Break-Even Analysis

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What is break even analysis ?

A break-even analysis relates **fixed cost, variable cost, and revenue to the quantity of units produced**. Relationships are conveniently displayed on graphs to assist communication among decision makers.

- Study of interrelationships among a firm's sales, costs, and operating profit at various levels of output
- Break-even analysis examines the cost tradeoffs associated with demand volume.
- A breakeven analysis is used to determine how much sales volume your business needs to start making a profit. The breakeven analysis is especially useful when you are developing a pricing strategy, either as part of a marketing plan or a business plan.

Break-Even Analysis

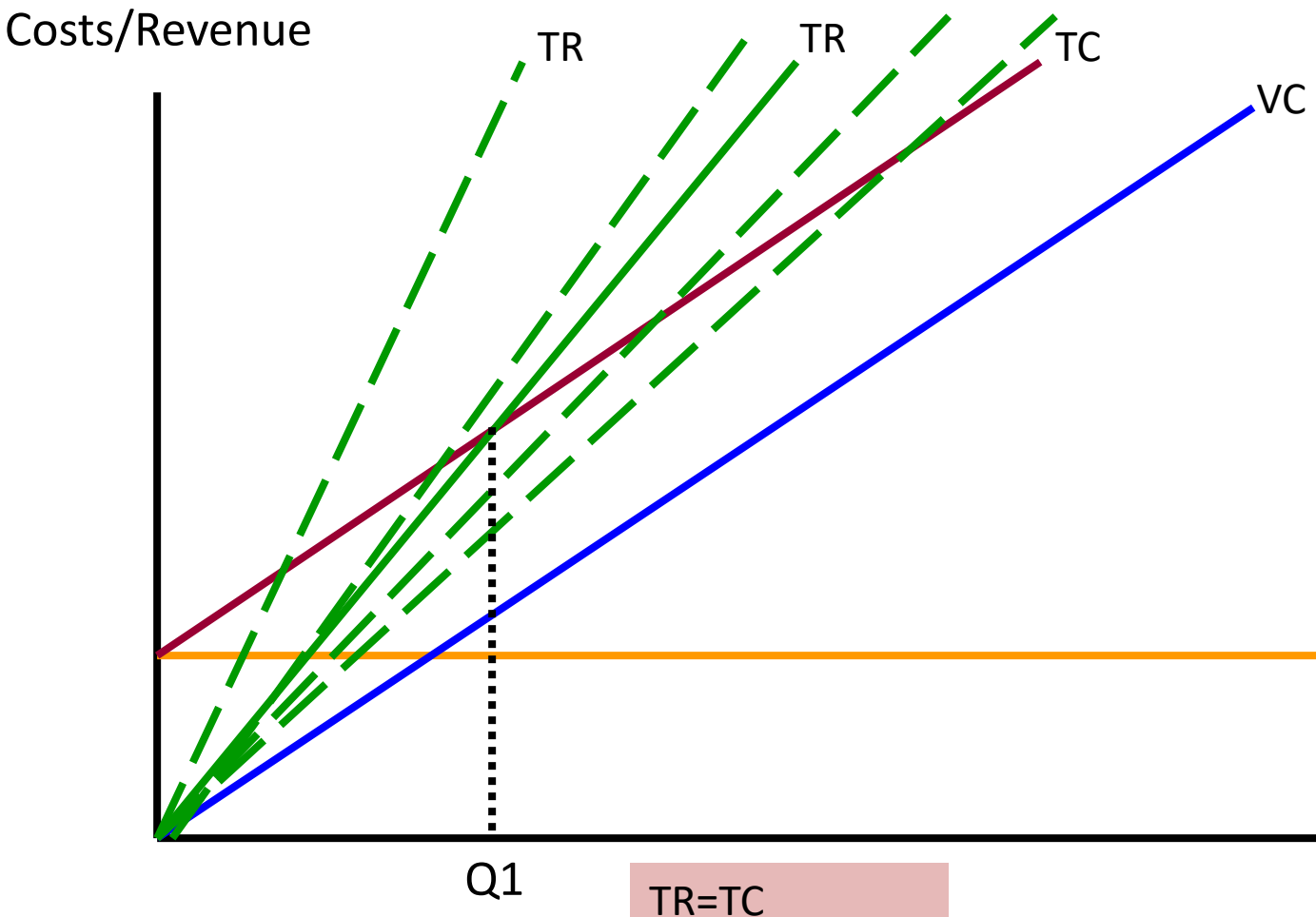
VARIABLE COSTS (VC): variable costs change when activity changes.

