

CLASS XI | CBSE | 2025-26

INTRODUCTORY

MICROECONOMICS

CHAPTER 9

Concept of Revenue

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Chapter Overview

What You Will Learn:

1. Total Revenue (TR) — meaning and formula
2. Average Revenue (AR) — why $AR = \text{Price}$ (Demand Curve)
3. Marginal Revenue (MR) — meaning and formula
4. Revenue under Perfect Competition — TR, AR, MR behaviour
5. Revenue under Monopoly / Imperfect Competition — TR, AR, MR behaviour
6. Relationship between TR and MR
7. Numericals on all revenue concepts

Exam Importance:

Revenue diagrams under Perfect Competition vs Monopoly = 4–6 marks. " $AR = \text{Price} = \text{Demand Curve}$ " is a concept that appears in 1-mark questions every year. TR–MR relationship and numericals = 3–4 marks.

1. MEANINGS AND FORMULAS

Revenue	Full Form	Meaning	Formula
TR	Total Revenue	Total income received from selling ALL units of output.	$TR = \text{Price (P)} \times \text{Quantity Sold (Q)}$
AR	Average Revenue	Revenue per unit sold. ALWAYS equal to the PRICE of the good.	$AR = TR \div Q = (P \times Q) \div Q = P$
MR	Marginal Revenue	Additional revenue from selling ONE MORE unit of output.	$MR = TR_{n+1} - TR_n = \Delta TR \div \Delta Q$

KEY EXAM FACT — AR = Price (Always):

Proof: $AR = TR/Q = (P \times Q)/Q = P$. So Average Revenue always equals the selling price.

This means the AR curve of a firm IS the Demand Curve for that firm's product.

"The AR curve = Demand Curve" — this statement is asked in 1-mark questions almost every year!

2. REVENUE UNDER PERFECT COMPETITION

Under Perfect Competition, a firm is a PRICE TAKER — it must accept the price fixed by the market. It can sell any quantity at this fixed market price. Price (AR) is CONSTANT.

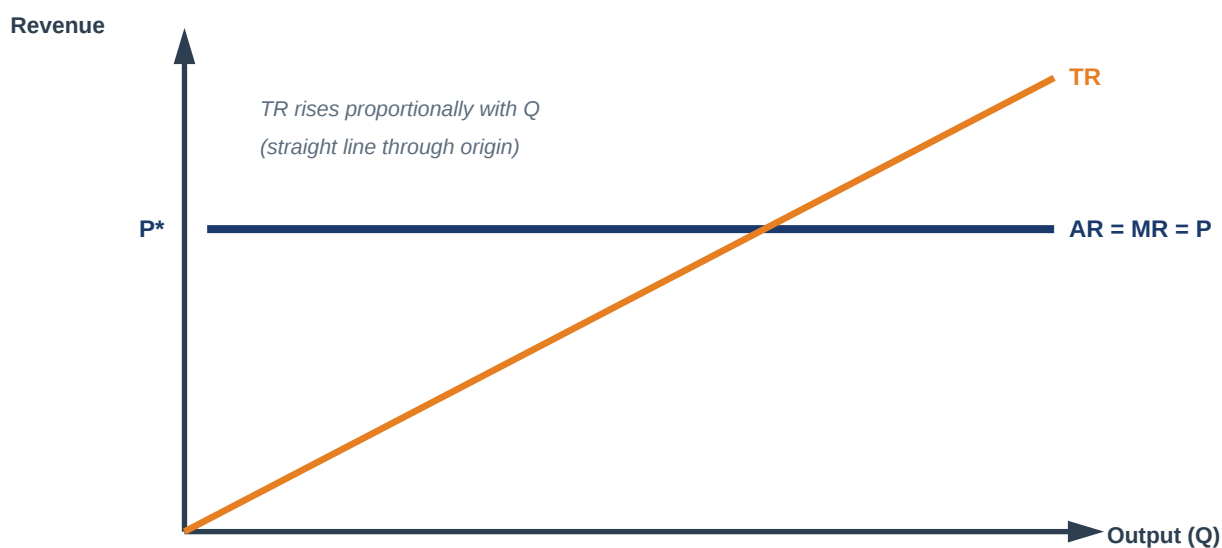
Revenue Schedule — Perfect Competition (Market Price = Rs. 10):

