

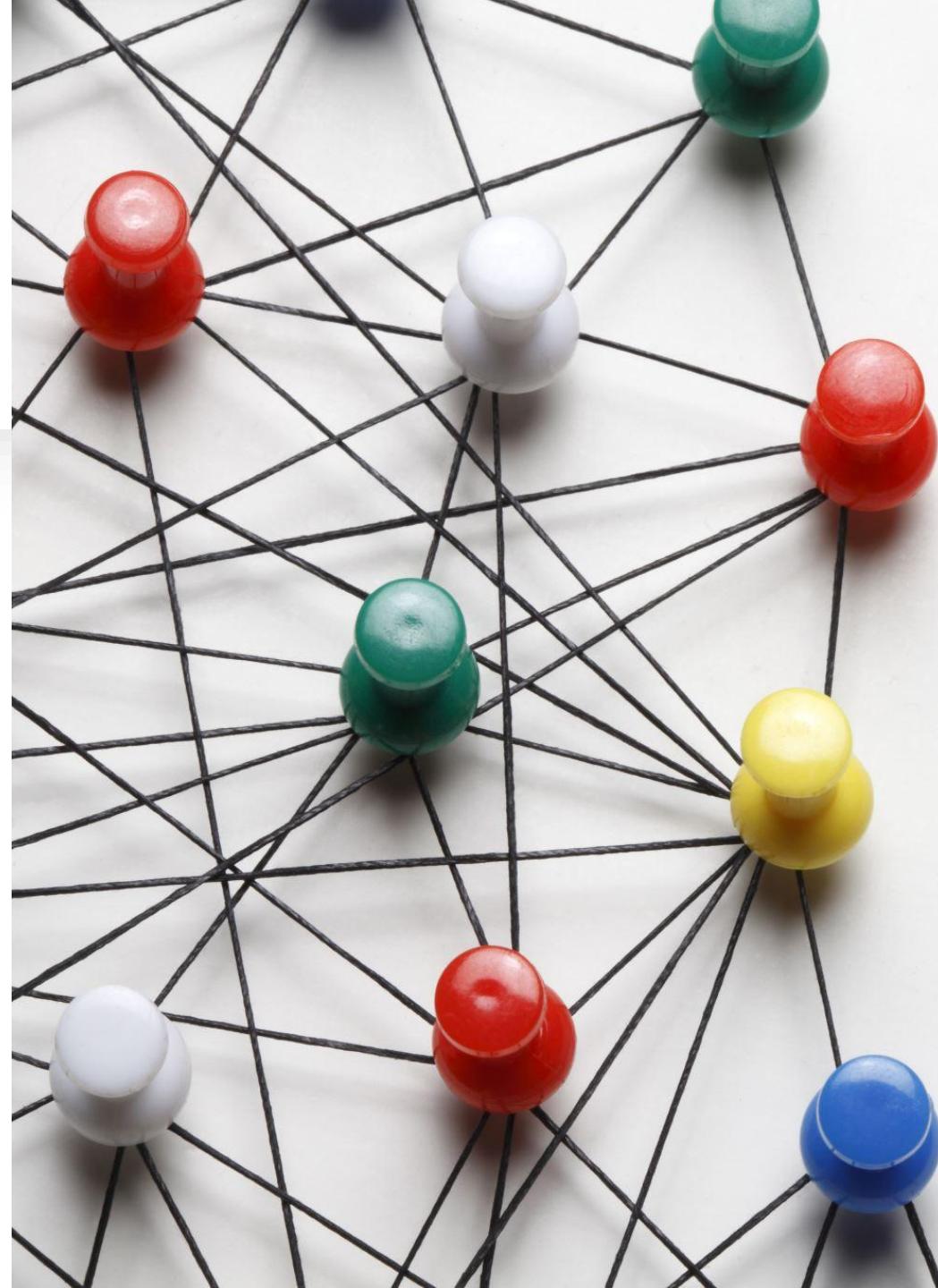
# Demand, Supply, and Market Equilibrium

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# Learning Outcomes

- Identify the circular flow of economic activities
- Define demand and supply
- Define market equilibrium
- Identify the graphical illustration of demand, supply, and equilibrium
- Identify the changes in demand, supply, and equilibrium



# The basic decision-making units

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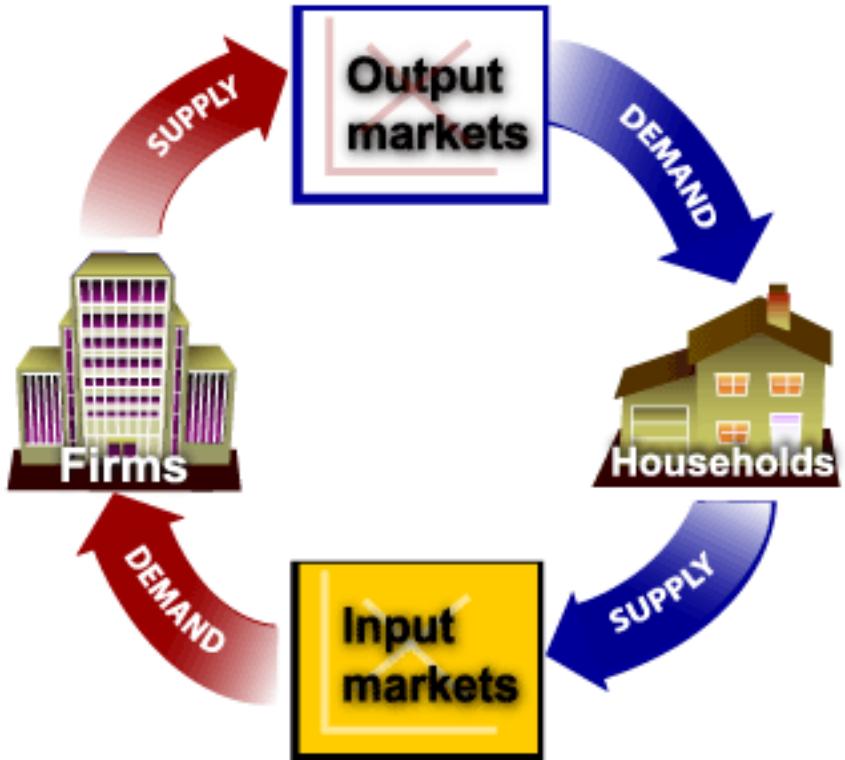
- **A firm** is an organization that transforms resources (inputs) into products (outputs). Firms are the primary producing units in a market economy.
- **An entrepreneur** is a person who organizes, manages, and assumes the risks of a firm, taking a new idea or a new product and turning it into a successful business.
- **Households** are the consuming units in an economy.

# The circular flow of economic activity

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**The circular flow of economic activity shows the connections between firms and households in input and output markets**

# Input market and output market



- Payments flow in the opposite direction as the physical flow of resources, goods, and services (counterclockwise).

- ***Output, or product, markets*** are the markets in which goods and services are exchanged.
- ***Input markets*** are the markets in which resources—labor, capital, and land used to produce products, are exchanged.

# Input Market (Factor Market)

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Input markets include:

- The ***labor market***, in which households supply work for wages to firms that demand labor.
- The ***capital market***, in which households supply their savings, for interest or for claims to future profits, to firms that demand funds to buy capital goods.
- The ***land market***, in which households supply land or other real property in exchange for rent.

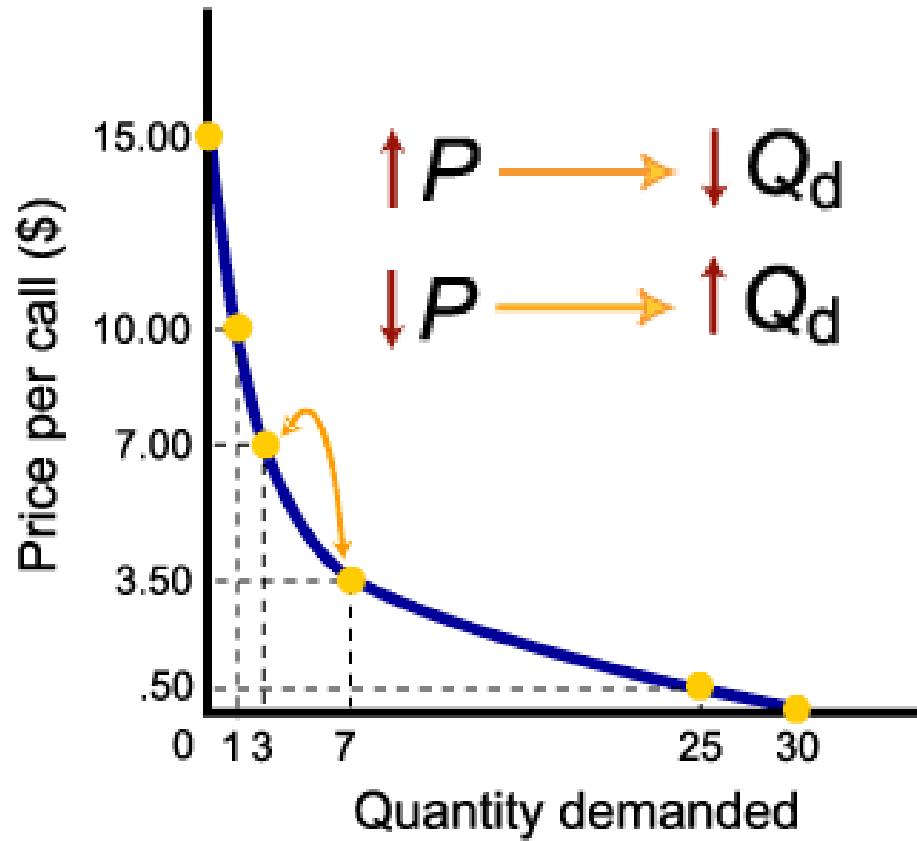
# Determinants of Household Demand

- A household's decision about the quantity of a particular output to demand depends on:
  - The *price of the product* in question.
  - The *income* available to the household.
  - The household's amount of *accumulated wealth*.
  - The *prices of related products* available to the household.
  - The household's *tastes and preferences*.
  - The household's *expectations* about future income, wealth, and prices.