- Example : your telephone bill is based on how many minutes you talk.
- Variable costs per unit do not change as activity increases. The cost/ minute talked is constant. For example, Rs. 1 per minute.
- Materials cost, labour cost *i.e*, Manufacturing labour, Assembly labour, Packing labour, Shipping cost.

FIXED COSTS (FC): Fixed costs remain unchanged when activity changes. e.g., cost of equipment, Overhead labour, Utilities, Plant operation.

Total cost = Fixed costs + Variable costs

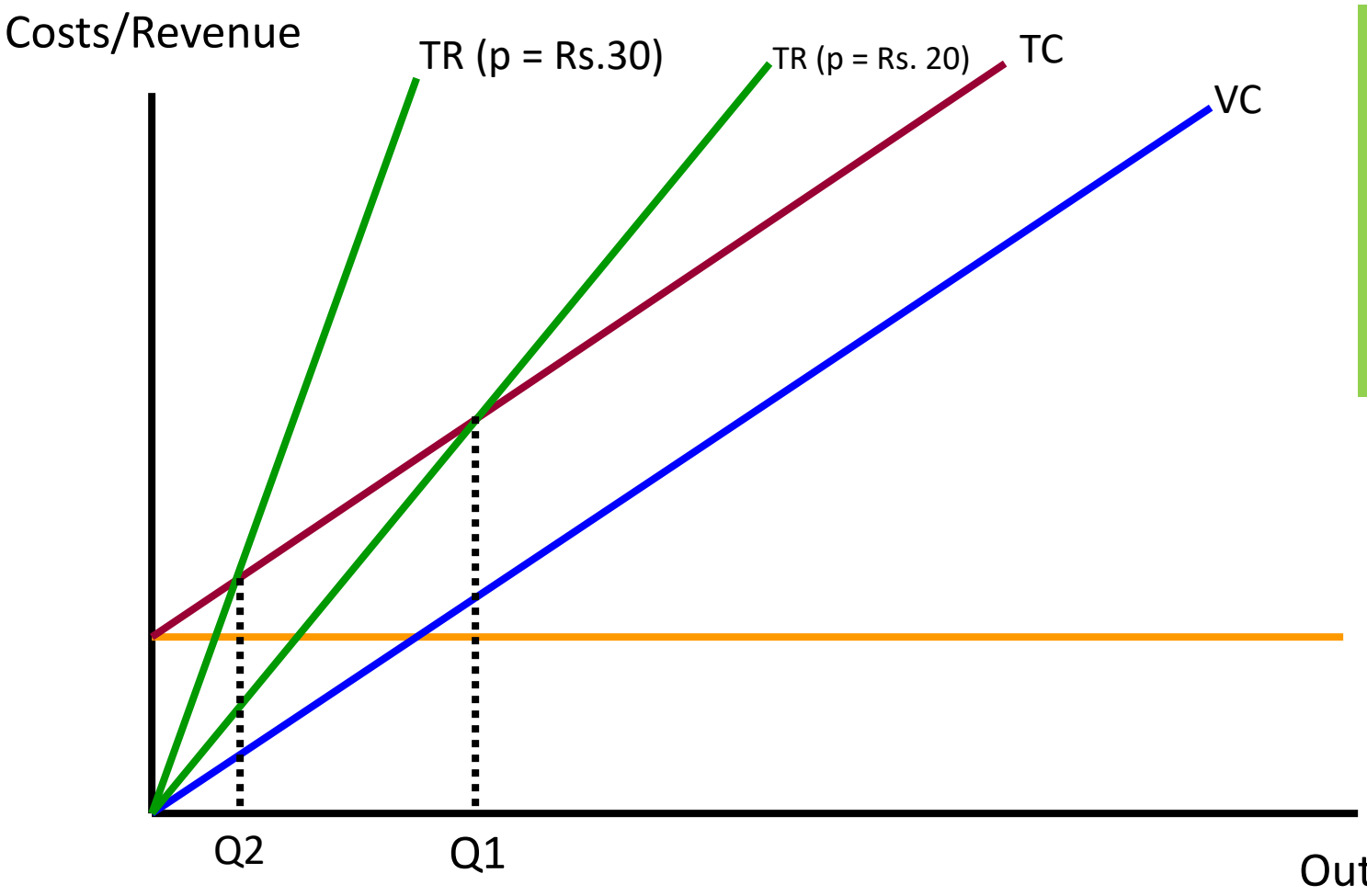
Break-Even Analysis



The Break-even point occurs where total revenue equals total costs – the firm, in this example would have to sell Q1 to generate sufficient revenue to cover its costs.

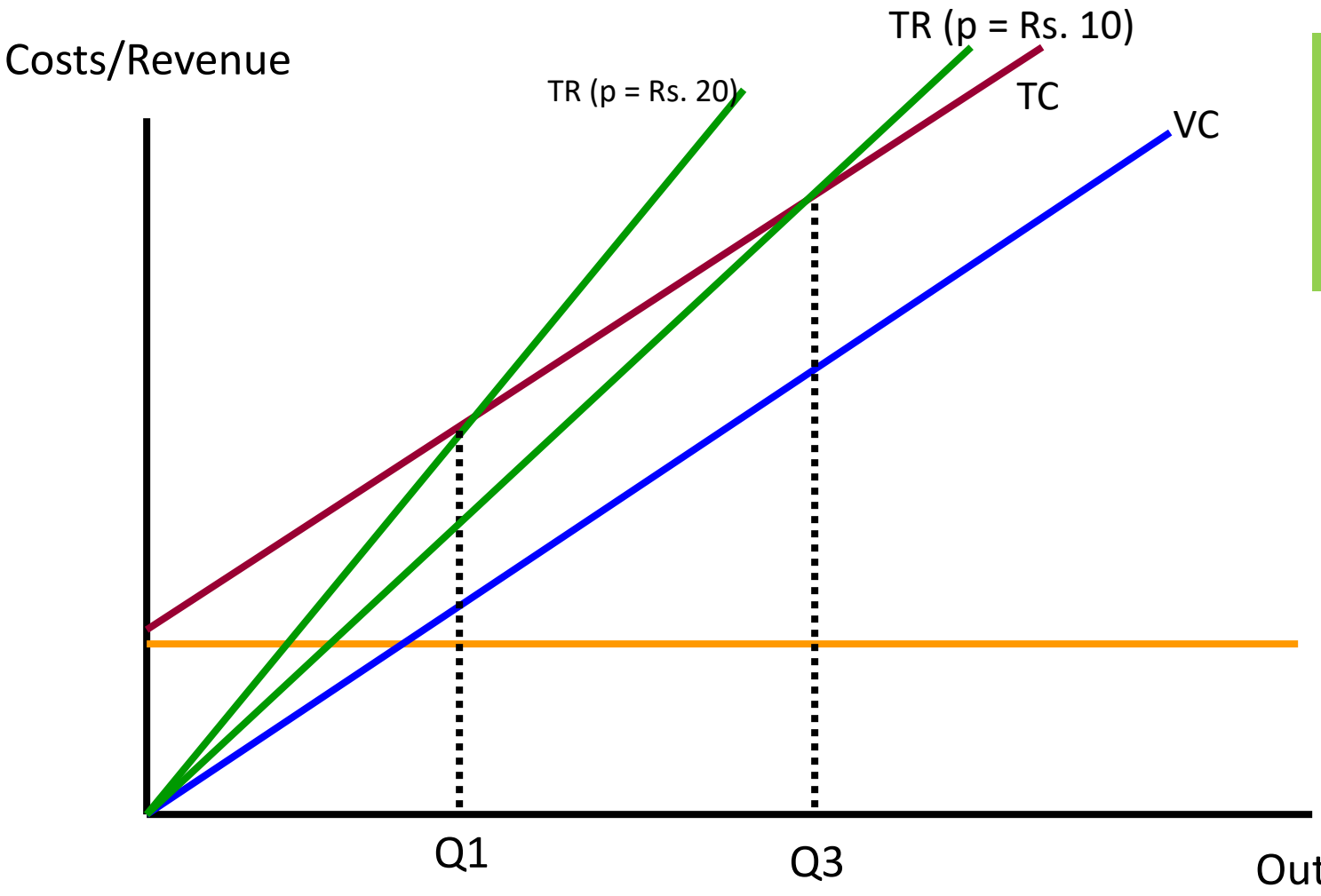
TR=TC
pQ1=FC+vQ1
Q1=FC/(p-v)