Units Sold (Q)	Price = AR (Rs.)	TR = P×Q (Rs.)	MR = TR _n - TR _(n-1) (Rs.)	Observation
1	10	10	10	MR = AR = Price
2	10	20	10 (20-10)	MR = AR = Price
3	10	30	10 (30-20)	MR = AR = Price
4	10	40	10 (40-30)	MR = AR = Price
5	10	50	10 (50-40)	MR = AR = Price

Key Observations — Perfect Competition:

- (a) AR = MR = Price = Constant at all output levels.
- (b) TR increases proportionally with Q — TR is a straight line through the ORIGIN.
- (c) The demand curve (AR curve) is a HORIZONTAL STRAIGHT LINE parallel to X-axis.
- (d) MR = AR — both are the same horizontal line.
- (e) Demand is PERFECTLY ELASTIC ($E_d = \infty$) for the firm under perfect competition.

Revenue Diagram — Perfect Competition:



3. REVENUE UNDER MONOPOLY / IMPERFECT COMPETITION

Under Monopoly, the firm is the ONLY seller — it faces the entire market demand curve. To sell more units, the monopolist must REDUCE the price for ALL units sold. So price (AR) FALLS as quantity sold increases.

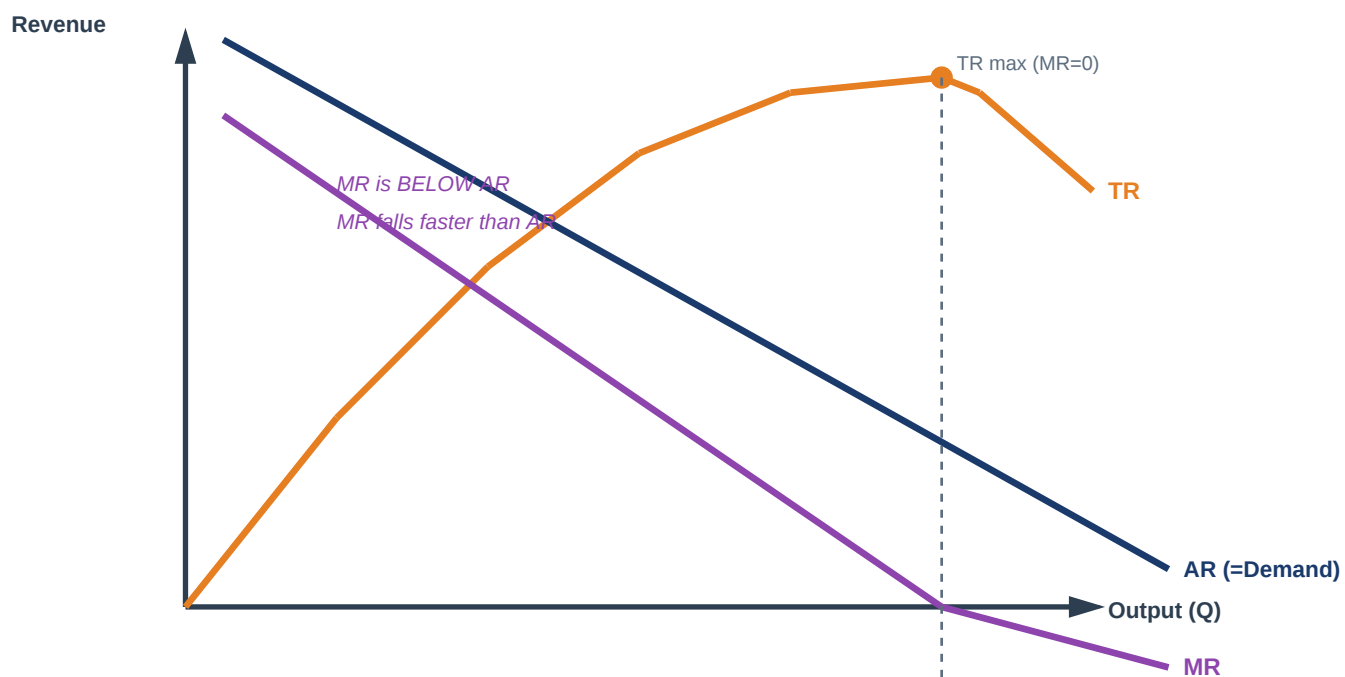
Revenue Schedule — Monopoly / Imperfect Competition:

