

Perfect Competition

A Perfectly Competitive Market

- A *perfectly competitive market* is one in which economic forces operate unimpeded.

A Perfectly Competitive Market

- A perfectly competitive market must meet the following requirements:
 - Both buyers and sellers are price takers.
 - The number of firms is large.
 - There are no barriers to entry.
 - The firms' products are identical.
 - There is complete information.
 - Firms are profit maximizers.

The Definition of Supply and Perfect Competition

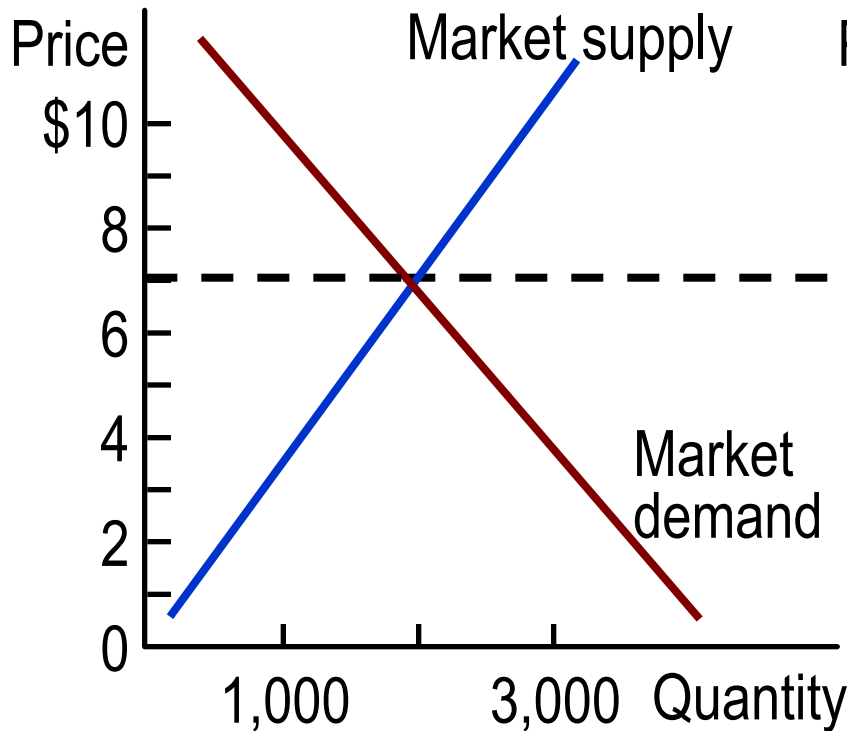
- When a firm operates in a perfectly competitive market, its supply curve is that portion of its short-run marginal cost curve above average variable cost.

Demand Curves for the Firm and the Industry

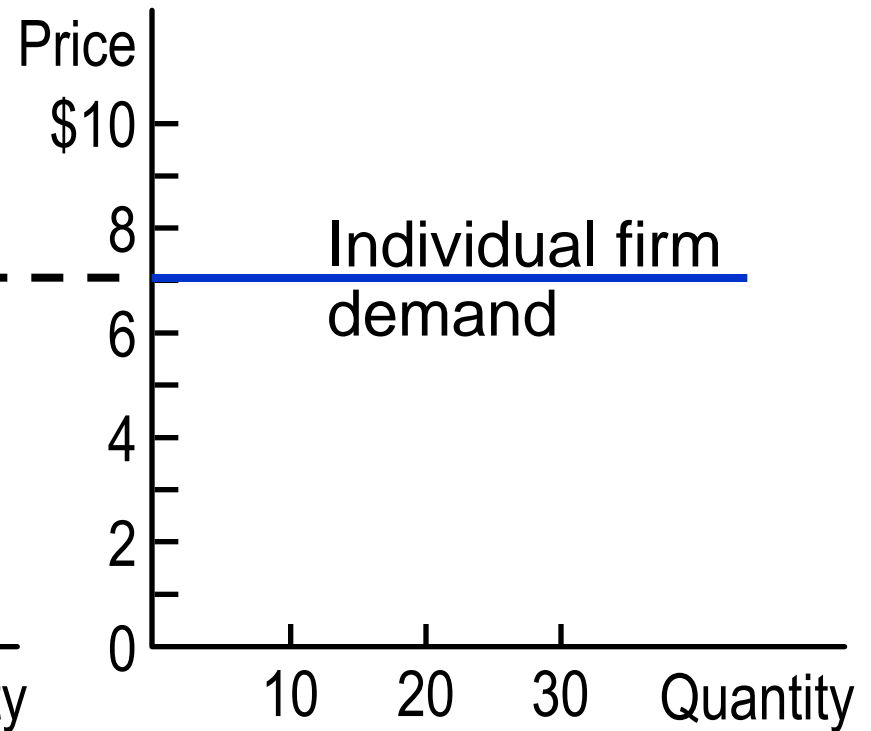
- The demand curve facing the firm is different from the industry demand curve.
- A perfectly competitive firm's demand schedule is perfectly elastic even though the demand curve for the market is downward sloping.

Market Demand Versus Individual Firm Demand Curve

Market



Firm



Profit-Maximizing Level of Output

- The goal of the firm is to maximize profits.
- Profit is the difference between total revenue and total cost.

Profit-Maximizing Level of Output

- What happens to profit in response to a change in output is determined by marginal revenue (MR) and marginal cost (MC).
- A firm maximizes profit when $MC = MR$.

Profit-Maximizing Level of Output

- ***Marginal revenue (MR)*** – the change in total revenue associated with a change in quantity.
- ***Marginal cost (MC)*** – the change in total cost associated with a change in quantity.

