The Market at Work: Supply and Demand

Sierra Smith

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Guiding Questions

1. What are the fundamentals of markets?
2. What determines demand?
3. What determines supply?
4. How do supply and demand interact to create equilibrium?

Competitive Market

- **Quantity Demanded Determinants:**
  1. Price
- **Demand Determinants:**
  1. Income
  2. Price of related goods
  3. Tastes and preference
  4. Number of buyers
  5. Price expectation
  6. Taxes and subsidies
- **Shortage:** $Q_D > Q_S$

Competitive Market

- **Quantity Supplied Determinants**
  1. Price
- **Supply Determinants**
  1. Inputs
  2. Technology and production process
  3. Number of sellers
  4. Price expectation
  5. Taxes and subsidies
- **Surplus:** $Q_S > Q_D$

Fundamentals of Markets

- **Firms**
  - Supply goods (or services)
- **Consumers**
  - Purchase goods supplied by firms
- **Exchange happens**
  - Through prices established in markets
  - Supply or demand factors can change the market price.
- **Market**
  - Place where buyers and sellers meet
  - Doesn't have to be a physical place
  - **Example:** Amazon, job fairs

Market Economy

- **Market economy**
  - Resources are allocated among households and firms with little or no government interference.
  - Producers and consumers are motivated by self-interest.
    - Producers want to sell products; consumers want to earn profits.
    - Consumers want to spend a limited budget on goods that make them happier.
- The **invisible hand** of the market guides resources to their highest-valued uses.
  - Although no party has any intention to promote market efficiency, self-interest will eventually push the market to reach the best outcome.
- *"It is not from the benevolence of the butcher, the brewer or the baker that we expect our dinner, but from their regard to their own interest."*- Adam Smith

Competitive Markets

- **Characteristics of a competitive market:**
  1. Many buyers and sellers
  2. The goods sold by each vendor are similar.
  3. No one individual has any influence over the price.
- **Example:** Sea bass, gala apples

Imperfect Markets

- **Imperfect Market:**
  - Buyer or seller has an influence on the price.
- **Market Power:**
  - The firm's ability to influence price
- **Monopoly:**
  - A single company that supplies the entire market for a good or service
- **Example:** De Beers diamonds, fast food burgers, airlines

Demand

- **Quantity demanded:**
  - The amount of a good buyers are willing and able to produce at the current price
  - **Example:** If the price of yarn is \$2 a skein, Lauren will buy 5 skeins
- **Law of Demand**
  - All else equal, there is an inverse relationship between price and quantity demanded.
  - If price $\uparrow$, quantity demanded $\downarrow$
  - If price $\downarrow$, quantity demanded $\uparrow$

Demand

- Demand can be represented two ways:

1. **Demand schedule**
   - Table showing the relationship between price and quantity demanded
2. **Demand curve**
   - Graph of the relationship between price and quantity demanded

- "Demand" represents the relationship between price and quantity demanded. "Quantity demanded" is just one point in that relationship.

Demand Schedule

Phoebe's Demand Schedule for Healing Crystals	
Price of healing crystals	**Number Demanded**
$20.00	0
$17.50	1
$15.00	2
$12.50	3
$10.00	4
$ 7.50	5
$ 5.00	6
$ 2.50	7
$ 0.00	8