# Demand

- The various amounts of a product (goods or services) that consumers are willing and able to purchase at various prices during some specific period
- Demonstrated by **the law of demand, the demand schedule and demand curve**

# The Law of Demand



- The *law of demand* states that there is a negative, or inverse, relationship between price and the quantity of a good demanded and its price.
- This means that demand curves slope downward.

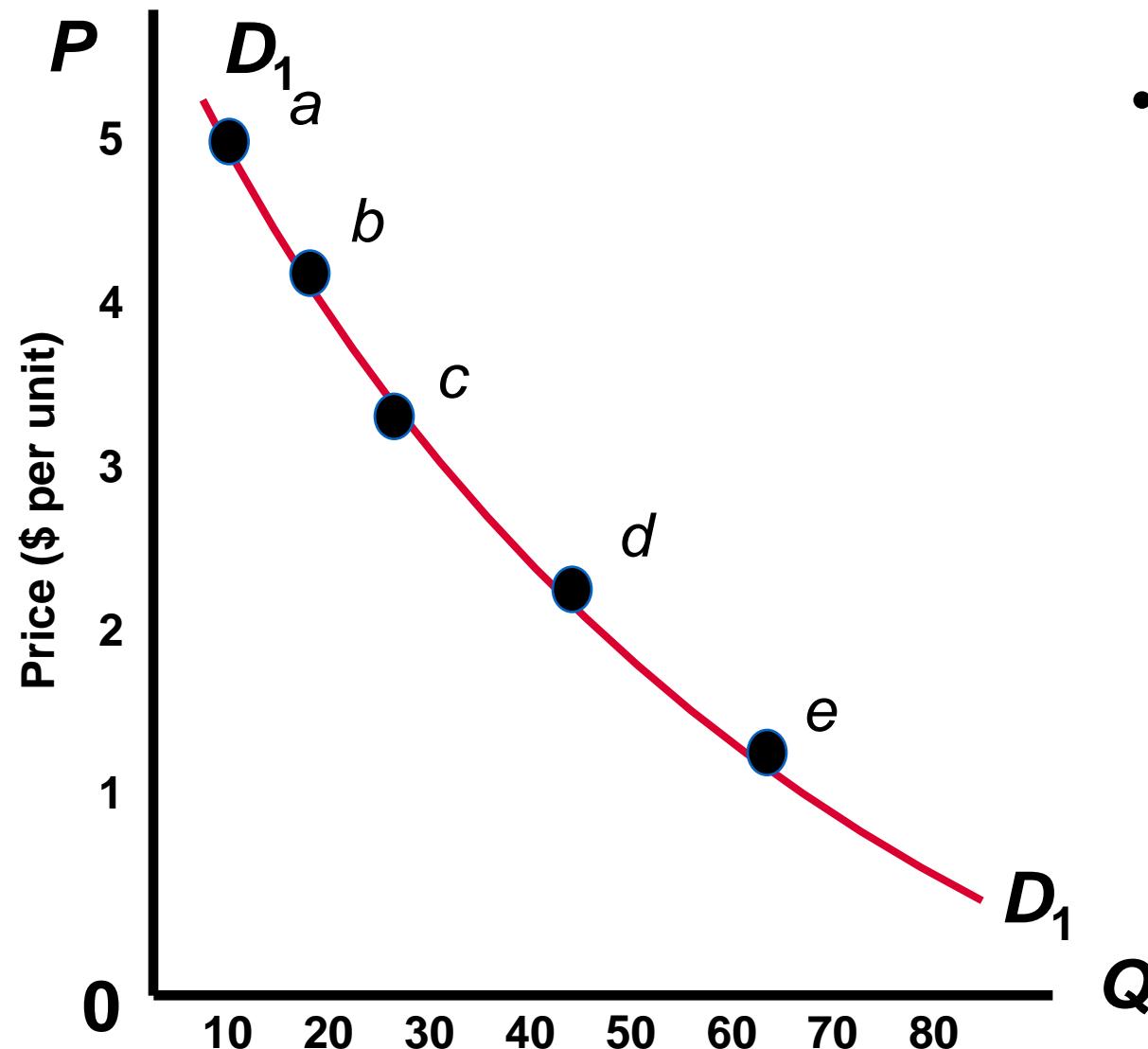
# The demand schedule

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- A ***demand schedule*** is a table showing how much of a given product a household would be willing to buy at different prices.
- Demand curves are usually derived from demand schedules.

Price per Unit	Quantity demanded
5	10
4	20
3	35
2	55
1	80

# The Demand Curve



- The ***demand curve*** is a graph illustrating how much of a given product a household would be willing to buy at different prices.



# Demand Equation

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$$Q_d = a - b P$$

# Question 01

Price of Pizza Slice	Number of Pizza Slice Demanded
\$ 0.5	8
\$0.75	7
\$1.00	6
\$1.25	5
\$1.50	4
\$1.75	3
\$2.00	2

Derive the demand equation

# Question 02

Price	Demand
0	100
1	80
2	60
4	20
5	0

Derive the demand equation

# Question 03

$$Q_d = 100 - 5P$$

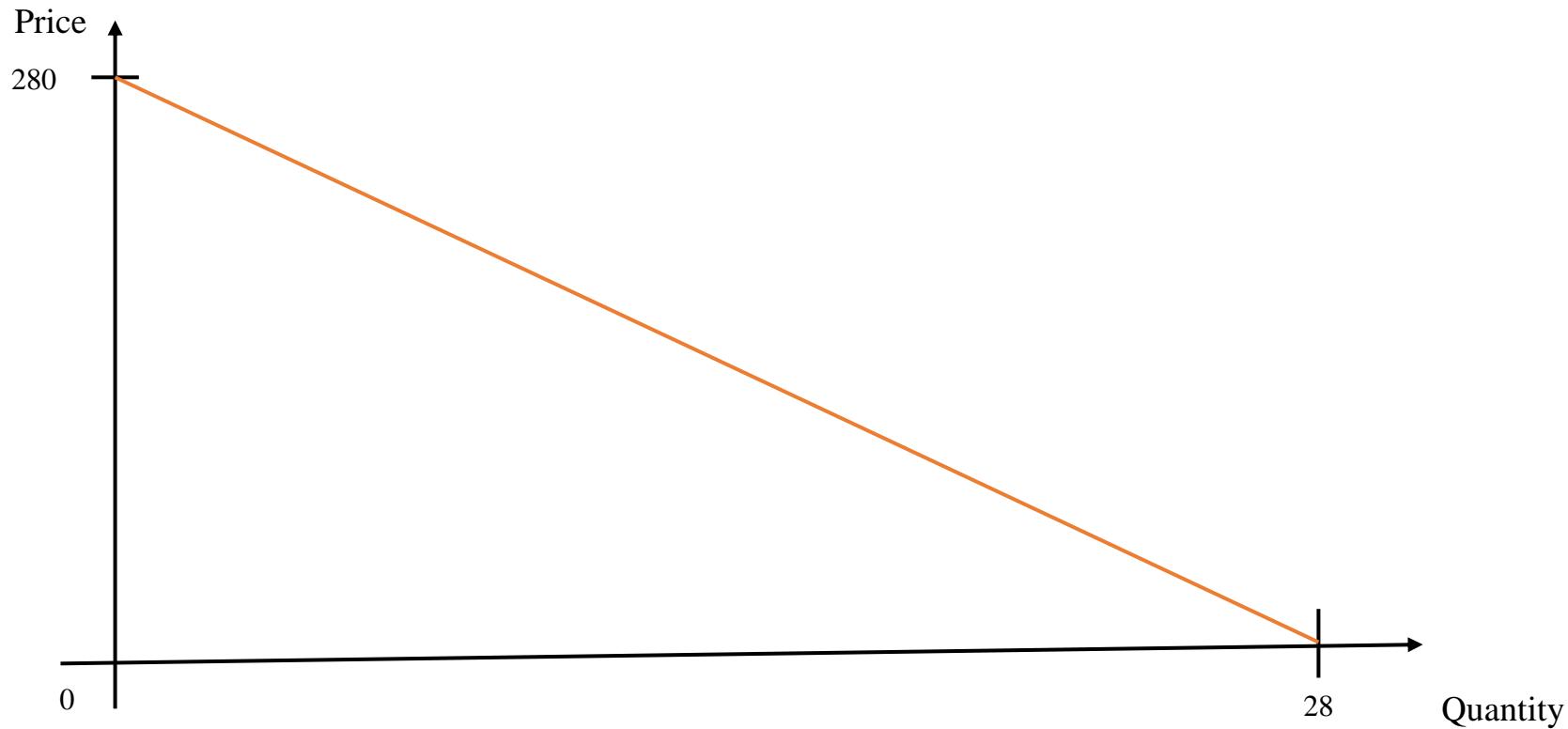
- Derive the demand schedule and draw the graph