Marginal Revenue

- A perfect competitor accepts the market price as given.
- As a result, marginal revenue equals price ($MR = P$).

Marginal Cost

- Initially, marginal cost falls and then begins to rise.
- Marginal concepts are best defined between the numbers.

Profit Maximization: $MC = MR$

- To maximize profits, a firm should produce where marginal cost equals marginal revenue.

How to Maximize Profit

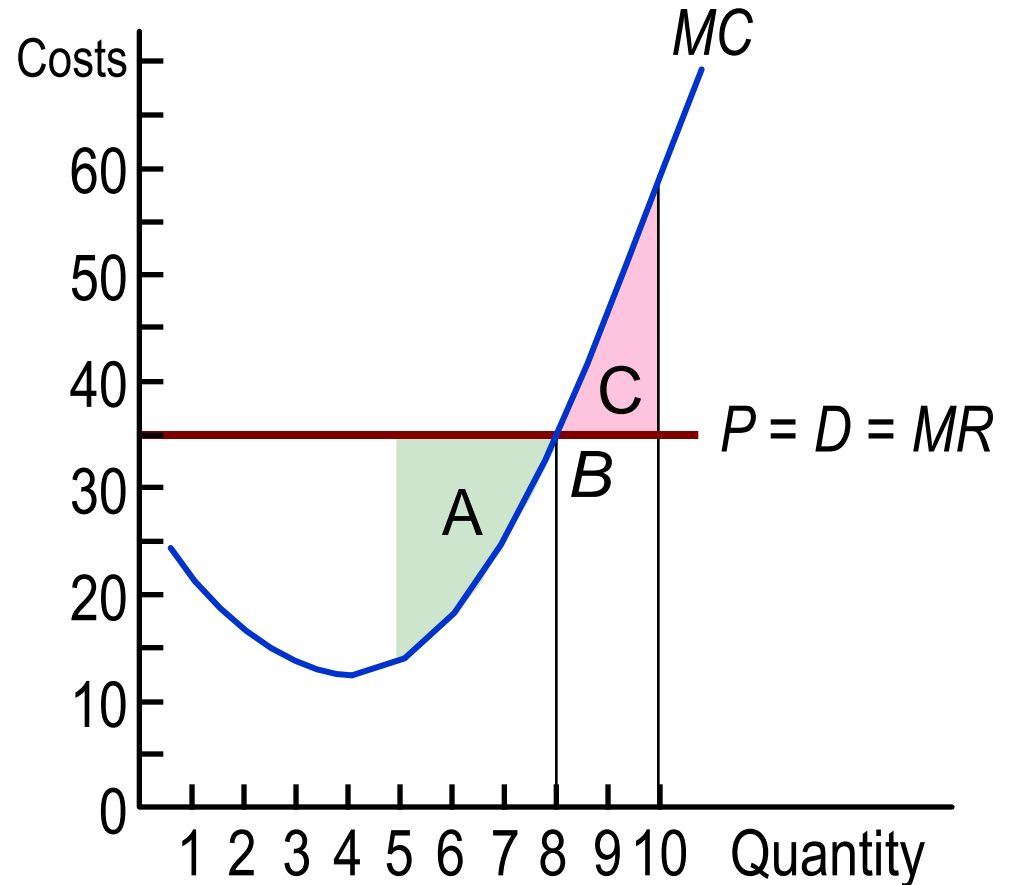
- If marginal revenue does not equal marginal cost, a firm can increase profit by changing output.
- The supplier will continue to produce as long as marginal cost is less than marginal revenue.

How to Maximize Profit

- The supplier will cut back on production if marginal cost is greater than marginal revenue.
- Thus, the profit-maximizing condition of a competitive firm is $MC = MR = P$.

Marginal Cost, Marginal Revenue, and Price

Price = MR	Quantity Produced	Marginal Cost
\$35.00	0	
35.00	1	\$28.00
35.00	2	20.00
35.00	3	16.00
35.00	4	14.00
35.00	5	12.00
35.00	6	17.00
35.00	7	22.00
35.00	8	30.00
35.00	9	40.00
35.00	10	54.00
35.00	10	68.00