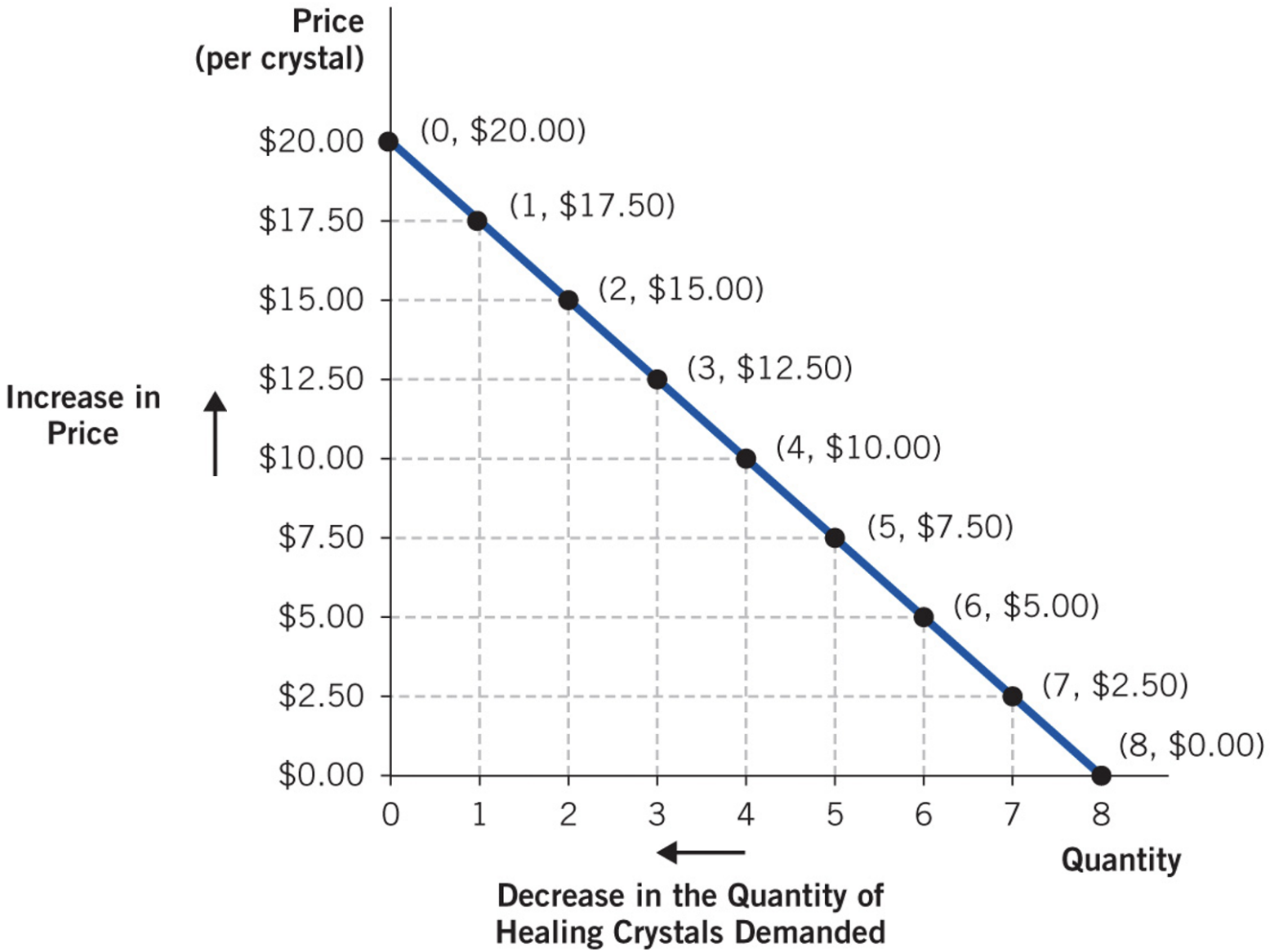
Higher price

Lower quantity demanded

Lower price

Higher quantity demanded

Demand Curve



Market Demand

- **Market demand:** Horizontal sum of all individual quantities demanded by each buyer in the market at each price