Break-Even Analysis



If the firm chose to set price higher than Rs. 20 (say Rs.30) the TR curve would be steeper – they would not have to sell as many units to break even

Break-Even Analysis



If the firm chose to set prices lower (say Rs.10) it would need to sell more units before covering its costs

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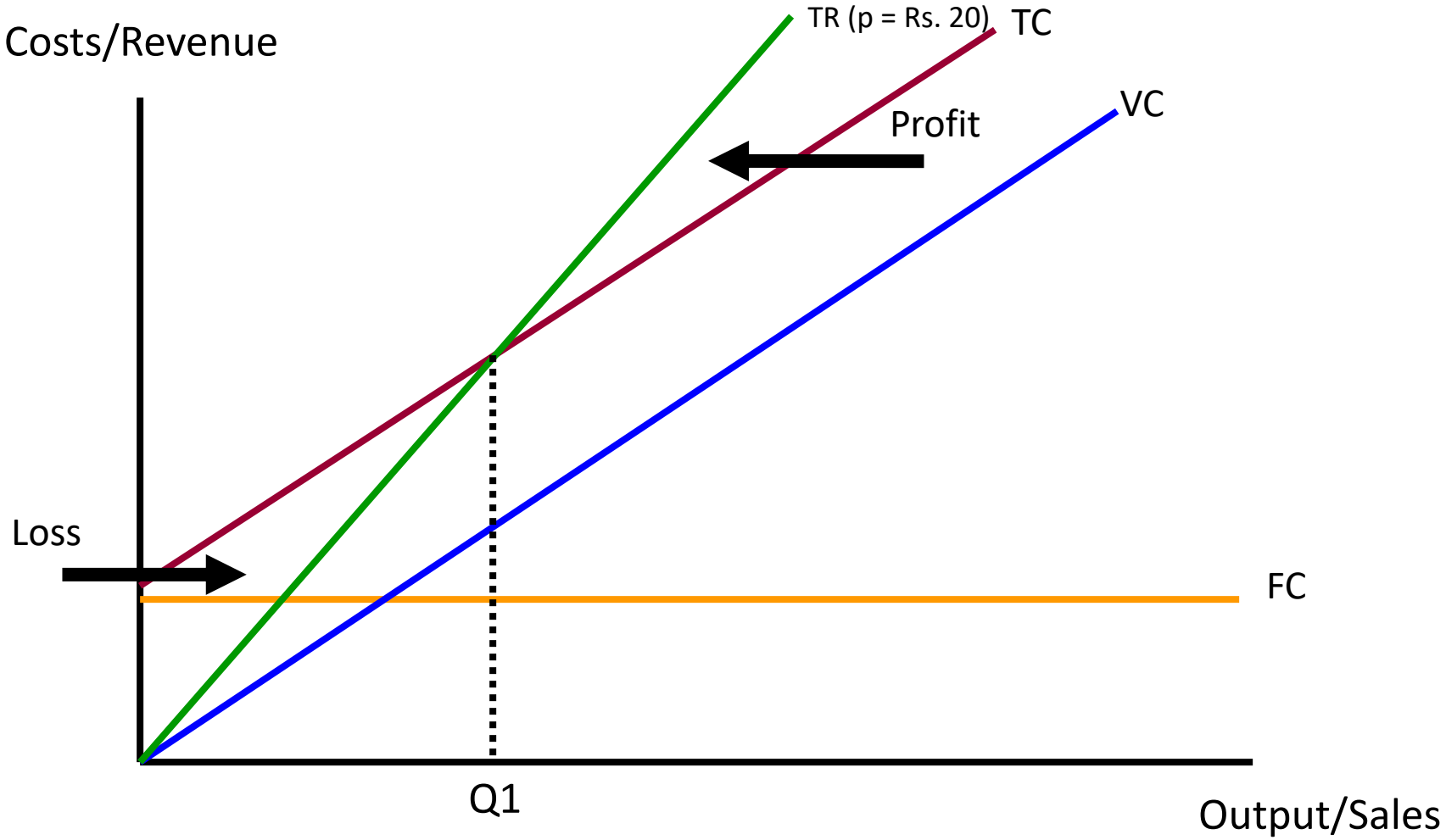