Q	Price=AR (Rs.)	TR = P×Q (Rs.)	MR = TR _■ - TR(■■■)	TR Behaviour
1	10	10	10	TR rising (MR positive)
2	9	18	8 (18-10)	TR rising (MR positive)
3	8	24	6 (24-18)	TR rising (MR positive)
4	7	28	4 (28-24)	TR rising (MR positive)
5	6	30	2 (30-28)	TR rising slowly (MR positive, small)
6	5	30	0 (30-30)	TR = MAXIMUM when MR = 0
7	4	28	-2 (28-30)	TR FALLING (MR negative)
8	3	24	-4 (24-28)	TR falling further

Key Observations — Monopoly / Imperfect Competition:

- (a) AR falls as quantity increases — firm must lower price to sell more.
- (b) MR falls faster than AR — MR is always BELOW AR (except for the very first unit).
- (c) TR first RISES (when MR is positive), reaches MAXIMUM when MR = 0, then FALLS (when MR is negative).
- (d) AR curve is downward sloping. MR curve is also downward sloping but STEEPER and BELOW AR.
- (e) For a linear (straight-line) demand curve: MR falls TWICE as fast as AR.
- (f) AR is ALWAYS positive. MR can be zero or negative.

Revenue Diagram — Monopoly / Imperfect Competition:



4. REVENUE COMPARISON — PERFECT COMPETITION vs MONOPOLY

Basis	Perfect Competition	Monopoly / Imperfect Competition
Price	Constant (price taker)	Falling (firm lowers price to sell more)
AR curve	Horizontal straight line	Downward sloping
MR curve	Horizontal = AR line	Downward sloping, below AR
AR vs MR	AR = MR = Price at all levels	AR > MR (MR falls faster; can be negative)
TR behaviour	Rises proportionally (straight)	Rises then falls (inverted U shape)
TR max	TR keeps rising as Q rises	TR is maximum when MR = 0
Elasticity	Perfectly elastic ($E_d = \infty$)	Elastic + Inelastic portions
Slope of AR/MR	Zero slope (flat)	Negative slope (downward)

MEMORY TRICK

REVENUE TRICKS: AR = Price (always) → AR curve = Demand Curve of the firm. Perfect Competition: AR = MR = P = Constant (all three are the same horizontal line). Monopoly: AR > MR (both downward sloping). MR can be negative. TR max when MR = 0. Linear demand → MR falls TWICE as fast as AR.

5. RELATIONSHIP BETWEEN TR AND MR

Condition	MR Value	Effect on TR	Stage
MR is positive ($MR > 0$)	$MR > 0$	TR is RISING — each extra unit adds positive revenue.	Elastic portion of demand ($Ed > 1$)
MR is zero ($MR = 0$)	$MR = 0$	TR is at its MAXIMUM — adding one more unit adds zero revenue.	Unitary elastic ($Ed = 1$)
MR is negative ($MR < 0$)	$MR < 0$	TR is FALLING — each extra unit reduces total revenue.	Inelastic portion of demand ($Ed < 1$)

Connection between MR, TR and Price Elasticity (Important for HOTS):

When $MR > 0 \rightarrow$ TR rises when price falls $\rightarrow$ demand is ELASTIC ($Ed > 1$).

When $MR = 0 \rightarrow$ TR is constant when price falls $\rightarrow$ demand is UNITARY ELASTIC ($Ed = 1$).

When $MR < 0 \rightarrow$ TR falls when price falls $\rightarrow$ demand is INELASTIC ($Ed < 1$).

EXAM-ORIENTED QUESTIONS

1-Mark Questions

Q1. What is Marginal Revenue?

Ans. MR is the additional revenue from selling one more unit. $MR = TR_n - TR_{(n-1)}$.

Q2. Why does AR always equal Price?

Ans. $AR = TR/Q = (P \times Q)/Q = P$. Mathematically, Average Revenue always equals the price at which the good is sold.

Q3. Under perfect competition, what is the relationship between AR and MR?