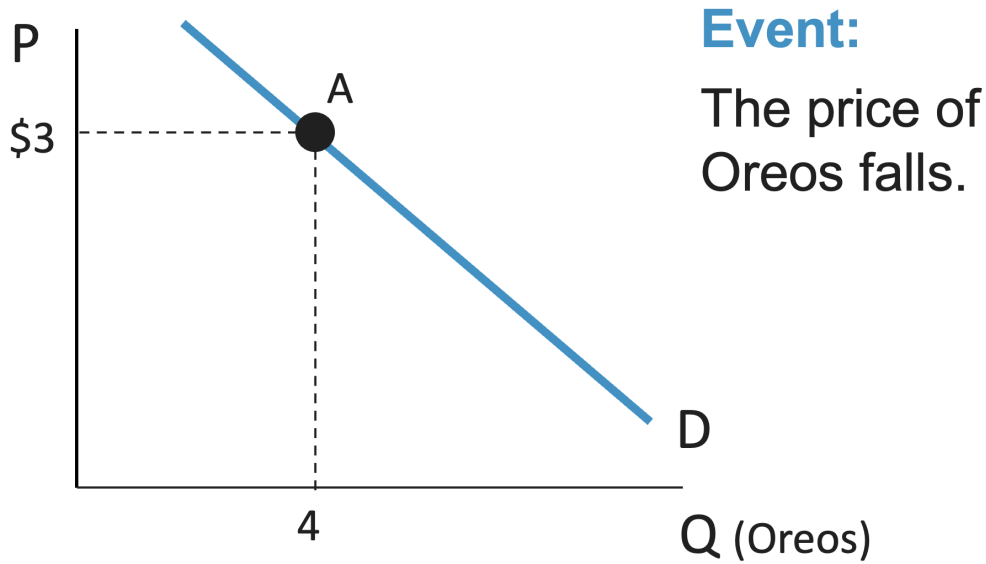
Price of Healing Crystal		Phoebe's Demand		Rachel's Demand		Market Demand
$20.00		0		0		0
$17.50		1		0		1
$15.00		2		1		3
$12.50		3	+	1	=	4
$10.00		4		2		6
$ 7.50		5		2		7
$ 5.00		6		3		9
$ 2.50		7		3		10
$ 0.00		8		4		12

Change in Quantity Demanded versus Change in Demand

- **Change in quantity demanded**
  - Movement along a demand curve
  - Caused by a change in the price of the good
  - Different point on the same demand curve
- **Change in demand**
  - Shift of the demand curve
    - Entire demand curve will shift to the left or right.
  - Caused by changes in nonprice factors
  - Different demand curves move to the left or right.

Polling Question 1

If demand is currently at point A, what will happen under the stated event?



A. Quantity demanded will increase

B. Quantity demanded will decrease

C. Demand will increase

D. Demand will decrease

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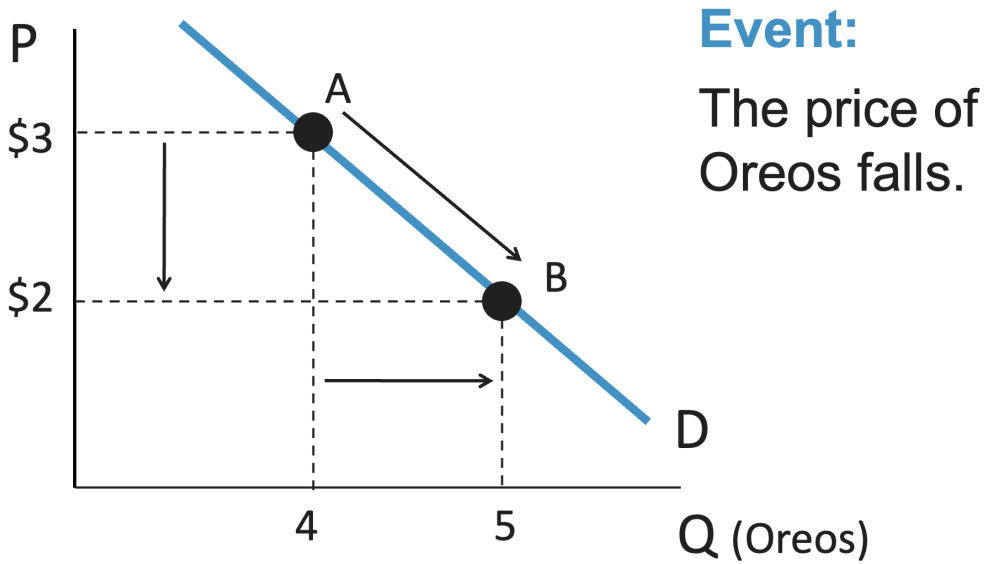