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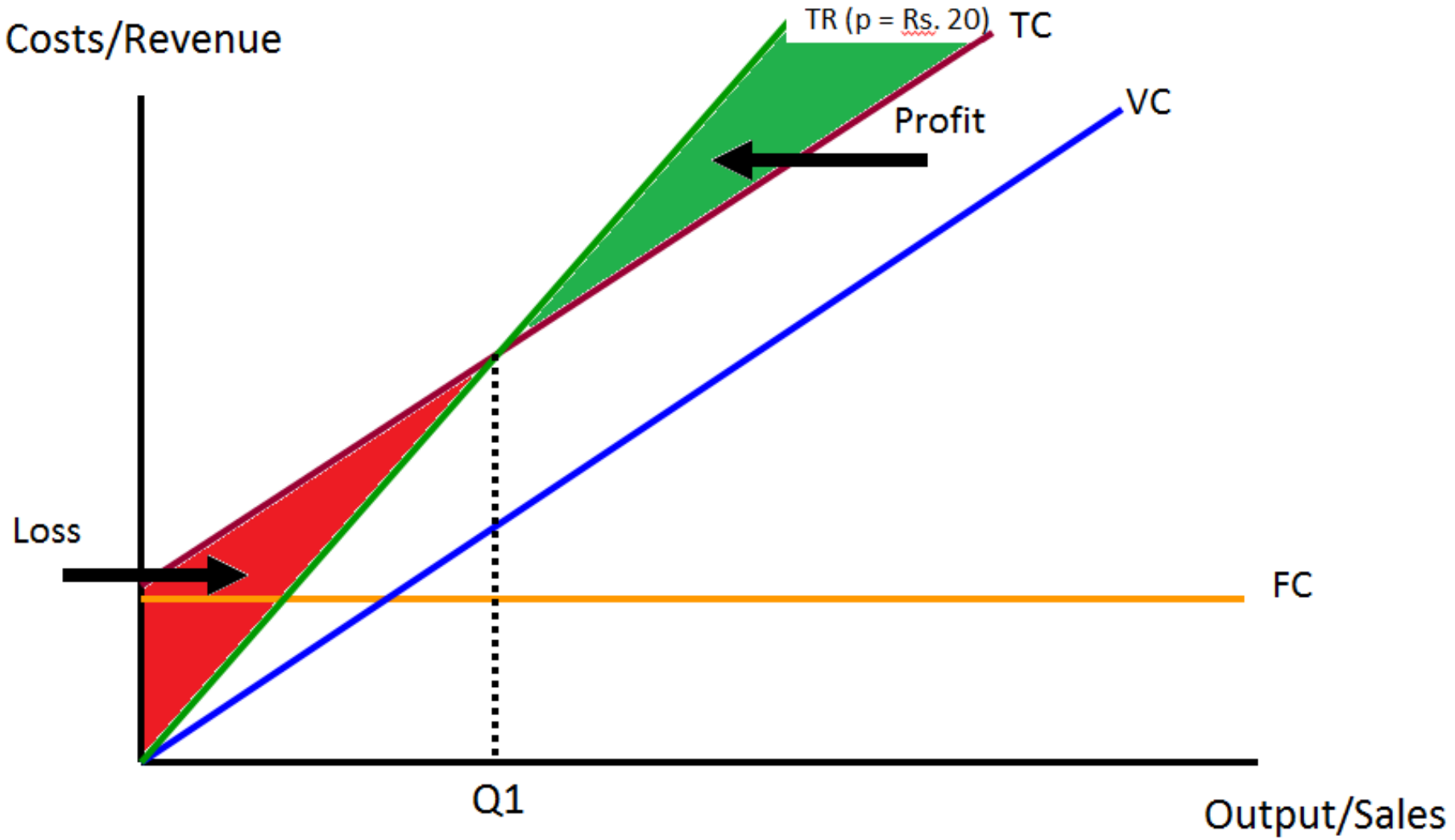