Ans. $AR = MR = \text{Price} = \text{Constant}$. Both are equal and form a single horizontal straight line.

Q4. When does TR reach its maximum?

Ans. TR is maximum when Marginal Revenue (MR) = 0 (zero).

Q5. Under monopoly, is AR greater or less than MR?

Ans. $AR > MR$. To sell more, price must fall for all units $\rightarrow$ MR falls faster than AR $\rightarrow$ MR is always below AR.

Q6. What is the shape of the TR curve under monopoly?

Ans. Inverted U shape — TR rises when $MR > 0$, reaches maximum when $MR = 0$, then falls when $MR < 0$.

Q7. What is the shape of TR under perfect competition?

Ans. Straight line rising from origin — TR increases proportionally with output since price is constant.

Q8. "AR curve is the demand curve of the firm." Explain.

Ans. $AR = \text{Price}$. The demand curve shows quantity demanded at different prices. Since $AR = \text{Price}$ at each output, the AR curve of the firm shows the price-output relationship = demand curve.

4-Mark Numerical Question

Q1. From the following data, complete the table and answer the questions:

Units Sold (Q)	Price/AR (Rs.)	TR (Rs.)	MR (Rs.)
1	12	?	?
2	11	?	?
3	10	?	?
4	9	?	?
5	8	?	?

(a) Calculate TR and MR for all units. (b) When is TR maximum? (c) When does MR become negative?

Solution:

TR: $12 \times 1 = 12$ | $11 \times 2 = 22$ | $10 \times 3 = 30$ | $9 \times 4 = 36$ | $8 \times 5 = 40$

MR: 12 (first unit) | 10 ($22 - 12$) | 8 ($30 - 22$) | 6 ($36 - 30$) | 4 ($40 - 36$)

(a) Complete table: TR: 12, 22, 30, 36, 40. MR: 12, 10, 8, 6, 4

(b) TR keeps rising in this range (MR is still positive). TR would be max when $MR = 0$.

(c) In this data MR is still positive. MR would turn negative if we continued (price falls further).

Observation: $MR < AR$ at every level (MR 12, 10, 8, 6, 4 < AR 12, 11, 10, 9, 8) — confirming monopoly condition.

6-Mark Question

Q1. Explain with schedules and diagrams how TR, AR, and MR behave differently under Perfect Competition and Monopoly. (6 marks)

Introduction: TR, AR, and MR are the three revenue concepts. Their behaviour differs based on market structure.

Under Perfect Competition: Price is fixed. $AR = MR = \text{Price} = \text{Constant}$. TR rises proportionally (straight line from origin). AR and MR are both horizontal lines (one line). Demand is perfectly elastic.

Under Monopoly: Firm must lower price to sell more. AR (price) falls. MR falls faster — $MR < AR$. TR first rises (MR positive), reaches maximum ($MR = 0$), then falls (MR negative). Demand curve slopes downward.

Diagrams: (1) Perfect Competition: Show TR as straight line from origin; $AR=MR$ as horizontal line. (2) Monopoly: Show TR as inverted U; AR as downward line; MR below AR (steeper downward line, can go below X-axis).

Conclusion: Under perfect competition, the firm is a price taker so $AR=MR=P$. Under monopoly, the firm controls price, causing $AR > MR$ and TR to peak and then decline.

CHAPTER SUMMARY

KEY FORMULAS:

$$TR = P \times Q \mid AR = TR/Q = P \mid MR = TR_{\text{■}} - TR_{\text{■■■■}}$$

AR = Price (always) | AR curve = Demand curve of the firm

PERFECT COMPETITION:

AR = MR = Price = Constant (horizontal lines) | TR = straight line from origin

MONOPOLY / IMPERFECT COMPETITION:

AR > MR (both downward sloping) | TR rises → max (MR=0) → falls (MR<0)

MR can be zero or negative | For linear demand: MR falls twice as fast as AR

LAST-MINUTE REVISION:

AR = Price (ALWAYS). AR curve = Demand Curve.

Perfect Competition → AR = MR = P (horizontal). Monopoly → AR > MR (both downward).

MR > 0 → TR rises | MR = 0 → TR max | MR < 0 → TR falls.

MR positive → Elastic demand | MR = 0 → Unitary elastic | MR negative → Inelastic demand.