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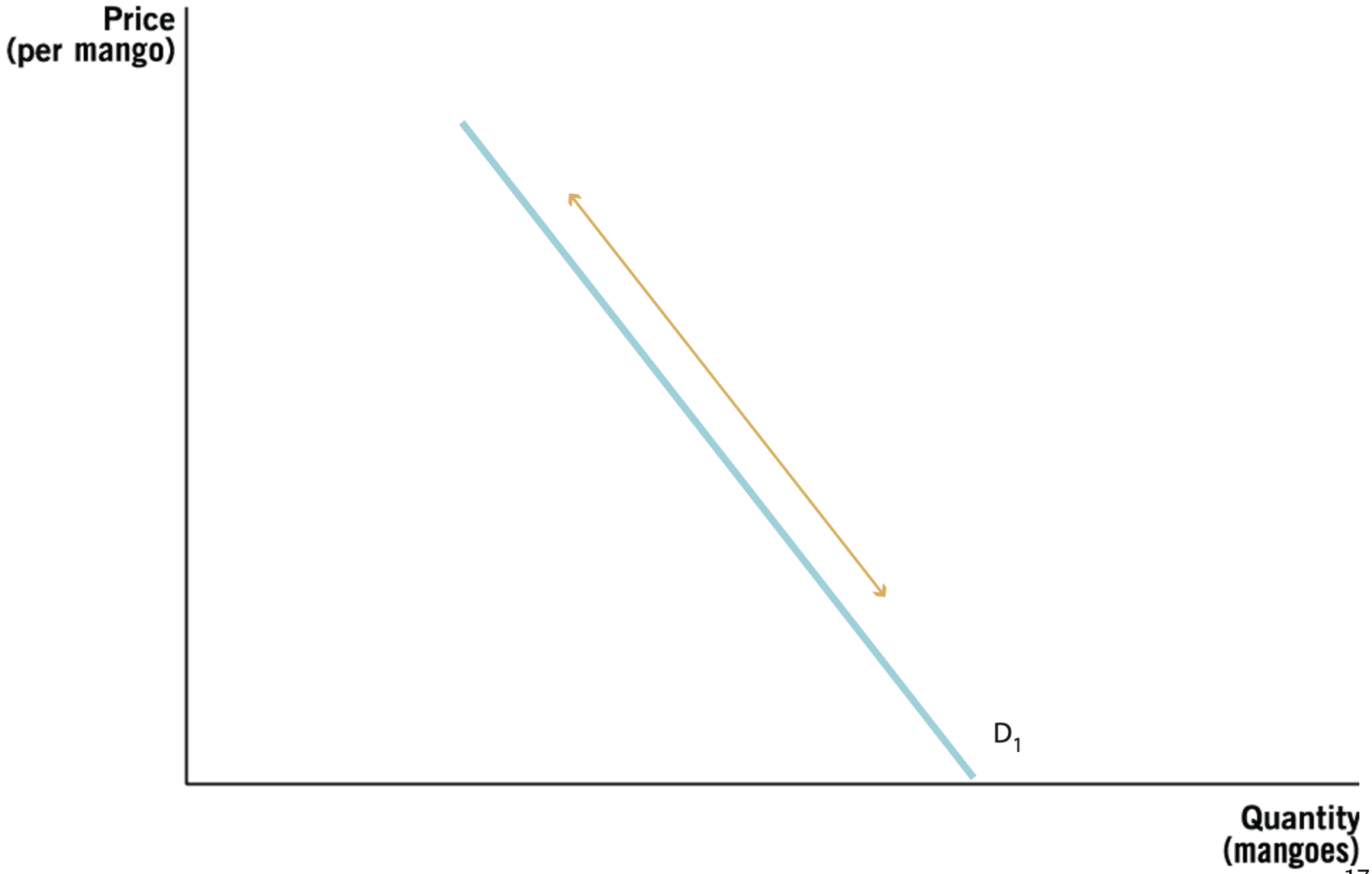
Changes in Demand