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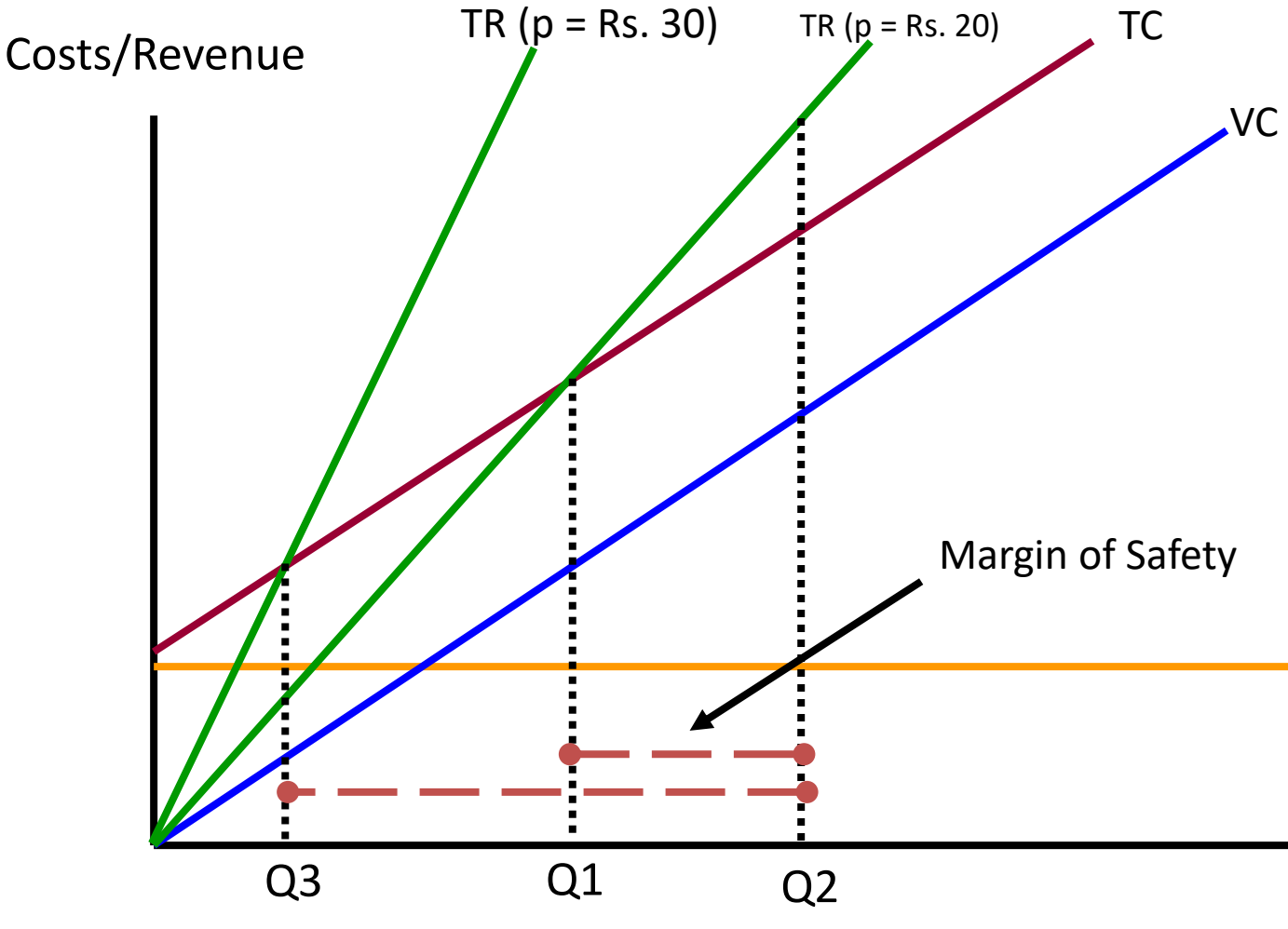
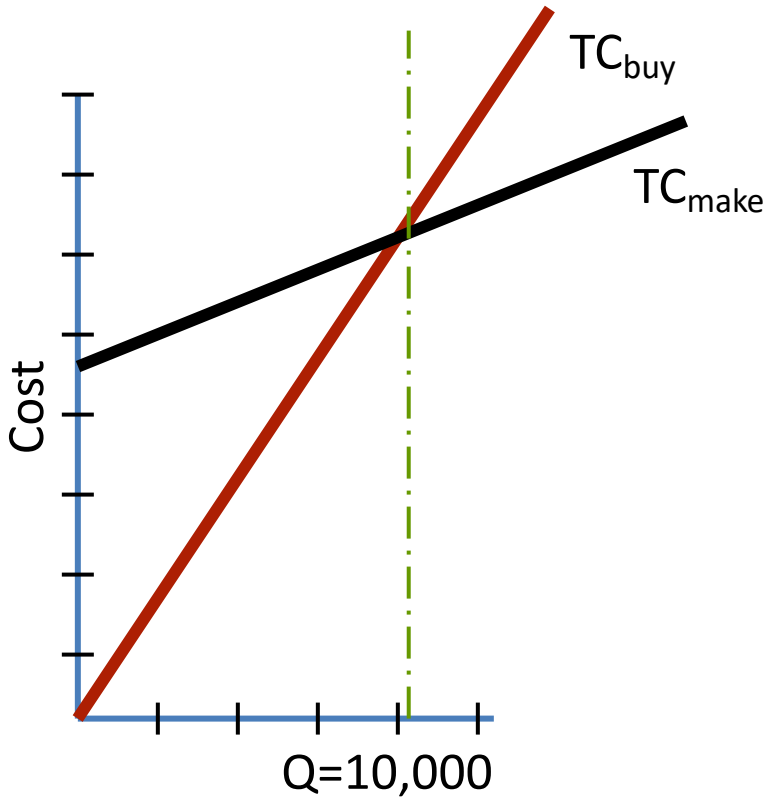