# Question 04

$$Q_d = 2200 - 200P$$

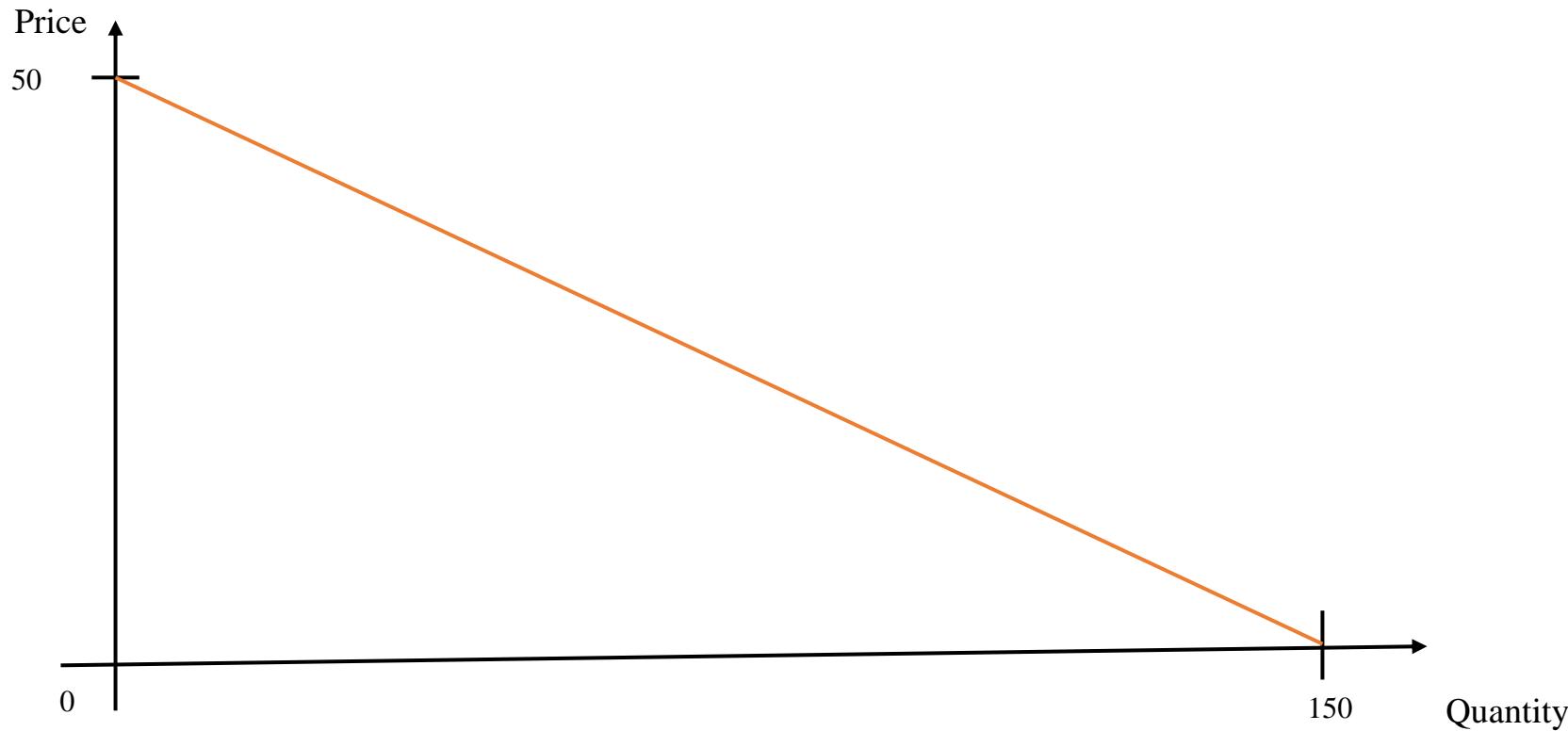
- Derive the demand schedule and draw the graph

# Question 05



Derive the demand equation and schedule

# Question 06



Derive the demand equation and schedule

# Demand function

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A demand function is a causal relationship between a dependent variable (i.e., quantity demanded) and various independent variables (i.e., factors that are believed to influence quantity demanded)

$$Q_d \propto f(P_x, Y, P_1 \dots P_{n-1}, T, P_e, S)$$

- Price of the commodity ( $P_x$ )
- Income ( $Y$ )
- Price of Related Goods ( $P_1 \dots P_{n-1}$ )
- Tastes and Preferences ( $T$ )
- Expectations ( $P_e$ )
- Social factors ( $S$ )

# Income and Wealth

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- **Income** is the sum of all households' wages, salaries, profits, interest payments, rents, and other forms of earnings in a given period of time. It is a *flow* measure.
- **Wealth**, or *net worth*, is the total value of what a household owns minus what it owes. It is a *stock* measure.

A close-up photograph of a small, silver metal shopping cart. Inside the cart are three wrapped gifts, each tied with a piece of twine. The cart is positioned on a light blue surface, and its red handle is visible.

# Related Goods and Services

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- ***Normal Goods*** are goods for which demand goes up when income is higher and for which demand goes down when income is lower.
- ***Inferior Goods*** are goods for which demand falls when income rises.

**Which of the following goods are likely to be classified as normal goods or services? Inferior? Define your answer.**

- Chocolate
- Public Transportation
- Used cars
- Mobile phone
- Computers
- Bicycle
- Movie theaters
- Dog shows
- Organic food
- Pizza
- Legal services





# Related Goods and Services

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- **Substitutes** are goods that can serve as replacements for one another; when the price of one increases, demand for the other goes up. *Perfect substitutes* are identical products.
- **Complements** are goods that “go together”; a decrease in the price of one results in an increase in demand for the other, and vice versa.

**Which of the following pairs of goods are likely to be classified as substitutes? Complements? Define your answer.**

- Bread and Butter
- PlayStation and Games
- Nike brand and Reebok brand sneakers
- IBM and Apple brand computers
- Dress shirts and ties
- Dominos and Pizza hut
- Vehicle and fuel
- Beer and wine
- Faxes and e-mail
- Cereal and milk

# Shift of Demand VS Movement along a Demand Curve

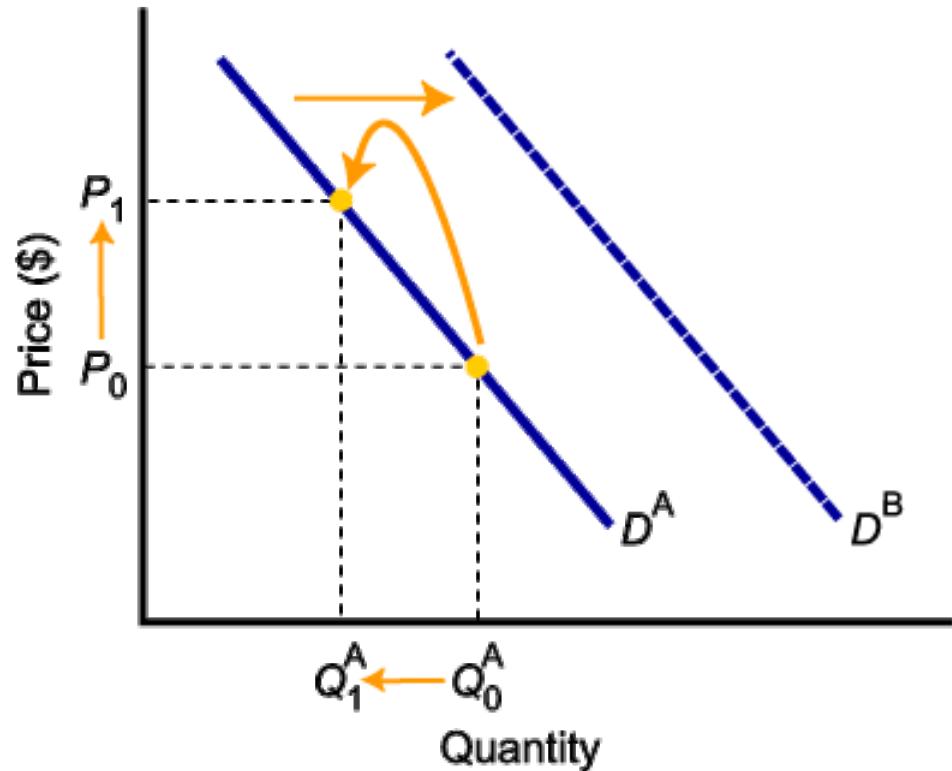
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- A change in the price of a good or service leads to a **Change in quantity demanded** (movement along the demand curve).
- Change in income, preferences, or prices of other goods or services leads to **Change in demand** (shift of the demand curve).

# Change in Demand and Change in quantity Demand

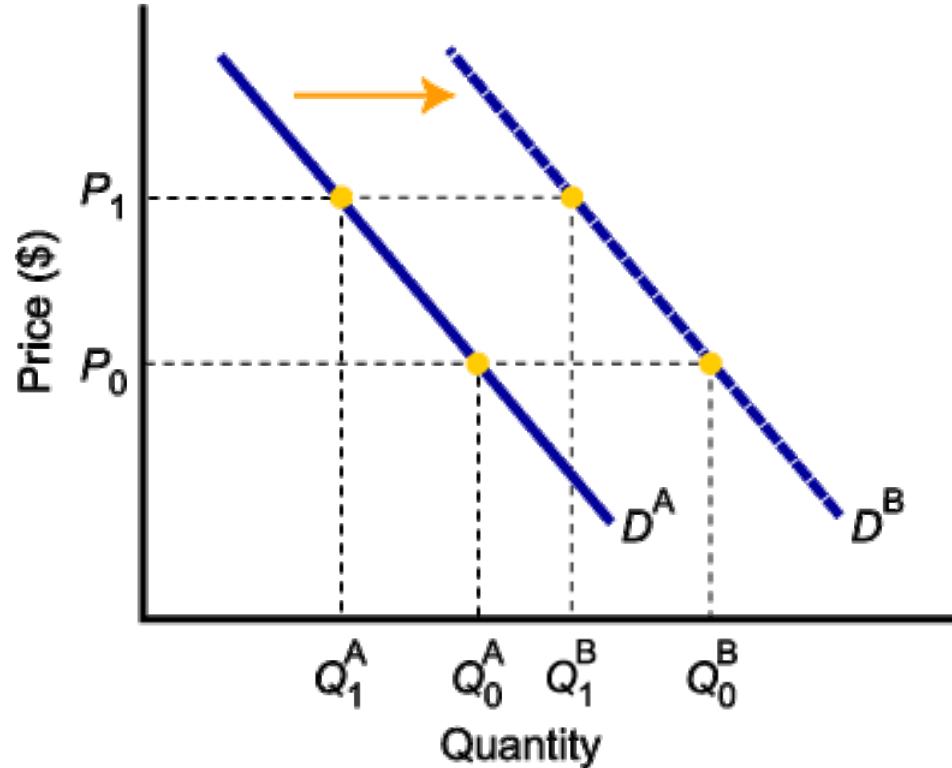
- Caused by changes in one or other of the **non-price determinants** of demand
- Represented as a **shift of the demand** curve either to the right or left
- Represents a change in the quantity demand at every price, so cannot be related to a change in price

# The shift of Demand Versus Movement Along a Demand Curve



- A change in *demand* is not the same as a change in *quantity demanded*.
- In this example, a higher price causes a lower *quantity demanded*.
- Changes in determinants of demand, other than price, cause a change in *demand*, or a *shift* of the entire demand curve, from  $D_A$  to  $D_B$ .