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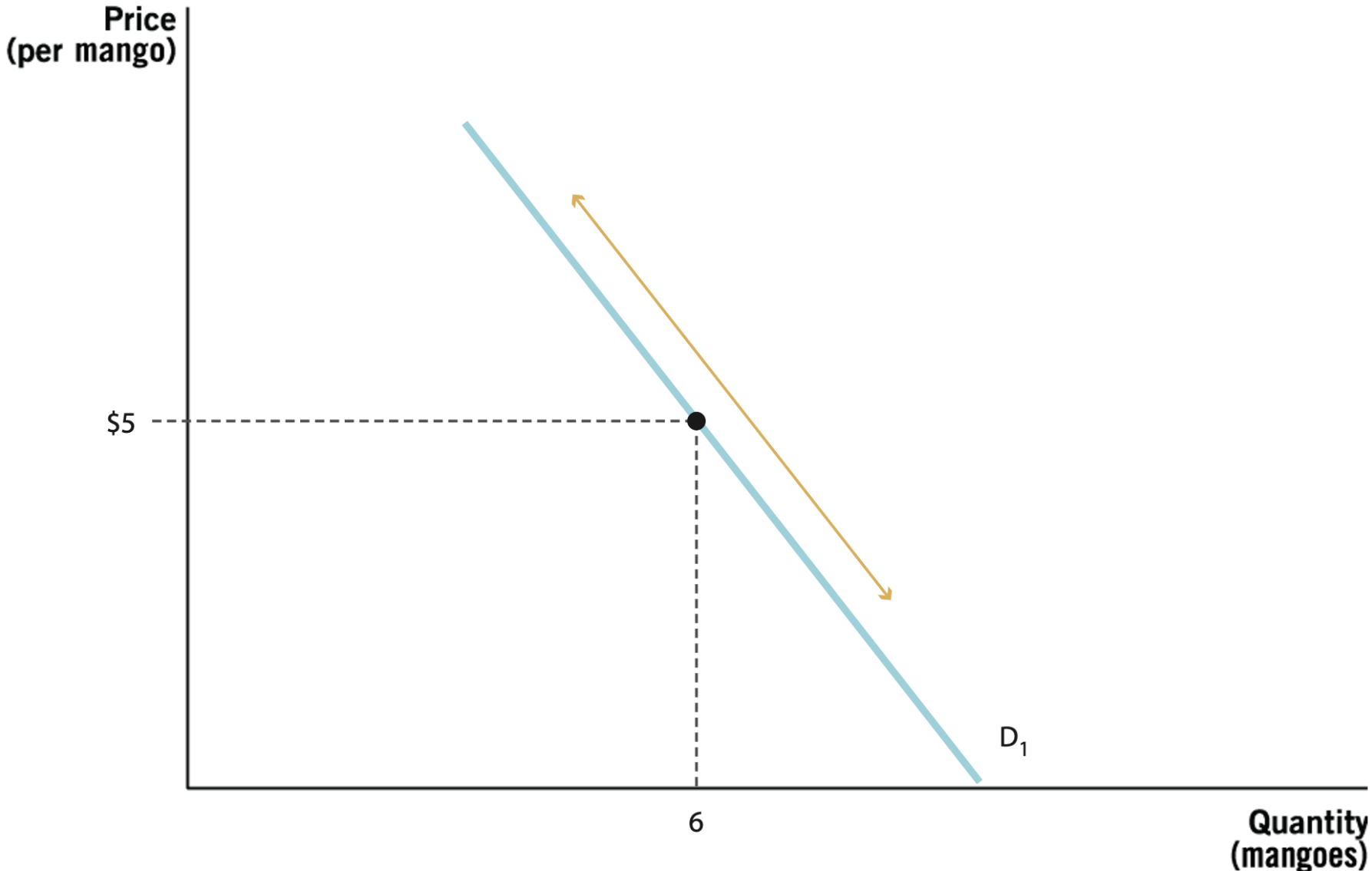

