PERFECT COMPETITION
What Is Perfect Competition?

Perfect competition is a market in which

- Many firms sell identical products to many buyers.
- There are no restrictions to entry into the industry.
- Established firms have no advantages over new ones.
- Sellers and buyers are well informed about prices.
What Is Perfect Competition?

Price Takers

In perfect competition, each firm is a price taker.

A **price taker** is a firm that cannot influence the price of a good or service.

No single firm can influence the price—it must “take” the equilibrium market price.

Each firm’s output is a *perfect substitute* for the output of the other firms,

- so the demand for each firm’s output is *perfectly elastic*. 
What Is Perfect Competition?

Economic Profit and Revenue

The goal of each firm is to maximize economic profit, which equals total revenue minus total cost.

Total cost is the opportunity cost of production, which includes normal profit.

A firm’s total revenue equals price, $P$, multiplied by quantity sold, $Q$, or $P \times Q$.

A firm’s marginal revenue is the change in total revenue that results from a one-unit increase in the quantity sold.
What Is Perfect Competition?

Figure 12.1 illustrates a firm’s revenue concepts.

Part (a) shows that market demand and market supply determine the market price that the firm must take.
What Is Perfect Competition?

Figure 12.1(b) shows the firm’s total revenue curve ($TR$)—the relationship between total revenue and quantity sold.
What Is Perfect Competition?

Figure 12.1(c) shows the marginal revenue curve ($MR$).

The firm can sell any quantity it chooses at the market price,

- so marginal revenue equals price and the demand curve for the firm’s product is horizontal at the market price.

(a) Sweater market

(b) Campus Sweaters’ total revenue

(c) Campus Sweaters’ marginal revenue

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What Is Perfect Competition?

The demand for a firm’s product is *perfectly elastic* because one firm’s sweater is a *perfect substitute* for the sweater of another firm.

<table>
<thead>
<tr>
<th>Quantity (Q)</th>
<th>Price (P)</th>
<th>Total Revenue (TR) = Q*P</th>
<th>Marginal Revenue (MR) = ΔTR/ΔQ</th>
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What Is Perfect Competition?

A perfectly competitive firm’s goal is to make maximum economic profit, given the constraints it faces.

So the firm must decide:

1. How to produce at minimum cost
2. What quantity to produce
3. Whether to enter or exit a market

We start by looking at the firm’s output decision.
Profit-Maximizing Output

A perfectly competitive firm chooses the output that maximizes its economic profit.

One way to find the profit-maximizing output is to look at the firm’s total revenue and total cost curves.

Figure 12.2 on the next slide looks at these curves along with the firm’s total profit curve.
Part (a) shows the total revenue, $TR$, curve.

Part (a) also shows the total cost curve, $TC$, which is like the one in Chapter 11.

Total revenue minus total cost is economic profit (or loss), shown by the curve $EP$ in part (b).
The Firm’s Output Decision

At low output levels, the firm incurs an economic loss—it can’t cover its fixed costs.

At intermediate output levels, the firm makes an economic profit.
The Firm’s Output Decision

At high output levels, the firm again incurs an economic loss—now the firm faces steeply rising costs because of diminishing returns.

The firm maximizes its economic profit when it produces 9 sweaters a day.
The Firm’s Output Decision

Marginal Analysis and Supply Decision

The firm can use marginal analysis to determine the profit-maximizing output.

Because marginal revenue is constant and marginal cost eventually increases as output increases:

- profit is maximized by producing the output at which marginal revenue, \( MR \), equals marginal cost, \( MC \).

\[ (MR=MC) \]

Figure 12.3 on the next slide shows the marginal analysis that determines the profit-maximizing output.
If \( MR > MC \), economic profit increases if output increases.

If \( MR < MC \), economic profit decreases if output increases.

If \( MR = MC \), economic profit decreases if output changes in either direction, so economic profit is maximized.
The Firm’s Output Decision

Temporary Shutdown Decision

If the firm makes an economic loss

- it must decide whether to exit the market or to stay in the market.

If the firm decides to stay in the market:

- it must decide whether to produce something or to shut down temporarily.

The decision will be the one that minimizes the firm’s loss.
The Firm’s Output Decision

Loss Comparisons Analysis

The firm’s loss equals total fixed cost \((TFC)\) plus total variable cost \((TVC)\) minus total revenue \((TR)\).

\[
\text{Economic loss} = TFC + TVC - TR \\
= TFC + (AVC - P) \times Q
\]

If the firm shuts down:

i. \(Q\) is 0 and

ii. the firm still has to pay its \(TFC\).

So the firm incurs an economic loss equal to \(TFC\).

This economic loss is the largest that the firm must bear.
The Firm’s Output Decision

The Shutdown Point

A firm’s shutdown point price and quantity at which it is indifferent between producing and shutting down.