# A Change in Demand Versus a Change in Quantity Demanded



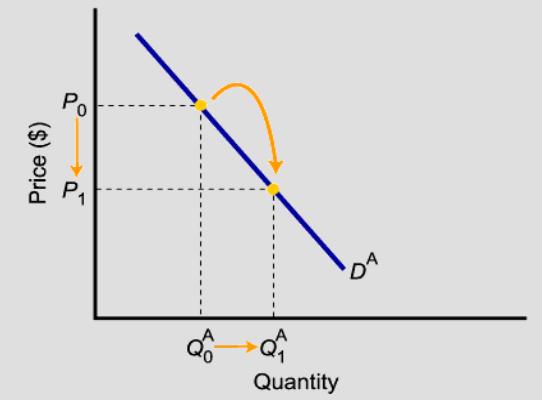
When *demand shifts* to the right, demand increases. This causes the *quantity demanded* to be greater than it was prior to the shift, *for each and every price level*.

# A Change in Demand Versus a Change in Quantity Demanded

To summarize:

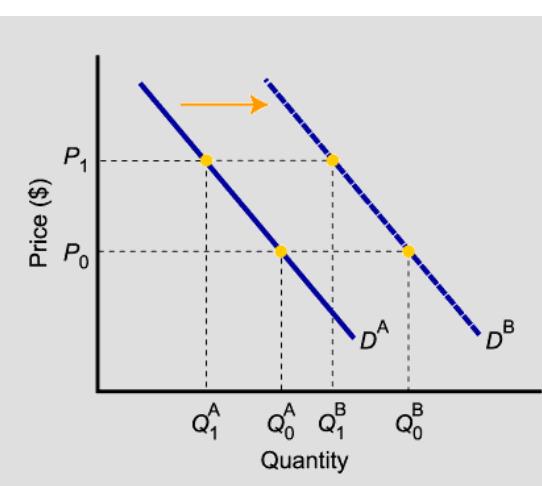
Change in price of a good or service  
leads to

Change in *quantity demanded*  
**(Movement along the curve).**



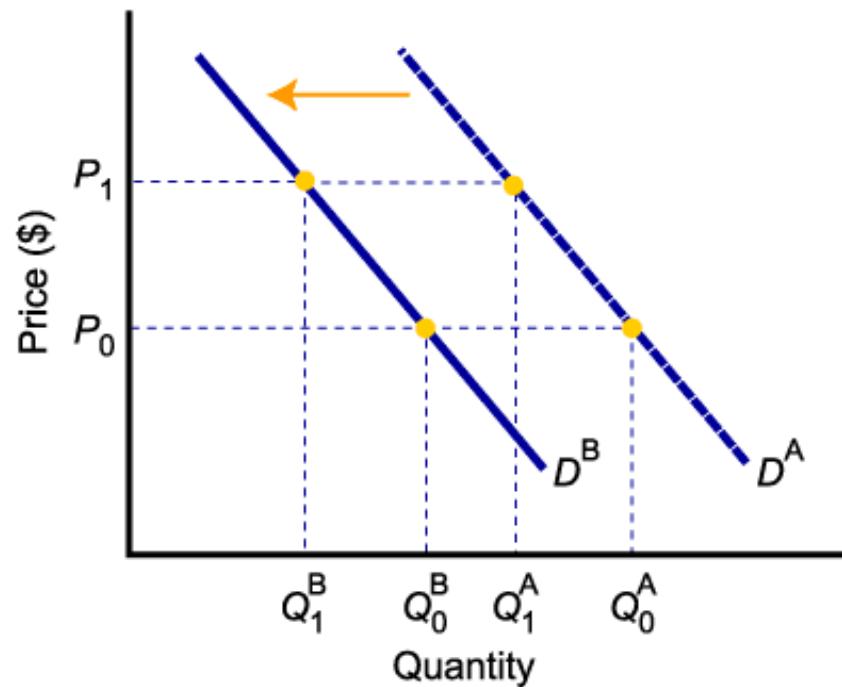
Change in income, preferences, or  
prices of other goods or services  
leads to

Change in demand  
**(Shift of curve).**

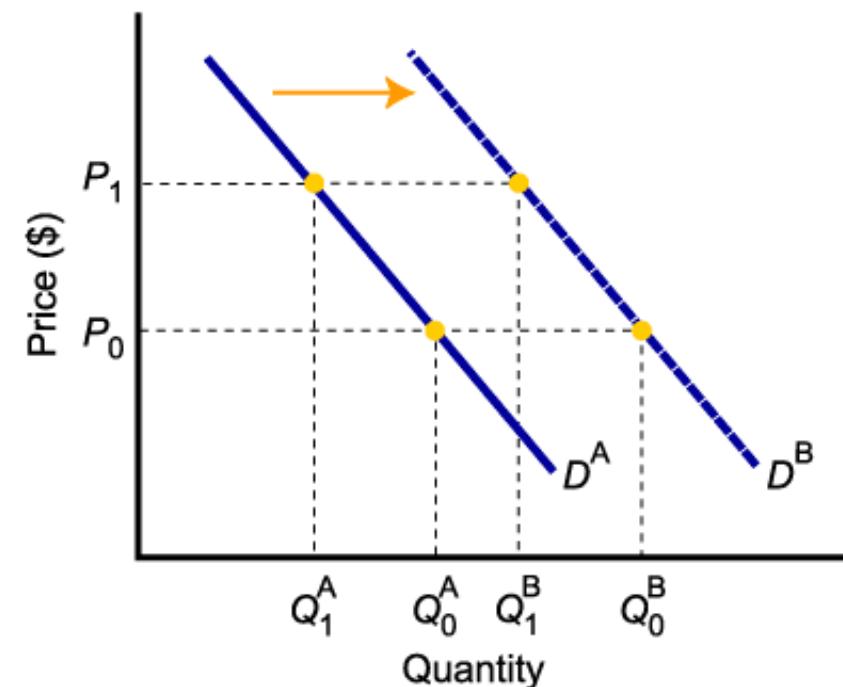


# The Impact of a Change in Income

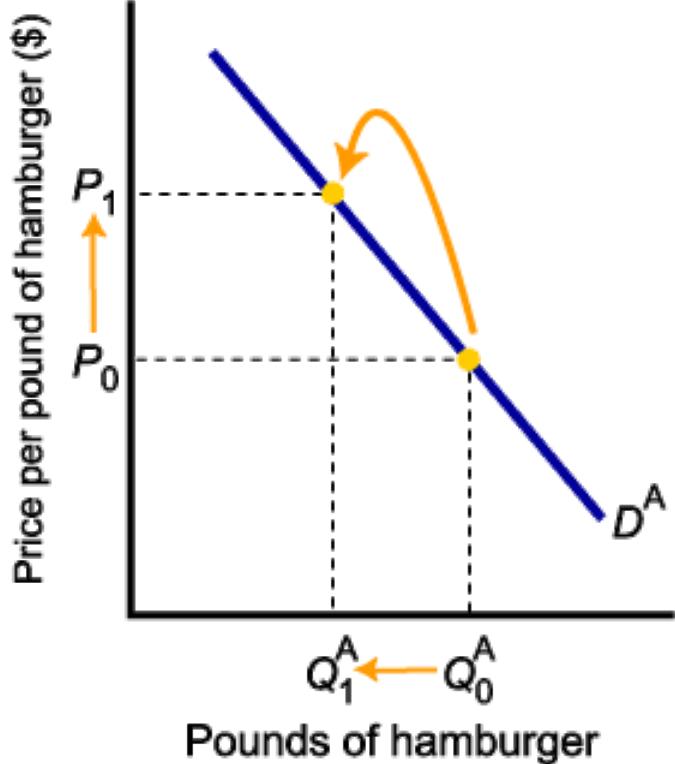
- Higher-income decreases the demand for an *inferior* good



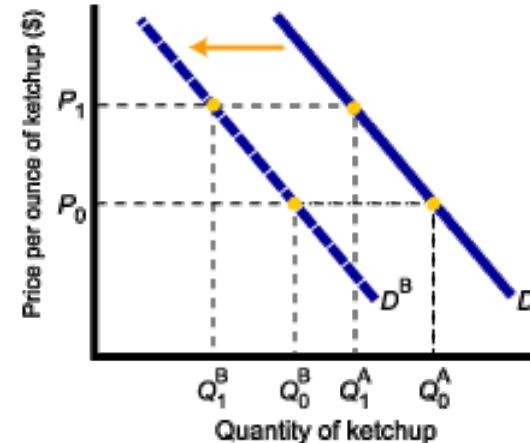
- Higher-income increases the demand for a *normal* good



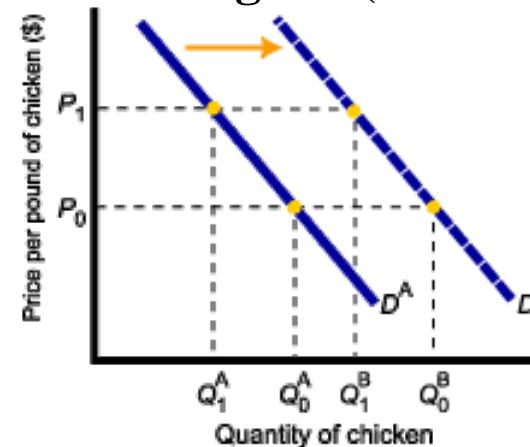
# The Impact of a Change in the Price of Related Goods