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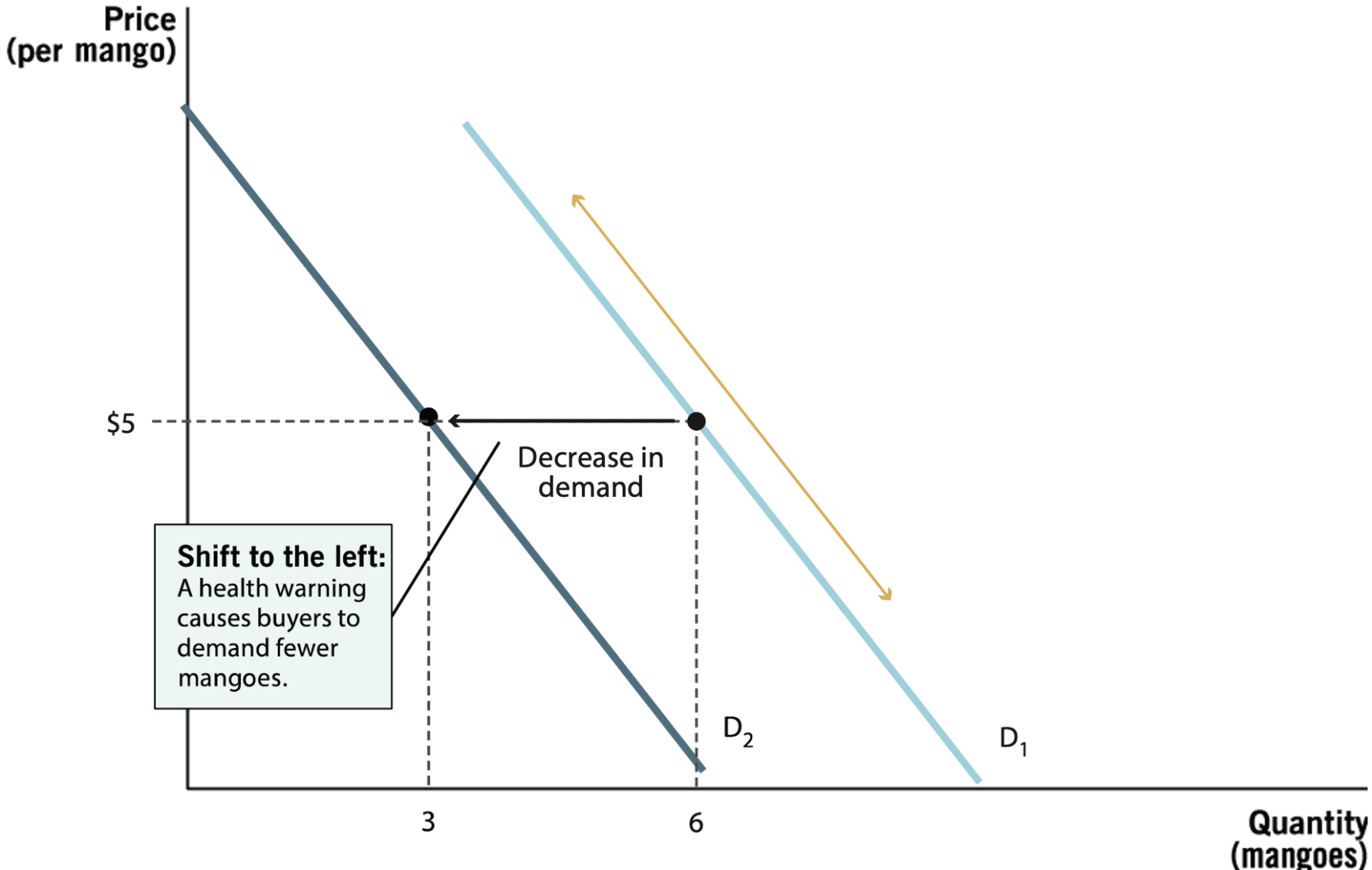

