.P. (2 ways) (expressing the B.E.P)

- Time value of money (Volume of sales)
- Physical Units (vol. of o/p) → (B.E.P. is the no. of units of a product which must be sold to get enough revenue over all the prodn expenses, both fixed & variable)

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↳ Measuring B.E.P in Physical Units:

→ Total revenue = Total cost (Fixed + Variable)

O/p in units	Total ($) Revenue	Total Fixed Cost ($)	Total Variable ($) Cost	Total cost ($) (FC + VC)
0	0	150	0	150
50	~~100~~ 200	150	150	300
100	~~200~~ 400	150	300	450
150	~~400~~ 600	150	450	600 → B.E.P.
200	~~600~~ 800	150	600	750
250	~~1000~~ ~~800~~	150	750	900
300	~~1000~~ 1200	150	900	1050
350	~~1200~~ 1400	150	1050	1200

→ ↳ assuming a perfectly competetive market, o/p ∝ total revenue. At B.E.P. no profit & no loss. After B.E.P. → firm → profit.

↳ Break-even Charts:

→ ~~for~~ help firms know ~~to what~~ the extent of profits and losses they incur @ different levels of activity.

→ Total costs, total FC, total VC, total revenue → concepts → shown separately

→ Purpose: To find the **B.E.P.**

→ Meeting of total revenue & total cost = B.E.P.

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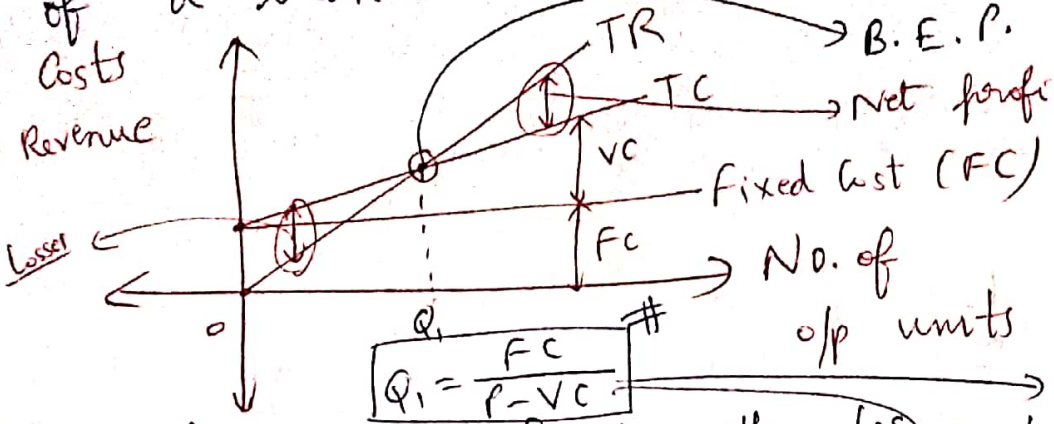
→ Eg of a break-even chart:



$Q_1 = \frac{FC}{P - VC}$ → qty @ break-even

TR → total revenue, → linear with o/ps

TC → total cost.

for qty to be sold for TR = TC.

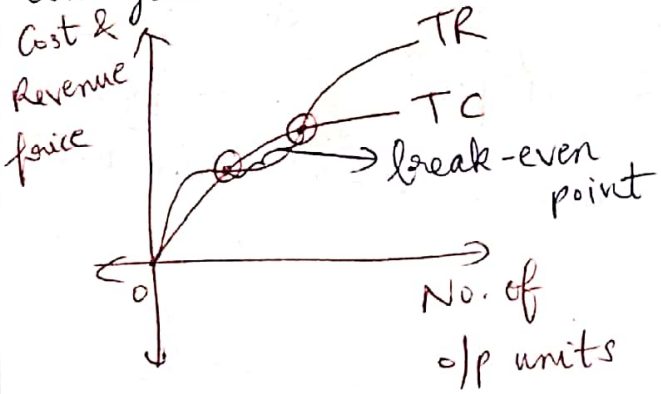
for TR & TC being linear

→ Above chart's assumptions:

- Perfectly competitive firm.
- Marginal Cost = constant
- Selling price is constant
- Firm produces only 1 product
- No time lag b/w investment & resulting revenue stream.

→ assumptions for linear break-even analysis.

↳ Non-linear break-even analysis:



⊛ analysis.

↳ Profit = (P → wholesale price per unit. − VC) × contribution

↳ Amt. per unit of sale contributed to profit & FC.

↳ Targetted o/p = $\frac{FC + profit}{P - VC}$

targetted profit is attained @ this o/p.

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↳ Marginal Revenue Product :

↑ in revenue due to an additional unit ↑ in i/p factor

$$= \frac{MR}{X_{t+1} - X_t}$$ → Marginal revenue.

→ Δ in i/p factor

↳ Marginal Factor cost :

↑ in marginal cost due to ↑ in i/p factor by 1 unit

$$= \frac{MC}{X_{t+1} - X_t}$$ → Δ in i/p factor

→ Marginal cost.

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