- Demand for complement good (ketchup) shifts left



- Demand for a substitute good (chicken) shifts right



- The price of hamburgers rises
- The quantity of hamburgers demanded falls

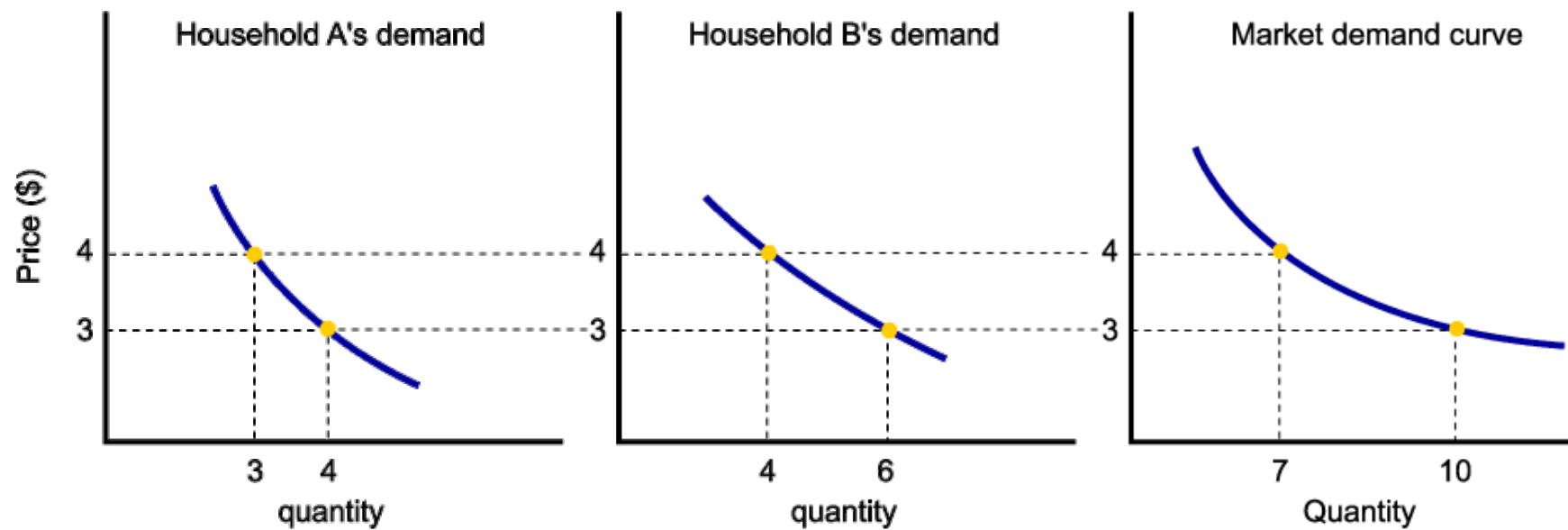
# From Household to Market Demand

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- Demand for a good or service can be defined for an *individual household*, or for a group of households that make up a *market*.
- *Market demand* is the sum of all the quantities of a good or service demanded per period by all the households buying in the market for that good or service.

# From Household Demand to Market Demand

- Assuming there are only two households in the market, market demand is derived as follows:



# EXERCISE

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Explain what will happen to pizza demand in each scenario using graphs.

- Increase in **income** of households
- Increase in **price** of pizza
- Increase in the price of **cheese**
- Decrease in price of **burgers**
- Customers' **preference** for pizza reduced

# Supply

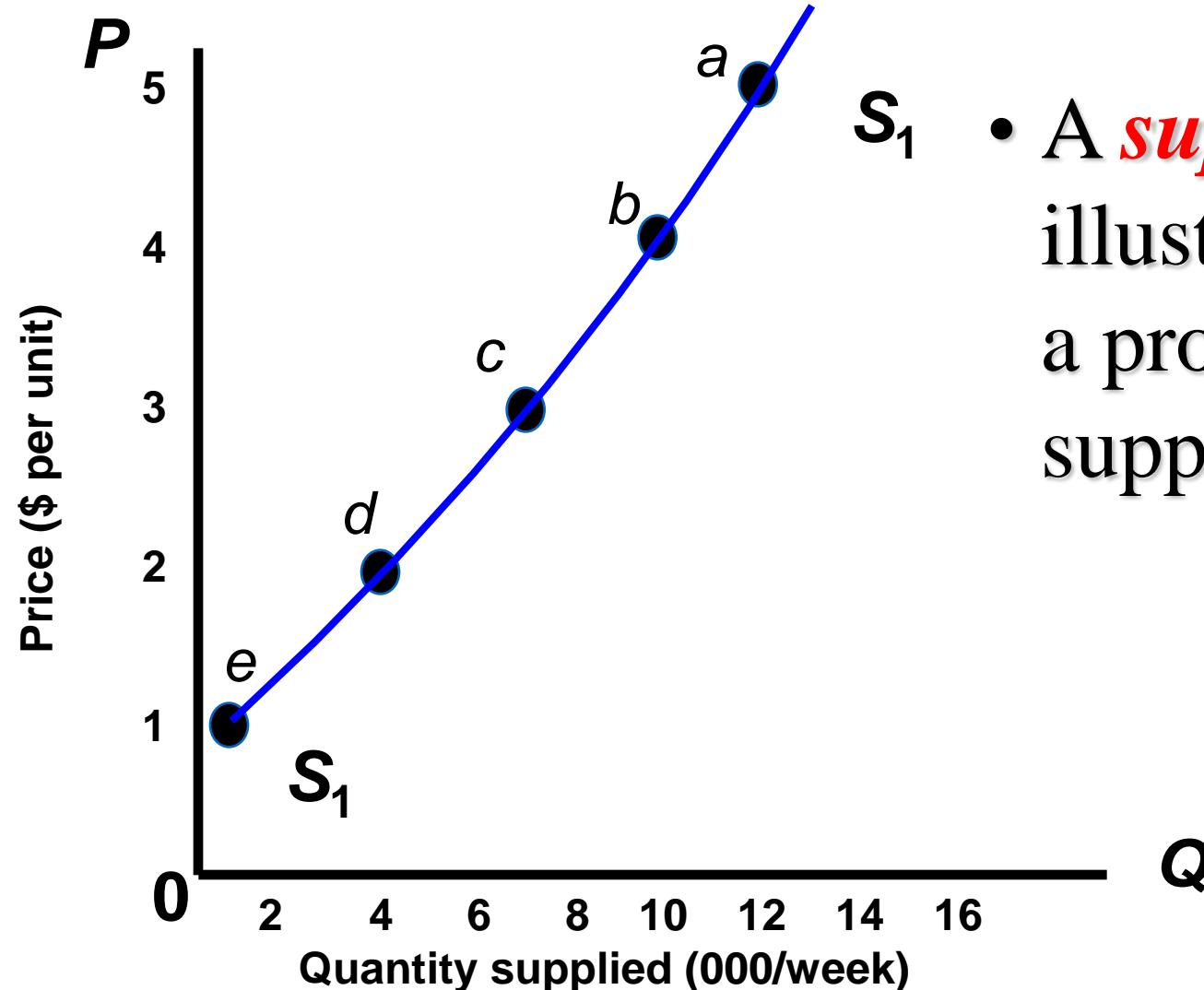
- Amount of goods or services that sellers are willing and able to sell at the price level.

# Supply in Output Markets

- A ***supply schedule*** is a table showing how much of product firms will supply at different prices.
- ***Quantity supplied*** represents the number of units of a product that a firm would be willing and able to offer for sale at a particular price during a given time period.

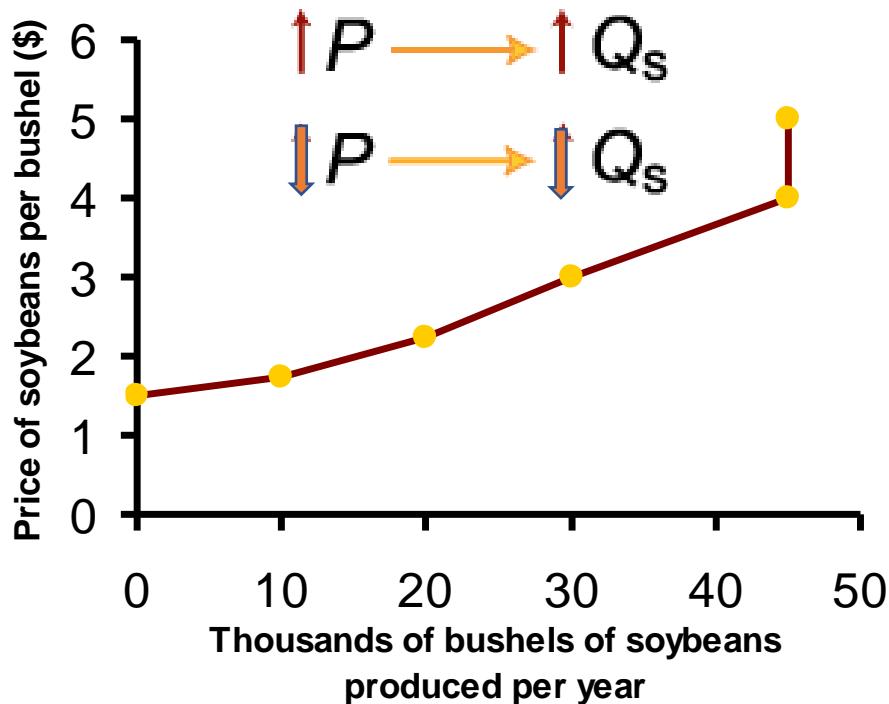
Price per Unit	Quantity Supplied
5	12,000
4	10,000
3	7,000
2	4,000
1	1,000

# The Supply Curve and the Supply Schedule



- A *supply curve* is a graph illustrating how much of a product a firm will supply at different prices.

# The Law of Supply



- The *law of supply* states that there is a positive relationship between the price and quantity of a good supplied.
- This means that supply curves typically have a positive slope.



# Supply Equation

$$Q_s = a + b P$$

# Supply function

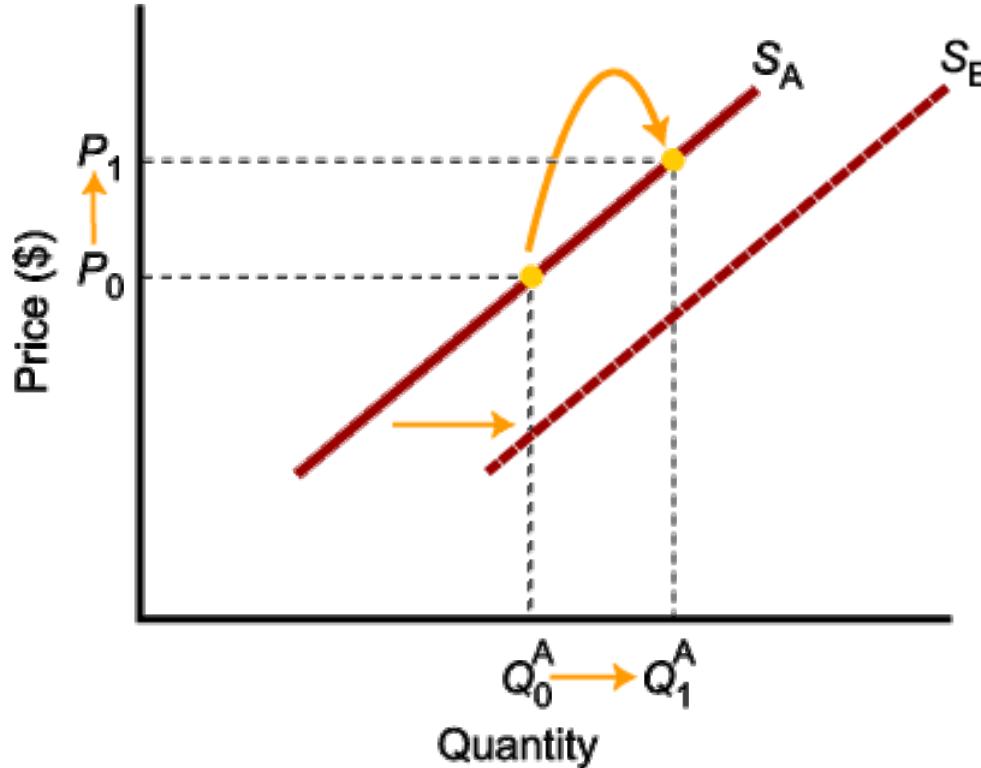
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A supply function is a causal relationship between a dependent variable (i.e., quantity supplied) and various independent variables (i.e., factors that are believed to influence quantity supplied)