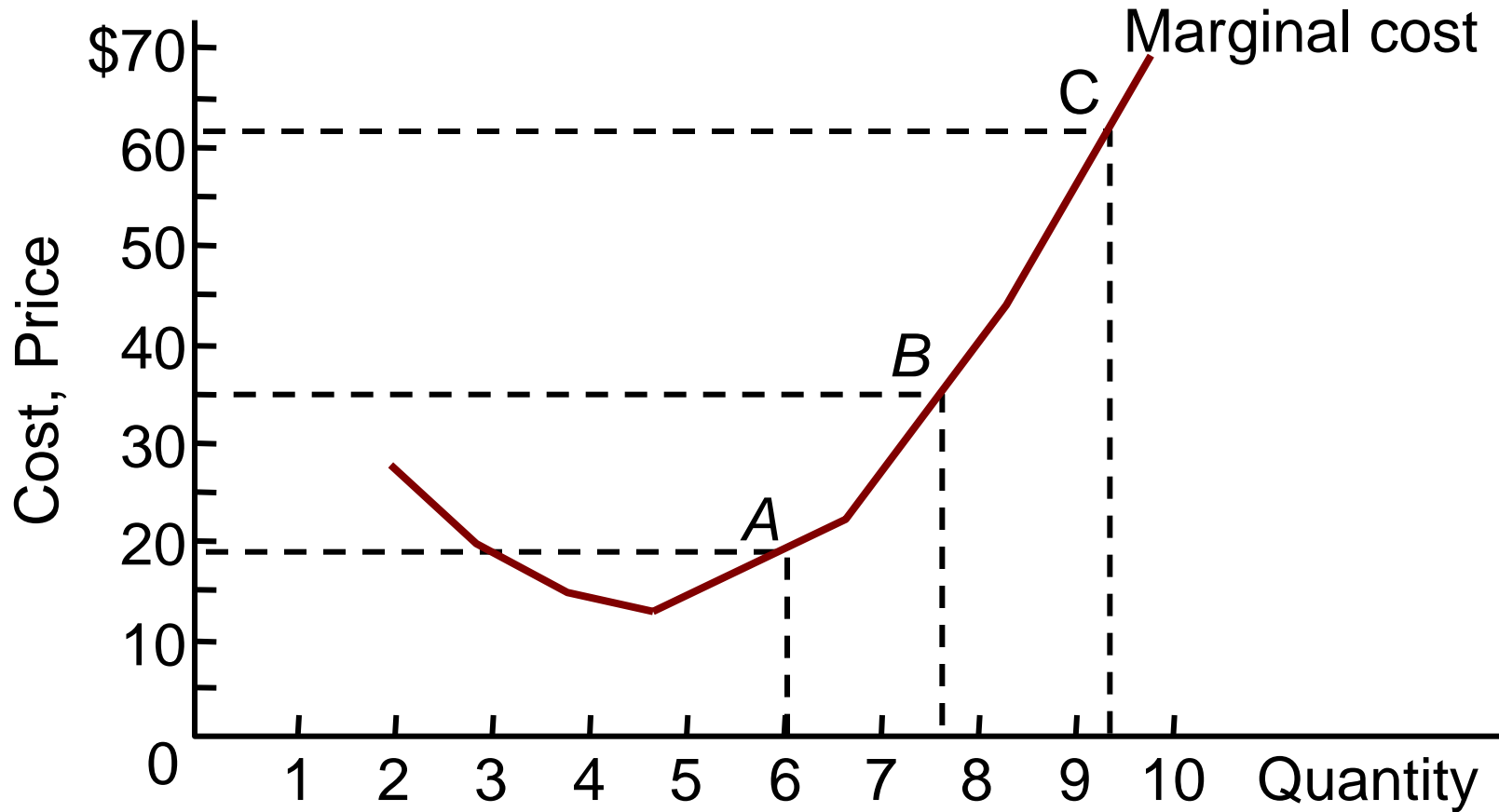
The Marginal Cost Curve Is the Supply Curve

- The marginal cost curve is the firm's supply curve above the point where price exceeds average variable cost.

The Marginal Cost Curve Is the Supply Curve

- The MC curve tells the competitive firm how much it should produce at a given price.
- The firm can do no better than produce the quantity at which marginal cost equals marginal revenue which in turn equals price.