This point is where

✓ **AVC** is at its minimum.
✓ **MC** curve crosses the **AVC** curve.
✓ the firm is **indifferent** between producing and shutting down temporarily.
✓ The firm incurs a loss equal to **TFC** from either action.
Figure 12.4 shows the shutdown point.

Minimum AVC is $17 a sweater.

If the price is $17, the profit-maximizing output is 7 sweaters a day.

The firm incurs a loss equal to the red rectangle.
If the price of a sweater is between $17 and $20.14:
the firm produces the quantity at which marginal cost equals price.

The firm covers all its variable cost and some of its fixed cost.

It incurs a loss that is less than $TFC$. 
Profits and Losses in the Short Run

Maximum profit ($\text{MR} = \text{MC}$) is not always a positive economic profit.

To determine whether a firm is making an economic profit or incurring an economic loss:

- we compare the firm’s average total cost (ATC) at the profit-maximizing output with the market price ($P$).

Figure 12.8 on the next slide shows the three possible profit outcomes.
In part (a) \( P = ATC \Rightarrow \) the firm makes zero economic profit (breaks even).

In part (b), \( P > ATC \Rightarrow \) the firm makes a positive economic profit.

In part (c) \( P < ATC \Rightarrow \) the firm incurs an economic loss—economic profit is negative.
The Firm’s Output Decision

The Firm’s Supply Curve

A perfectly competitive firm’s supply curve shows how the firm’s profit-maximizing output varies as the market price varies, other things remaining the same.

Because the firm produces the output at which \( MC = MR \), and because \( MR = P \):

☑️ the firm’s supply curve is linked to its \( MC \) curve.

But at a price below the shutdown point, the firm produces nothing.
The Firm’s Decision

If price equals minimum $AVC$, $17$ in this example, the firm is indifferent between producing nothing and producing at the shutdown point, $T$.

If the $P = $25, the firm produces 9 sweaters a day, the quantity at which $P = MC$.

If the $P = $31, the firm produces 10 sweaters a day, the quantity at which $P = MC$.

The blue curve in part (b) traces the firm’s short-run supply curve.
Output, Price, and Profit in the Short Run

The **short-run market supply curve** shows the **quantity supplied by all firms in the market at each price**

- when each **firm’s plant** & the **number of firms** remain the same.

At a $P = \text{minimum } AVC$, the shutdown price,
some firms will produce the shutdown quantity and others will produce zero.

At this price, the market supply curve is horizontal.
A Change in Demand

An increase in demand brings a rightward shift of the market demand curve: The price rises and the quantity increases.

A decrease in demand brings a leftward shift of the market demand curve: The price falls and the quantity decreases.
In short-run equilibrium, a firm might make an economic profit, break even, or incur an economic loss.

Only one of them is a long-run equilibrium because firms can enter or exit the market.

**Entry and Exit**

New firms enter an industry in which existing firms make an economic profit.

Firms exit an industry in which they incur an economic loss.

Figure 12.9 shows the effects of entry and exit.
Output, Price, and Profit in the Long Run

A Closer Look at Entry

- If the market \( P = $25 \), firms in the market lead to economic profit.
- New firms will enter the market (as long as firms are making economic profits) – the market supply increases and the market price falls.
- In the long run, the market price falls until firms are making zero economic profit.
Output, Price, and Profit in the Long Run

A Closer Look at Exit

- If the market $P = 17$, firms in the market are incurring economic loss.
- Firms will exit the market (as long as firms are incurring economic losses) – the market supply decreases and the market price rises.
- In the long run, the price continues to rise until firms make zero economic profit.
Changes in Demand and Supply as Technology Advances

- **An Increase in Demand**
  - An increase in demand shifts the market demand curve rightward.
  - Starting from long-run equilibrium, firms make economic profits.
  - The market DD curve shifts rightward, the market price rises, and each firm increases the quantity it produces.
  - The market price is now > the firm’s minimum average total cost, => economic profit.
Changes in Demand and Supply as Technology Advances

- Economic profit induces some firms to enter the market => increases the market supply and the price starts to fall.

- The quantity produced by all firms starts to decrease and each firm’s economic profit starts to fall.

- Eventually, enough firms have entered for the supply (firms no longer enter the market) & increased demand to be in balance & firms make zero economic profit.
Changes in Demand and Supply as Technology Advances

Technological Advance Changes Supply

Starting from a long-run equilibrium, when a new technology becomes available that lowers production costs, the first firms to use it make economic profit.

This induces some new-technology firms to enter the market. Market supply increases and the price falls.

When a new technology becomes available, ATC and MC of production fall.
Changes in Demand and Supply as Technology Advances

- With the lower price, old-technology firms incur economic losses.
- Some exit the market; others switch to the new technology.
- Eventually all firms are using new technology.
- The market supply has increased and firms are making zero economic profit.