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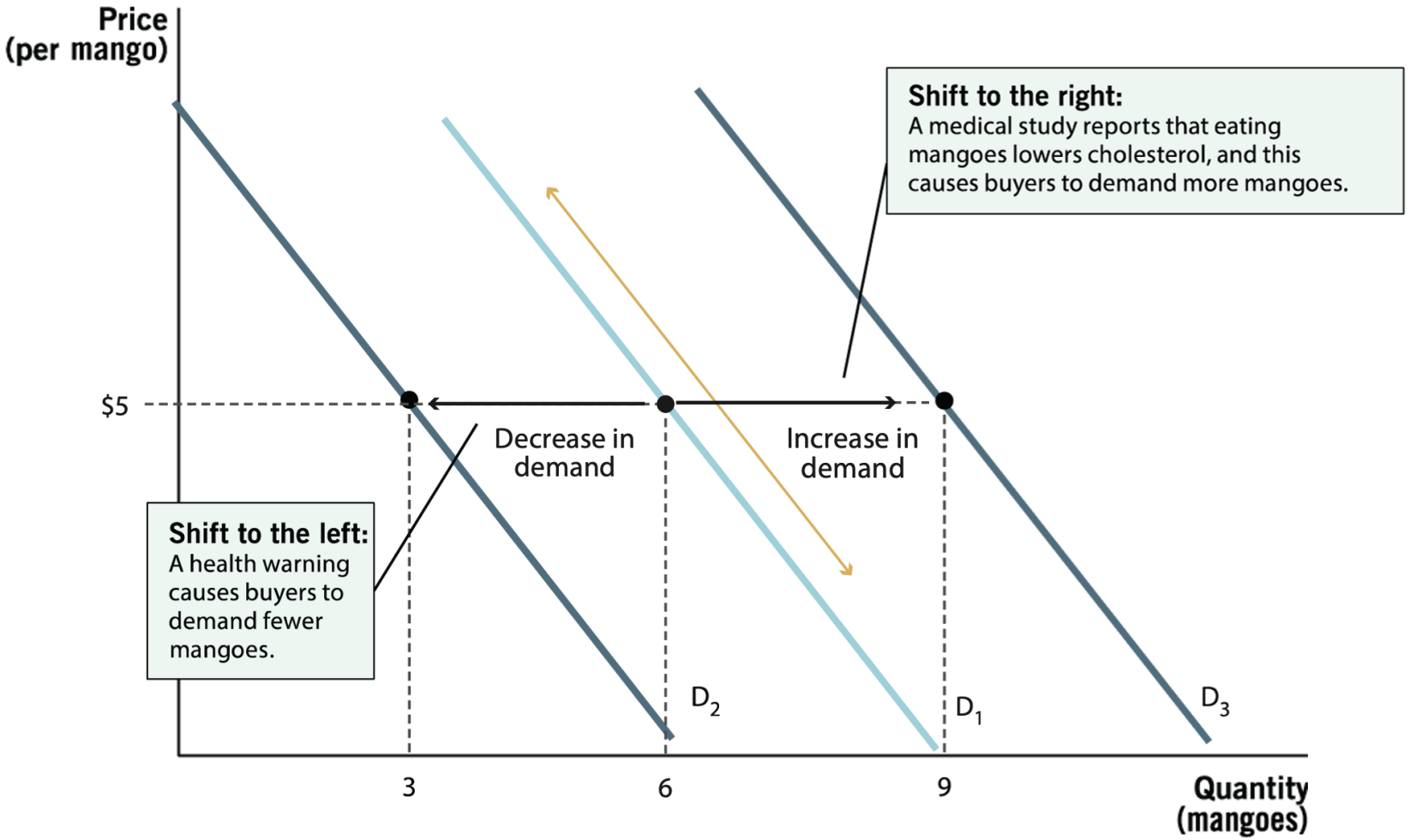
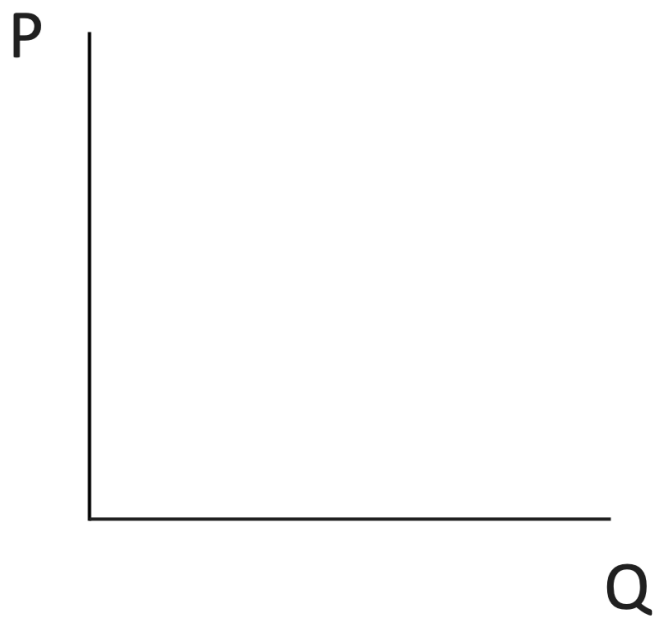
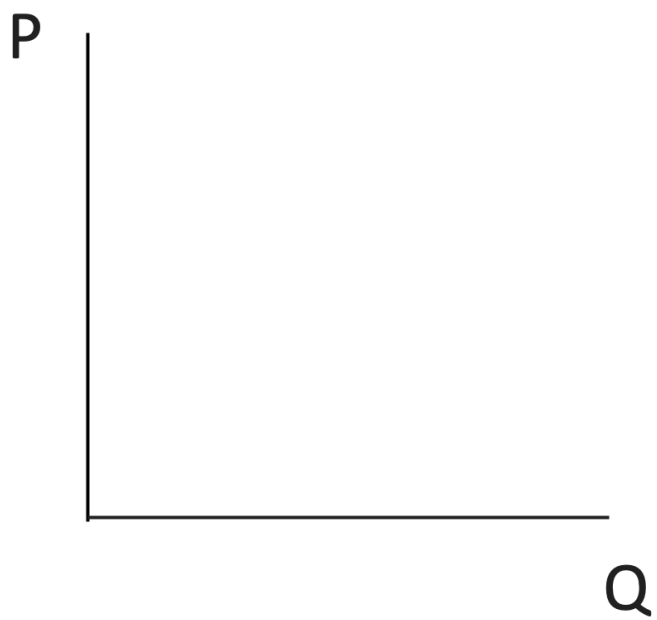