The Marginal Cost Curve Is the Firm's Supply Curve



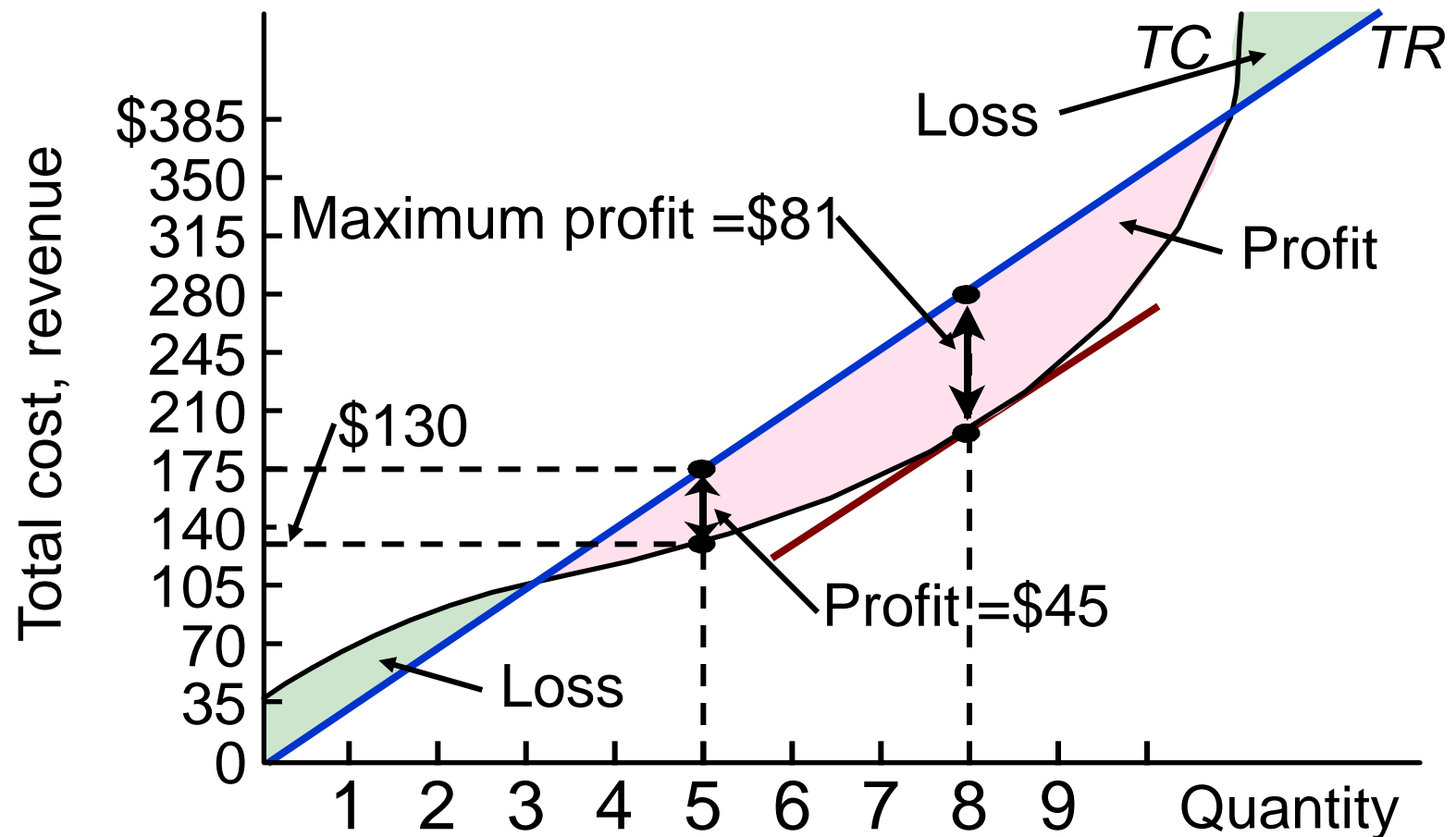
Firms Maximize Total Profit

- Firms seek to maximize total profit, not profit per unit.
 - Firms do not care about profit per unit.
 - As long as increasing output increases total profits, a profit-maximizing firm should produce more.

Profit Maximization Using Total Revenue and Total Cost

- Profit is maximized where the vertical distance between total revenue and total cost is greatest.
- At that output, MR (the slope of the total revenue curve) and MC (the slope of the total cost curve) are equal.

Profit Determination Using Total Cost and Revenue Curves



Total Profit at the Profit-Maximizing Level of Output

- The $P = MR = MC$ condition tells us how much output a competitive firm should produce to maximize profit.
- It does not tell us how much profit the firm makes.

Determining Profit and Loss From a Table of Costs

- Profit can be calculated from a table of costs and revenues.
- Profit is determined by total revenue minus total cost.

Costs Relevant to a Firm

P = MR	Output	Total Cost	Marginal Cost	Average Total Cost	Total Revenue	Profit TR-TC
—	0	40.00	—	—	0	-40.00
35.00	1	68.00	28.00	68.00	35.00	-33.00
35.00	2	88.00	20.00	44.00	70.00	-18.00
35.00	3	104.00	16.00	34.67	105.00	1.00
35.00	4	118.00	14.00	29.50	140.00	22.00
35.00	5	130.00	12.00	26.00	175.00	45.00
35.00	6	147.00	17.00	24.50	210.00	63.00

Costs Relevant to a Firm

P = MR	Output	Total Cost	Marginal Cost	Average Total Cost	Total Revenue	Profit TR-TC
35.00	4	118.00	14.00	29.50	140.00	22.00
35.00	5	130.00	12.00	26.00	175.00	45.00
35.00	6	147.00	17.00	24.50	210.00	63.00
35.00	7	169.00	22.00	24.14	245.00	76.00
35.00	8	199.00	30.00	24.88	280.00	81.00
35.00	9	239.00	40.00	26.56	315.00	76.00
35.00	10	293.00	54.00	29.30	350.00	57.00

Determining Profit and Loss From a Graph

- Find output where $MC = MR$.
 - The intersection of $MC = MR (P)$ determines the quantity the firm will produce if it wishes to maximize profits.

Determining Profit and Loss From a Graph

- Find profit per unit where $MC = MR$.
 - Drop a line down from where MC equals MR , and then to the ATC curve.
 - This is the profit per unit.
 - Extend a line back to the vertical axis to identify total profit.

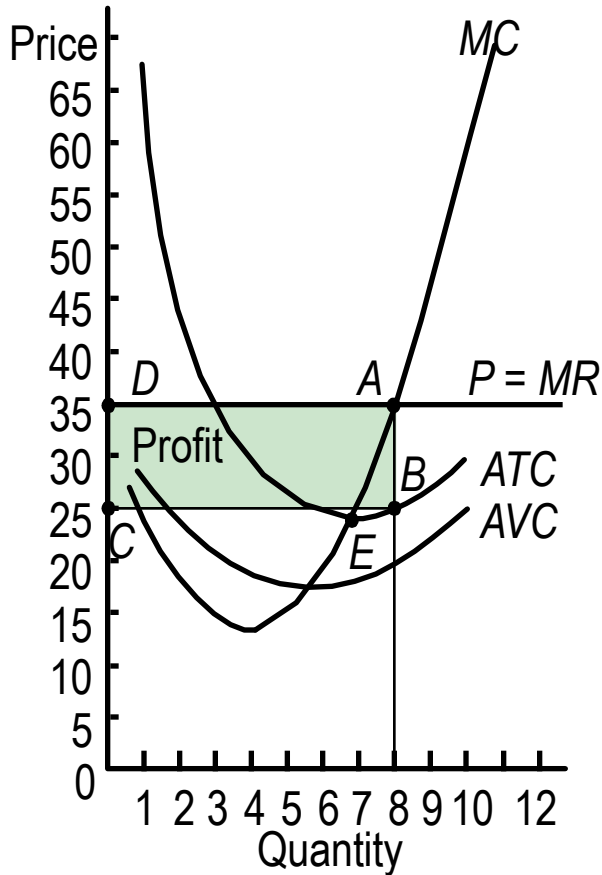
Determining Profit and Loss From a Graph

- The firm makes a profit when the ATC curve is below the MR curve.
- The firm incurs a loss when the ATC curve is above the MR curve.

