The Meaning of Competition

- A perfectly competitive market has the following characteristics:
  - Each seller takes the market price as given.
  - Firms can freely enter or exit the market.

Revenue of a Competitive Firm

**Total revenue** for a firm is the **selling price times the quantity sold**.

$$TR = (P \times Q)$$
Total revenue is proportional to the amount of output.

Average revenue tells us how much revenue a firm receives for the typical unit sold.

In perfect competition, average revenue equals the price of the good.

\[
\text{Average revenue} = \frac{\text{Total revenue}}{\text{Quantity}} = \frac{(\text{Price} \times \text{Quantity})}{\text{Quantity}} = \text{Price}
\]

Marginal revenue is the change in total revenue from an additional unit sold.

\[
\text{MR} = \frac{\Delta \text{TR}}{\Delta \text{Q}}
\]
Revenue of a Competitive Firm

For competitive firms, **marginal revenue** equals the price of the good.

Total, Average, and Marginal Revenue for a Competitive Firm

<table>
<thead>
<tr>
<th>Quantity (Q)</th>
<th>Price (P)</th>
<th>Total Revenue (TR=PxQ)</th>
<th>Average Revenue (AR=TR/Q)</th>
<th>Marginal Revenue (MR=         )</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>$6.00</td>
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Profit Maximization for the Competitive Firm

◆ The goal of a competitive firm is to maximize profit.
◆ This means that the firm will want to produce the quantity that maximizes the **difference between total revenue and total cost**.

Profit Maximization: A Numerical Example

<table>
<thead>
<tr>
<th>Price (P)</th>
<th>Quantity (Q)</th>
<th>Total Revenue (TR=PxQ)</th>
<th>Total Cost</th>
<th>Profit (TR-TC)</th>
<th>Marginal Revenue (MR=         )</th>
<th>Marginal Cost (MC=       )</th>
</tr>
</thead>
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</table>
Profit Maximization for the Competitive Firm...

The firm maximizes profit by producing the quantity at which marginal cost equals marginal revenue.

Profit Maximization for the Competitive Firm

Profit maximization occurs at the quantity where marginal revenue equals marginal cost.

Profit Maximization for the Competitive Firm

When \( MR > MC \) → increase \( Q \)

When \( MR < MC \) → decrease \( Q \)

When \( MR = MC \) → Profit is maximized.

Measuring Profit in the Graph for the Competitive Firm...

Profit-maximizing quantity
The Firm’s Short-Run Decision to Shut Down

- **A shutdown** refers to a short-run decision not to produce anything during a specific period of time because of current market conditions.
- **Exit** refers to a long-run decision to leave the market.

The firm considers its **sunk costs** when deciding to exit, but ignores them when deciding whether to shut down.

- **Sunk costs** are costs that have already been committed and cannot be recovered.
The Firm’s Short-Run Decision to Shut Down

- The firm shuts down if the revenue it gets from producing is less than the variable cost of production.

\[\text{Shut down if } TR < VC\]
\[\text{Shut down if } TR/Q < VC/Q\]
\[\text{Shut down if } P < AVC\]

The Firm’s Long-Run Decision to Exit or Enter a Market

- In the long-run, the firm exits if the revenue it would get from producing is less than its total cost.

\[\text{Exit if } TR < TC\]
\[\text{Exit if } TR/Q < TC/Q\]
\[\text{Exit if } P < ATC\]

The portion of the marginal-cost curve that lies above average variable cost is the competitive firm’s short-run supply curve.
The Firm’s Long-Run Decision to Exit or Enter a Market

- A firm will enter the industry if such an action would be profitable.
  
  **Enter if TR > TC**
  **Enter if TR/Q > TC/Q**
  **Enter if P > ATC**

The Competitive Firm’s Long-Run Supply Curve

The competitive firm’s **long-run supply curve** is the portion of its marginal-cost curve that lies above average total cost.
The Firm’s Short-Run and Long-Run Supply Curves

- **Short-Run Supply Curve**
  - The portion of its marginal cost curve that lies above average variable cost.

- **Long-Run Supply Curve**
  - The marginal cost curve above the minimum point of its average total cost curve.

Supply in a Competitive Market

Market supply equals the sum of the quantities supplied by the individual firms in the market.

The Short Run: Market Supply with a Fixed Number of Firms

- For any given price, each firm supplies a quantity of output so that its marginal cost equals price.
- The market supply curve reflects the individual firms’ marginal cost curves.
The Long Run: Market Supply with Entry and Exit

- Firms will enter or exit the market until profit is driven to zero.
- In the long run, price equals the minimum of average total cost.
- The long-run market supply curve is horizontal at this price.

Increase in Demand in the Short Run

- An increase in demand raises price and quantity in the short run.
- Firms earn profits because price now exceeds average total cost.
Increase in Demand in the Short Run...

(b) Short-Run Response

Market

Firm

Quantity (firm)

Price

Profit

MC ATC

Quantity (market)

Price

(b) Short-Run Response

Market

Firm

Quantity (firm)

Price

Profit

MC ATC

Quantity (market)

Price

(c) Long-Run Response

Market

Firm

Quantity (firm)

Price

MC ATC

Quantity (market)

Price

Increase in Demand in the Short Run...

(b) Short-Run Response

Market

Firm

Quantity (firm)

Price

Profit

MC ATC

Quantity (market)

Price

(c) Long-Run Response

Market

Firm

Quantity (firm)

Price

MC ATC

Quantity (market)

Price