$$Q_d \propto f(P_x, P_f, P_1 \dots P_{n-1}, T, E, G)$$

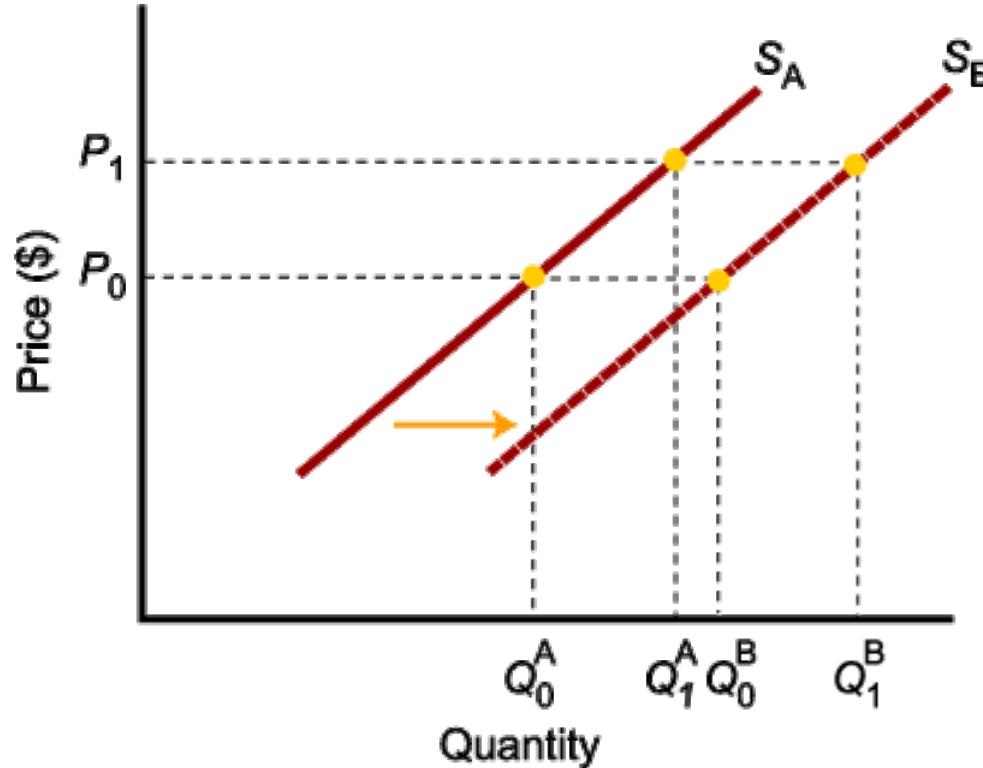
- Price of the commodity ( $P_x$ )
- Price of factors of production or inputs ( $P_f$ )
- Price of Related Goods ( $P_1 \dots P_{n-1}$ )
- Technology ( $T$ )
- Expectations of the supplier ( $E$ )
- Government Policies ( $G$ )

# A Change in Supply Versus a Change in Quantity Supplied



- In this example, changes in determinants of supply, other than price, cause an *increase in supply*, or a *shift* of the entire supply curve, from  $S_A$  to  $S_B$ .
- A change in *supply* is not the same as a change in *quantity supplied*.
  - In this example, a higher price causes *higher quantity supplied*, and a *move along* the demand curve.

# A Change in Supply Versus a Change in Quantity Supplied



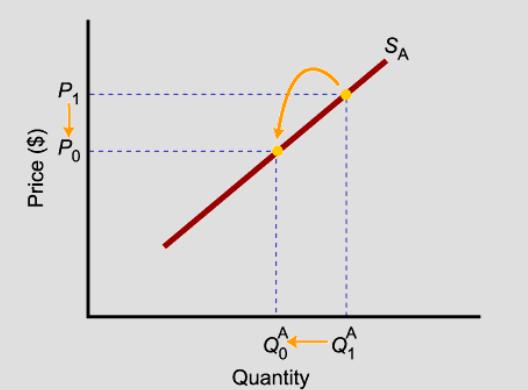
- When *supply shifts* to the right, supply increases. This causes the *quantity supplied* to be greater than it was prior to the shift, *for each and every price level*.

# A Change in Supply Versus a Change in Quantity Supplied

To summarize:

Change in price of a good or service  
leads to

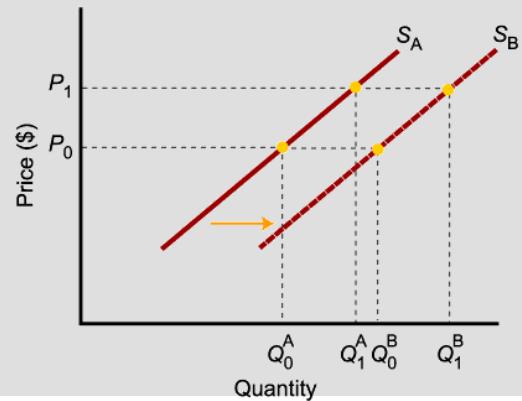
Change in *quantity supplied*  
**(Movement along the curve).**



Change in costs, input prices, technology, or prices of  
related goods and services

leads to

Change in supply  
**(Shift of curve).**



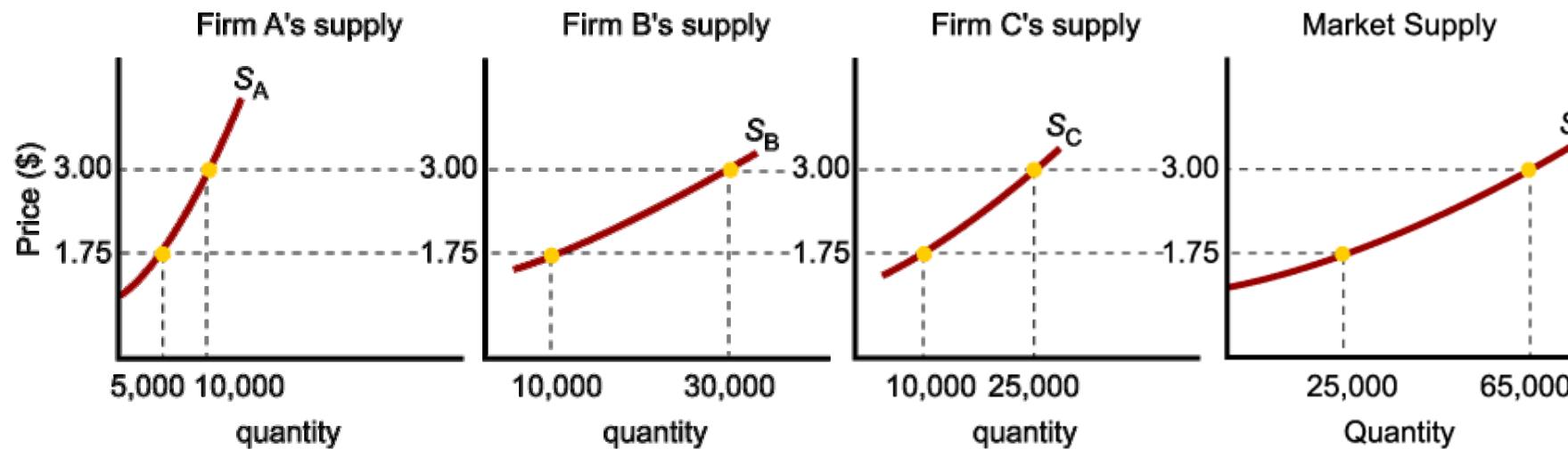
# From Individual Supply to Market Supply

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- The supply of a good or service can be defined for an individual firm, or for a group of firms that make up a market or an industry.
- *Market supply* is the sum of all the quantities of a good or service supplied per period by all the firms selling in the market for that good or service.

# Market Supply

- As with market demand, *market supply* is the horizontal summation of individual firms' supply curves.