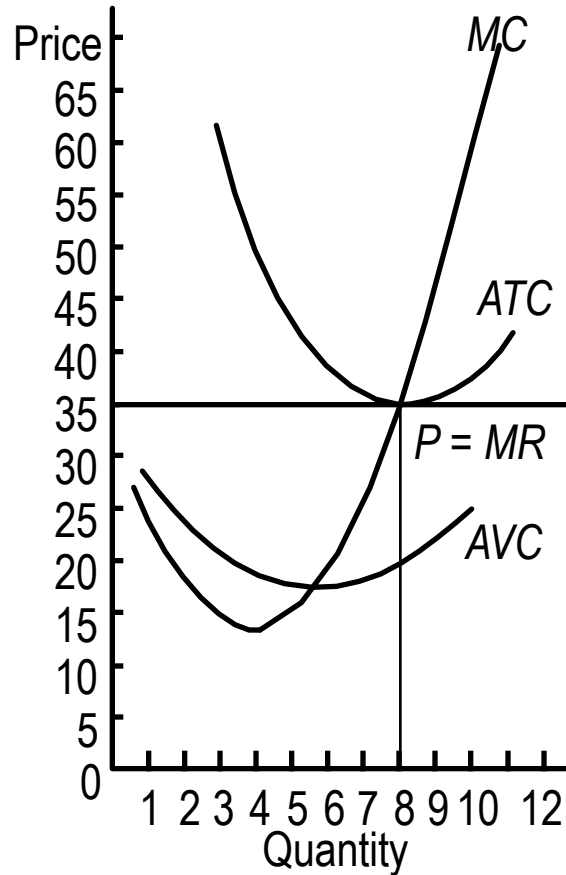
Determining Profit and Loss From a Graph

- Zero profit or loss where $MC=MR$.
 - Firms can earn zero profit or even a loss where $MC = MR$.
 - Even though economic profit is zero, all resources, including entrepreneurs, are being paid their opportunity costs.

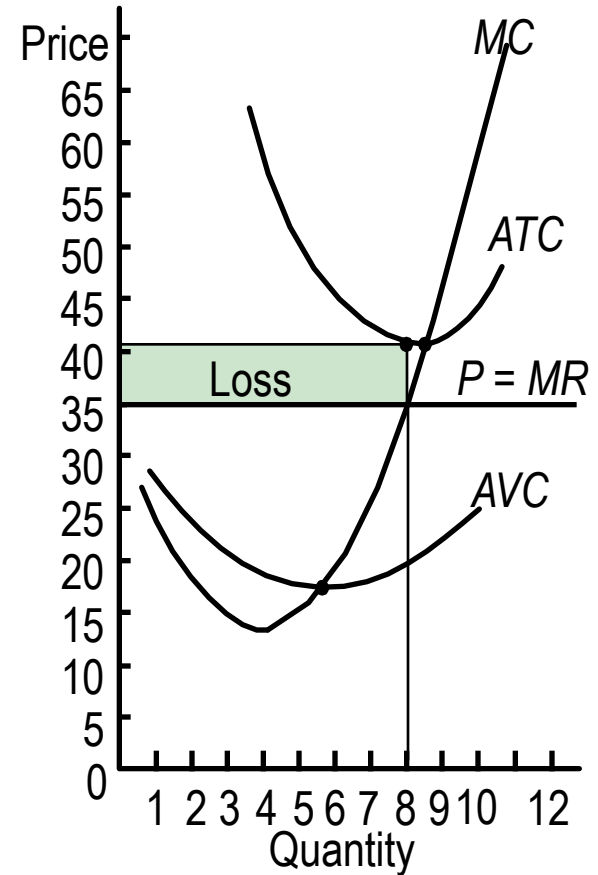
Determining Profits Graphically



(a) Profit case



(b) Zero profit case



(c) Loss case

The Shutdown Point

- The firm will shut down if it cannot cover average variable costs.
 - A firm should continue to produce as long as price is greater than average variable cost.
 - If price falls below that point it makes sense to shut down temporarily and save the variable costs.