A higher price would lower the break even point and the margin of safety would widen

Break-Even Analysis

Example 1: Make or buy decision

Purchase price = Rs. 200 per piece



Manufacturing costs

FC=Rs. 5,00,000

VC=150 per piece

BEQ=FC/(p-v) =5,00,000/(200-150)
=10,000

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Example 2: Comparing two production methods

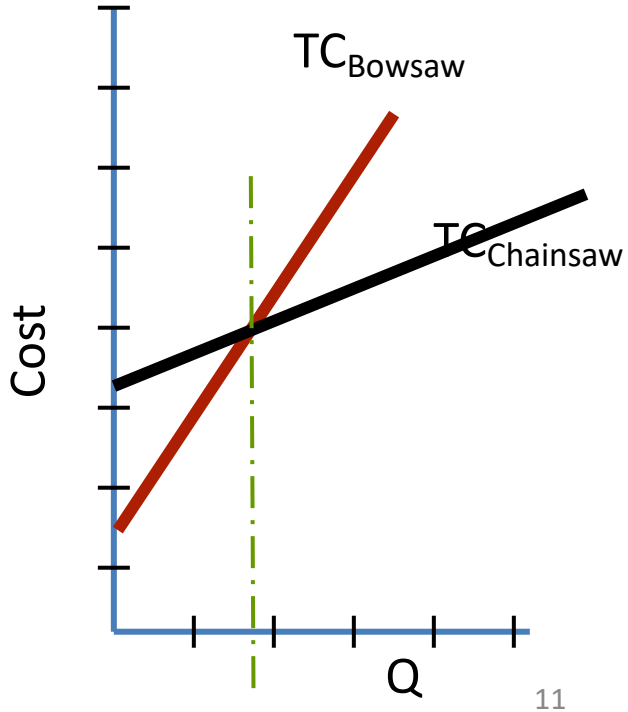
Bowsaw or chainsaw to cut trees

- Bowsaw
  - Fixed cost is $5.00
  - Variable cost is $0.40 per
- Chainsaw
  - Fixed cost is $305
  - Variable cost is $0.10 per tree

- **Solution**

$Q_{(break\text{-}even)} = (305 - 5)/(0.40 - 0.10)$

$= 300/0.30 = 1{,}000$ trees



Nonlinear Breakeven Analysis

Assumptions: (1) Price varies with demand; (2) We have fixed costs; (3) We have constant variable cost.