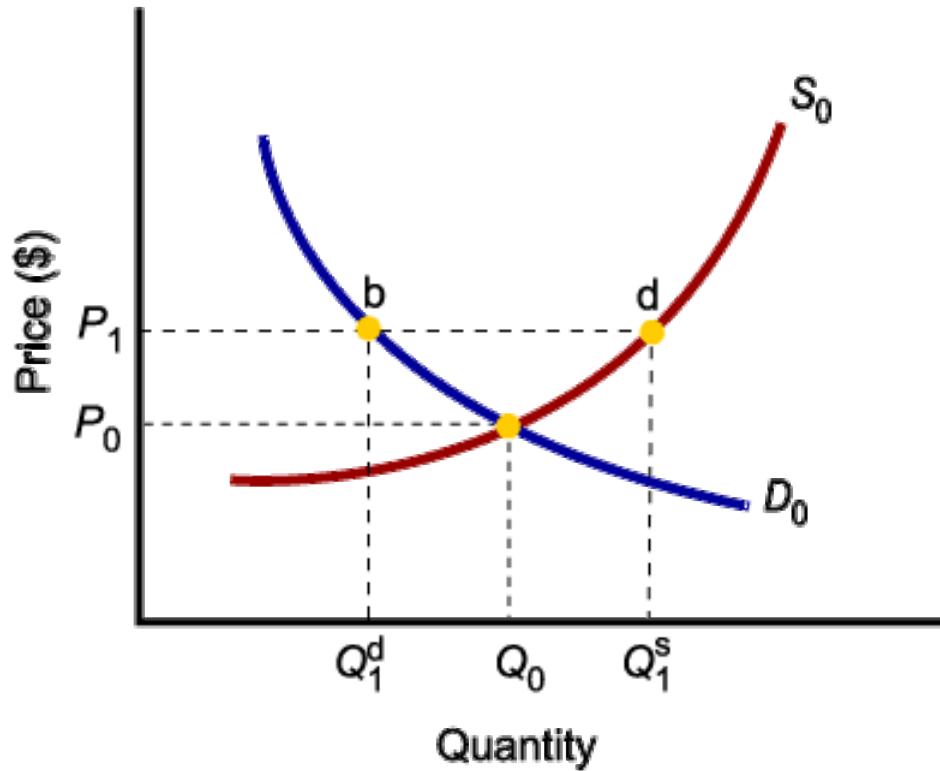


# Market Equilibrium

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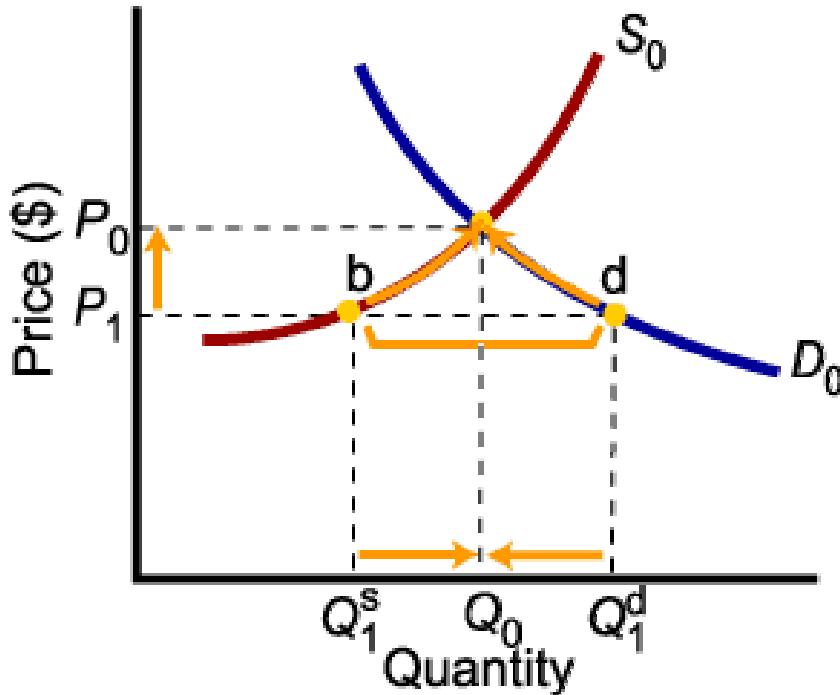
- The operation of the market depends on the interaction between buyers and sellers.
- An *equilibrium* is a condition that exists when the quantity supplied and quantity demanded are equal.
- At equilibrium, there is no tendency for the market price to change.

# Market Equilibrium



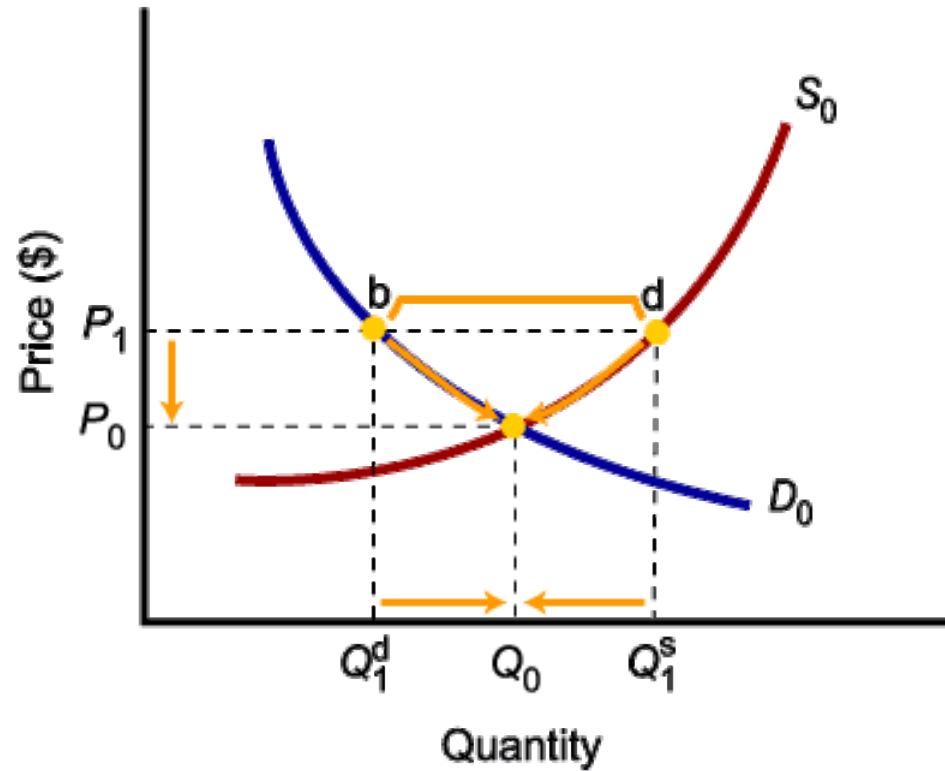
- Only in equilibrium is the quantity supplied equal to the quantity demanded.
- At any price level other than  $P_0$ , the wishes of buyers and sellers do not coincide.

# Market Disequilibrium



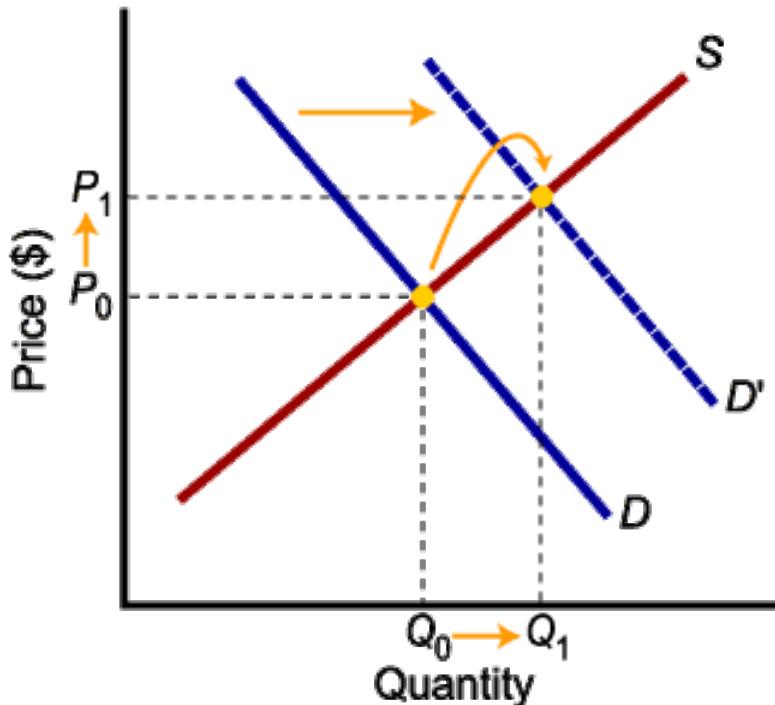
- ***Excess demand***, or shortage, is the condition that exists when the quantity demanded exceeds the quantity supplied at the current price.
- When the quantity demanded exceeds the quantity supplied, the price tends to rise until equilibrium is restored.

# Market Disequilibrium

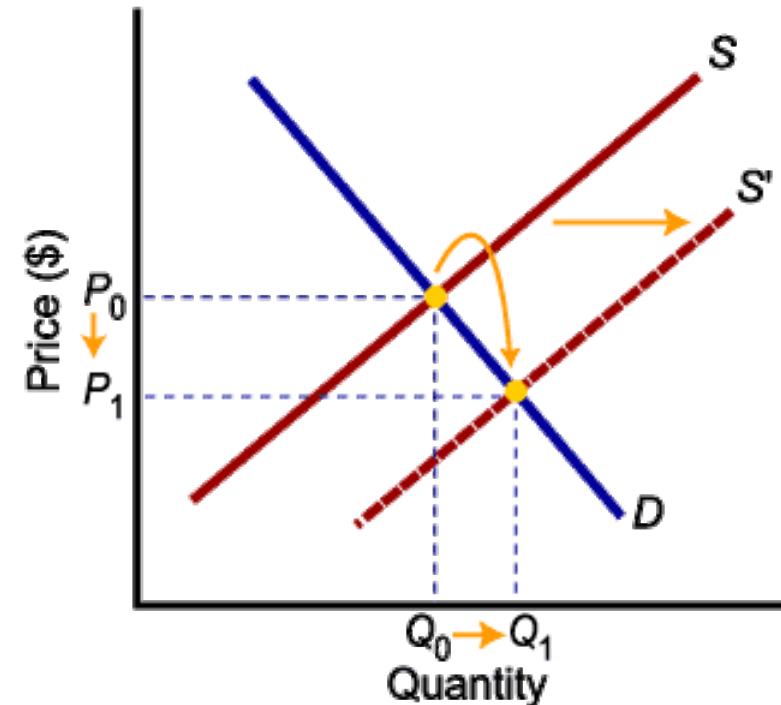


- ***Excess supply***, or surplus, is the condition that exists when quantity supplied exceeds quantity demanded at the current price.
- When the quantity supplied exceeds the quantity demanded, the price tends to fall until equilibrium is restored.