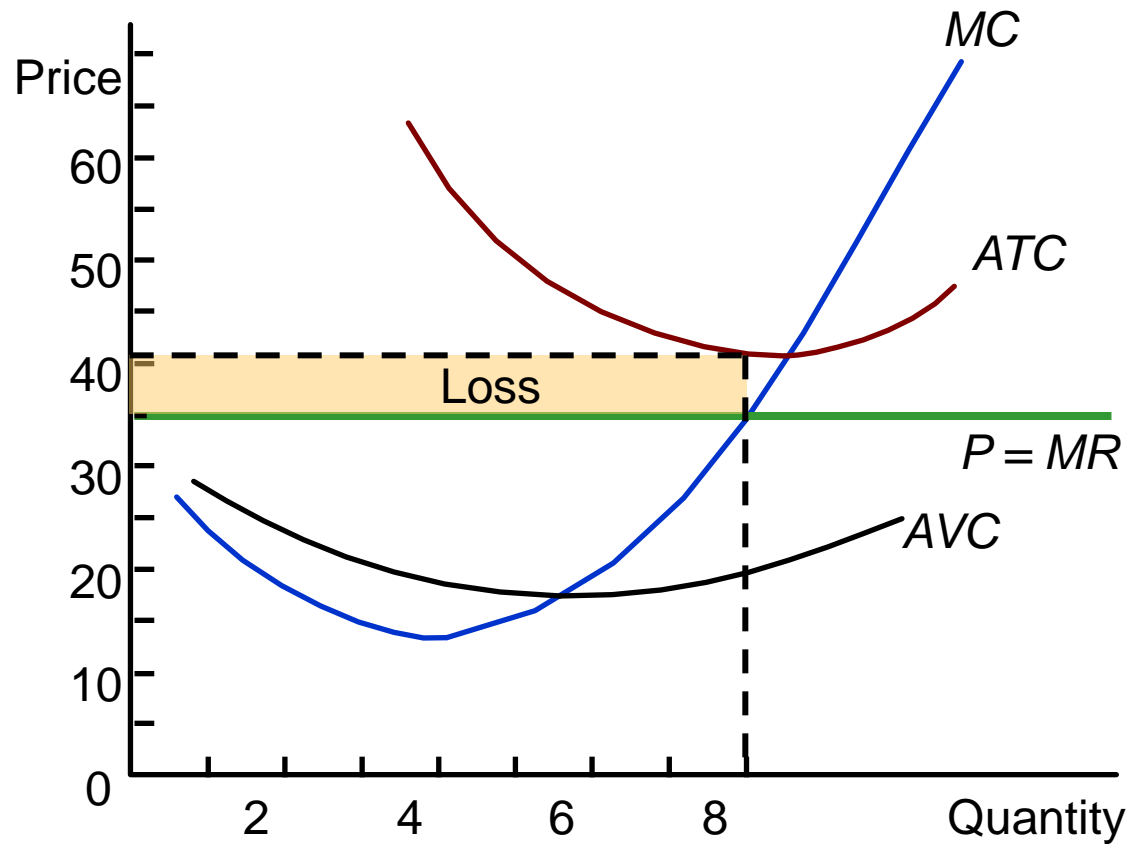
The Shutdown Point

- The *shutdown point* is the point at which the firm will be better off it shuts down than it will if it stays in business.

The Shutdown Point

- If total revenue is more than total variable cost, the firm's best strategy is to temporarily produce at a loss.
- It is taking less of a loss than it would by shutting down.

The Shutdown Decision



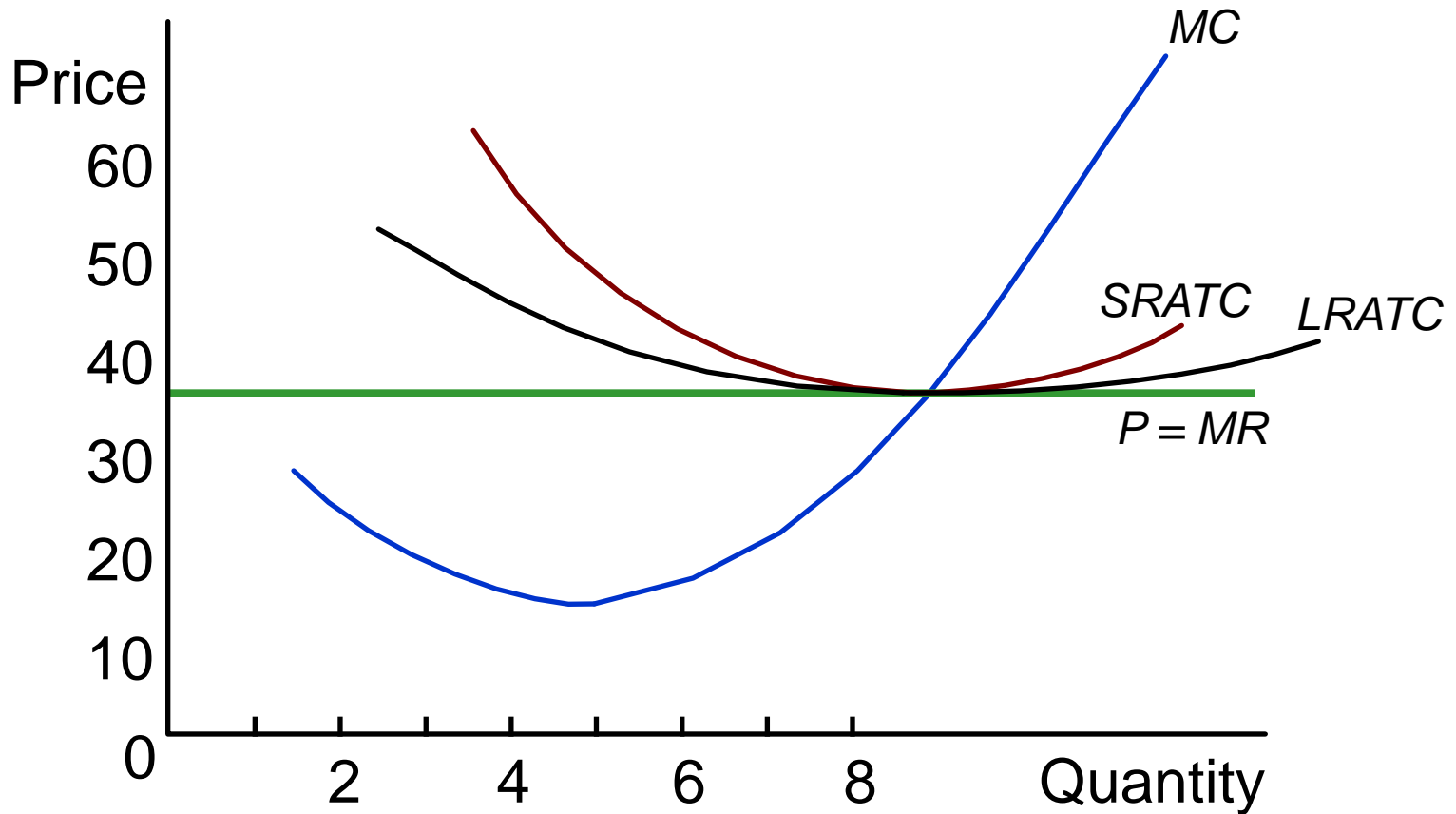
Long-Run Competitive Equilibrium

- Profits and losses are inconsistent with long-run equilibrium.
 - Profits create incentives for new firms to enter, output will increase, and the price will fall until zero profits are made.
 - The existence of losses will cause firms to leave the industry.

Long-Run Competitive Equilibrium

- Only at zero profit will entry and exit stop.
- The zero profit condition defines the long-run equilibrium of a competitive industry.

Long-Run Competitive Equilibrium



Long-Run Competitive Equilibrium

- Zero profit does not mean that the entrepreneur does not get anything for his efforts.
- ***Normal profit*** – the amount the owners of business would have received in the next-best alternative.

Long-Run Competitive Equilibrium

- Normal profits are included as a cost and are not included in economic profit.
- Economic profits are profits above normal profits.

An Increase in Demand

- If input prices remain constant, the new equilibrium will be at the original price but with a higher output.

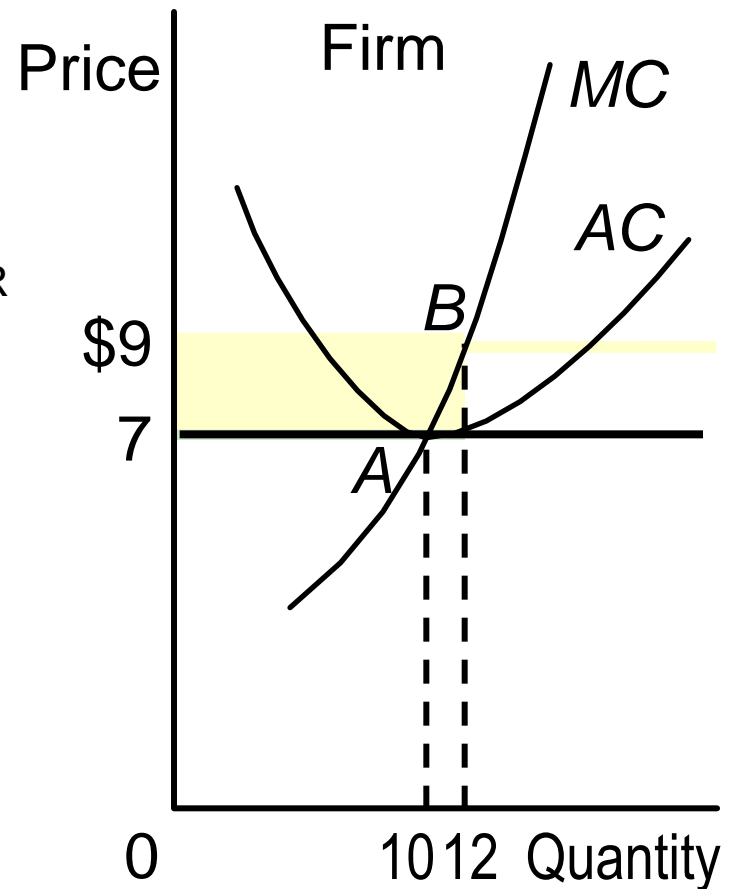
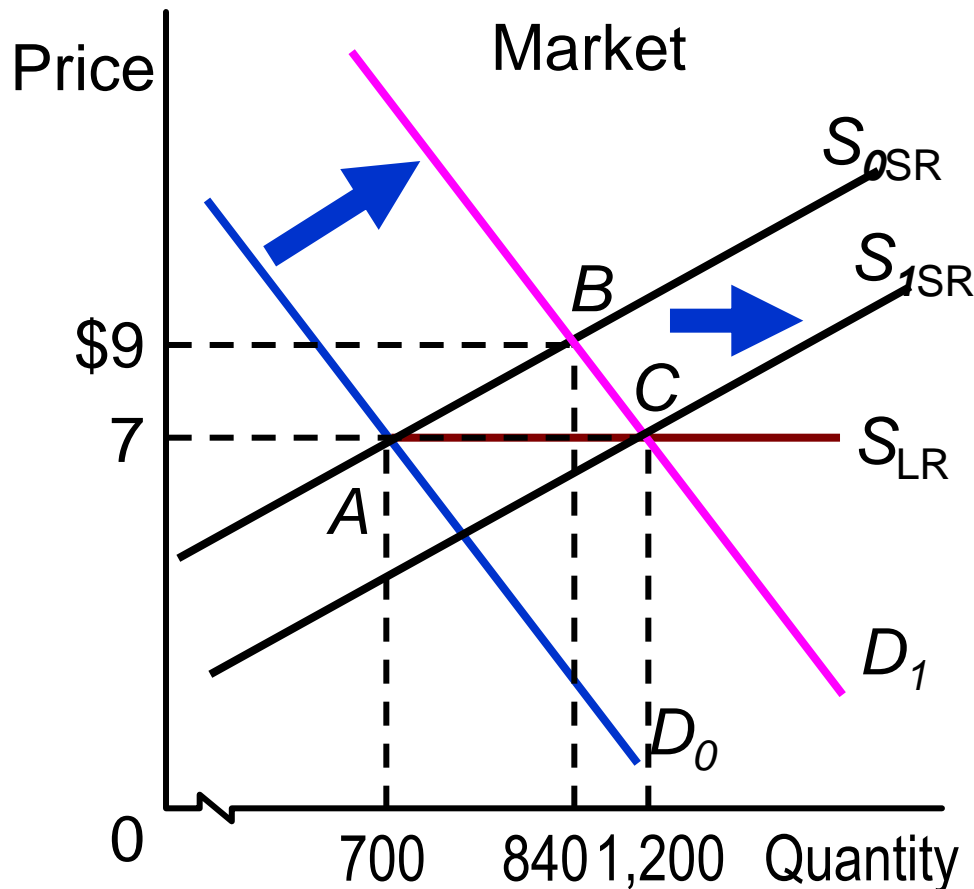
An Increase in Demand

- The original firms return to their original output but since there are more firms in the market, the total market output increases.