# Increases in Demand and Supply

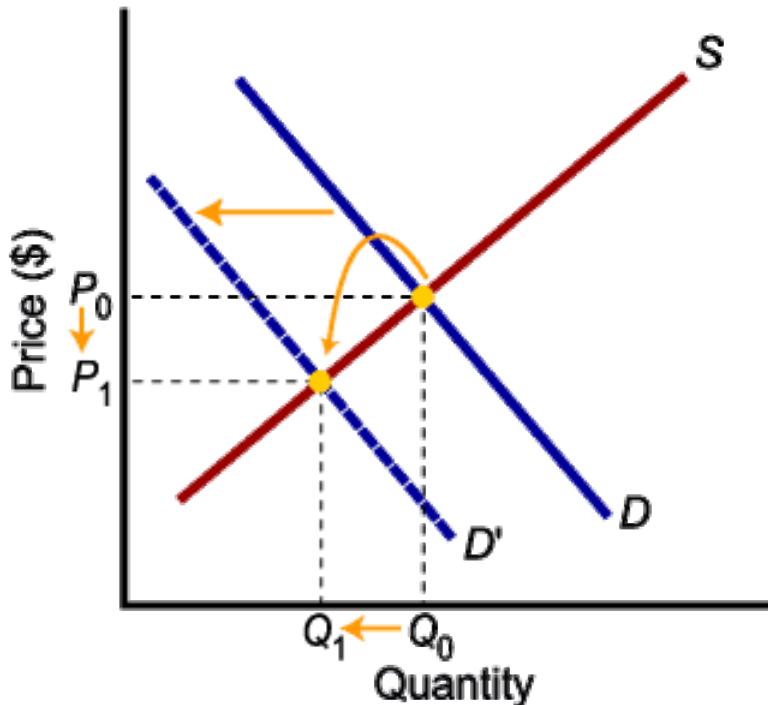


- ***Higher demand*** leads to higher equilibrium prices and higher equilibrium quantity.

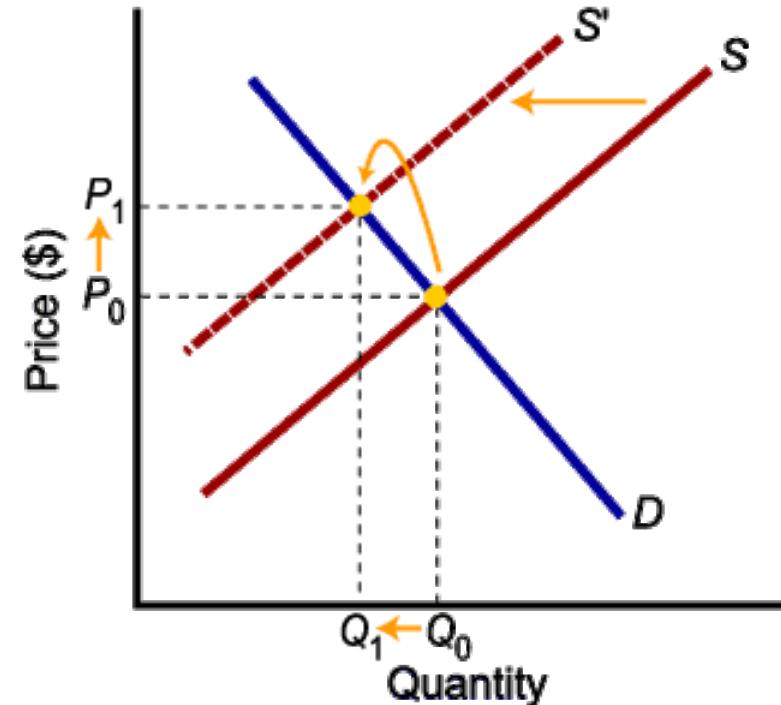


- ***Higher supply*** leads to lower equilibrium prices and higher equilibrium quantity.

# Decreases in Demand and Supply



- ***Lower demand*** leads to lower prices and lower quantity exchanged.



- ***Lower supply*** leads to higher prices and lower quantity exchanged.

# Exercise 01

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Demand and Supply schedule of product X is given below

- Compute the equations for Quantity demanded and quantity supplied.
- What is the equilibrium price?
- What is the equilibrium quantity?
- Find the Equilibrium price and quantity through a graphical format.

Price	Demand	Supply
2	16	-6
3	14	-4
4	12	-2
5	10	0
6	8	2
7	6	4
7.5	5	5
8	4	6
9	2	8
10	0	10

# Exercise 02

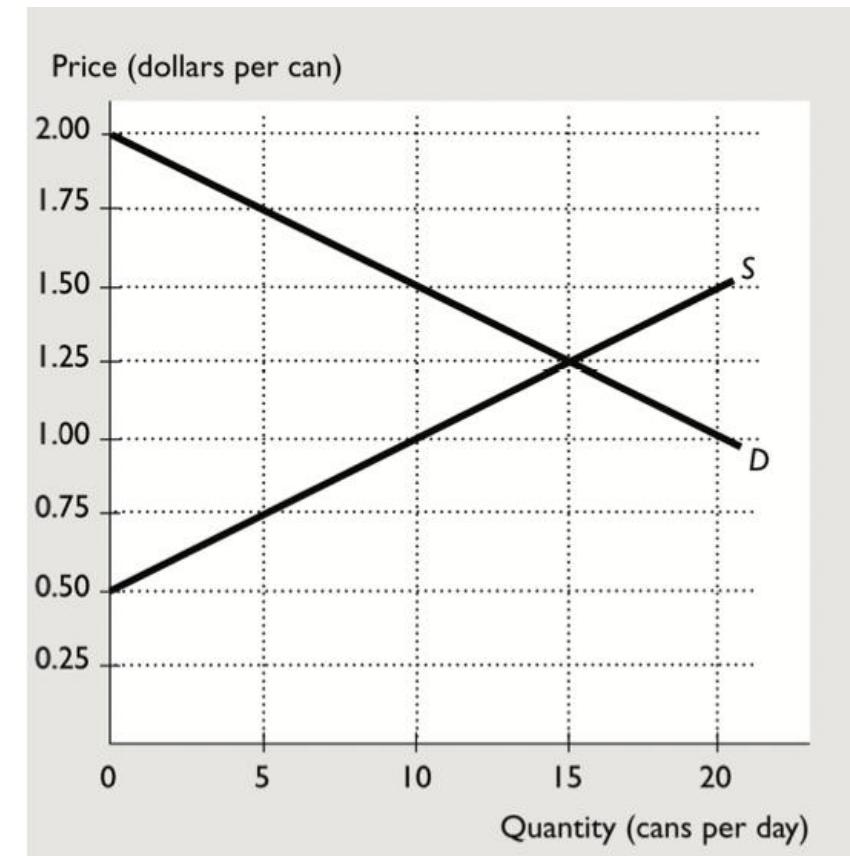
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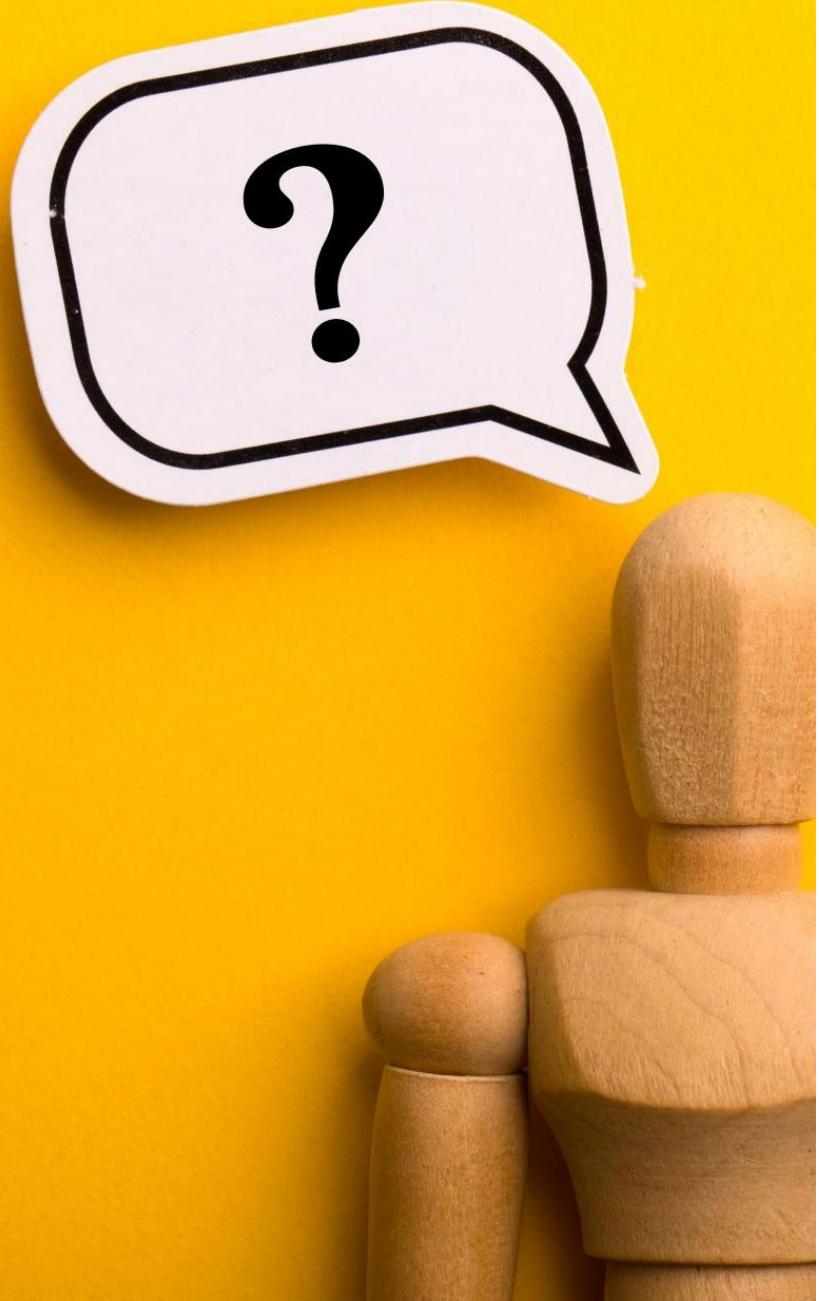
- Here are the equations for the demand and supply curves:
- Demand curve:  $Q_d = 3300 - 2P$
- Supply curve:  $Q_s = 500 + 8P$
- Compute the equilibrium price and quantity.
- Graphically illustrate and find the equilibrium values.

# Exercise 03

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- Calculate the equilibrium levels by using equations.
- In market equilibrium, what is the consumer surplus and producer surplus?
- Is the market for soft drinks efficient? Why?
- If the government restricted producers to 10 cans of soft drinks a day, would the market for soft drinks be efficient? Why?
- In the situation described in part 4, what is the deadweight loss?
- If the government passed a law requiring producers of soft drinks to sell 20 cans a day, would the market for soft drinks be efficient? Why or why not?
- In the situation described in part 6, what is the deadweight loss?





# Thank you

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## Any Question?