An Increase in Demand

- In the short run, the price does more of the adjusting.
- In the long run, more of the adjustment is done by quantity.

Market Response to an Increase in Demand



Long-Run Market Supply

- In the long run firms earn zero profits.
- If the long-run industry supply curve is perfectly elastic, the market is a ***constant-cost industry***.

Long-Run Market Supply

- Two other possibilities exist:
 - *Increasing-cost industry* – factor prices rise as new firms enter the market and existing firms expand capacity.
 - *Decreasing-cost industry* – factor prices fall as industry output expands.

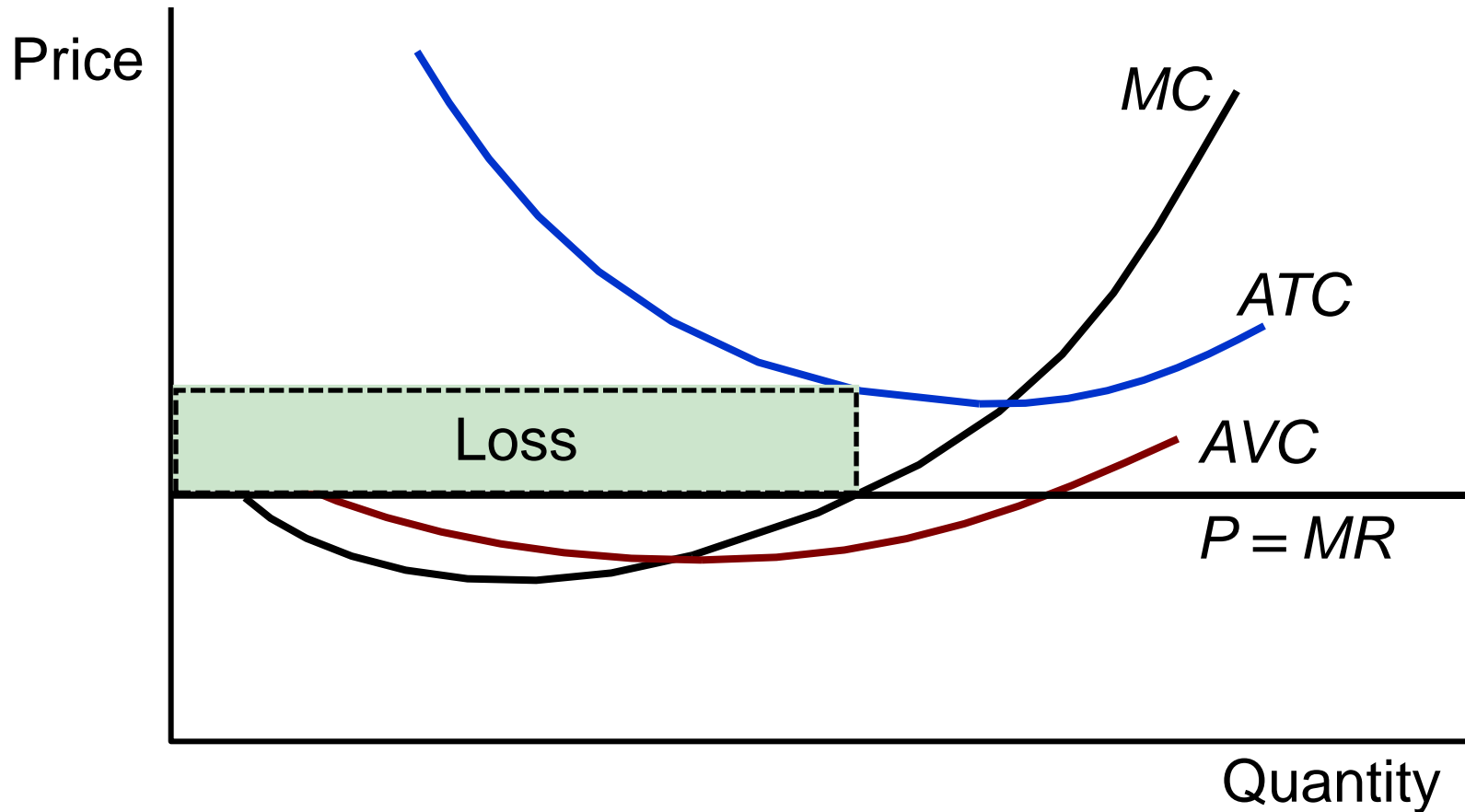
An Example in the Real World

- K-mart decided to close over 300 stores after experiencing two years of losses.
- K-mart thought its losses would be temporary.

An Example in the Real World

- Price exceeded average variable cost, so it continued to keep some stores open even though those stores were losing money.

An Example in the Real World



An Example in the Real World

- After two years of losses, its perspective changed.
- The company moved from the short run to the long run.

An Example in the Real World

- They began to think that demand was not temporarily low, but permanently low.
- At that point they shut down those stores for which $P < AVC$.