Factors That Shift Demand

1. Changes in income
   - **Normal good:** Good we buy more of when we get more income
     - **Example:** Restaurant food, clothes, massages
   - **Inferior good:** Good we buy less of when we get more income
     - **Example:** Ramen, generic brands
2. Price of related goods
   - **Complements:** Two goods used together
     - **Example:** Peanut butter and jelly, shampoo and conditioner, cereal and milk
   - **Substitutes:** Goods that can be used in place of each other
     - **Example:** Pens and pencils, Adderall and Ritalin, Coke and Pepsi

Event: Price of peanut butter increases

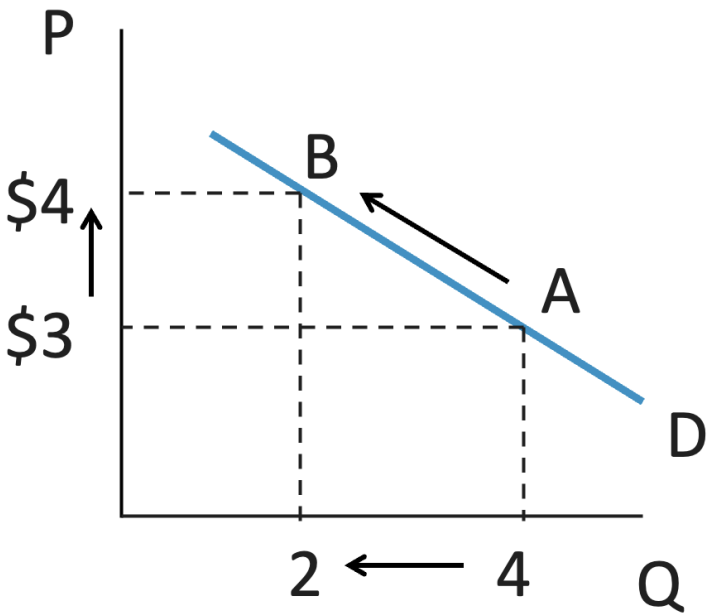


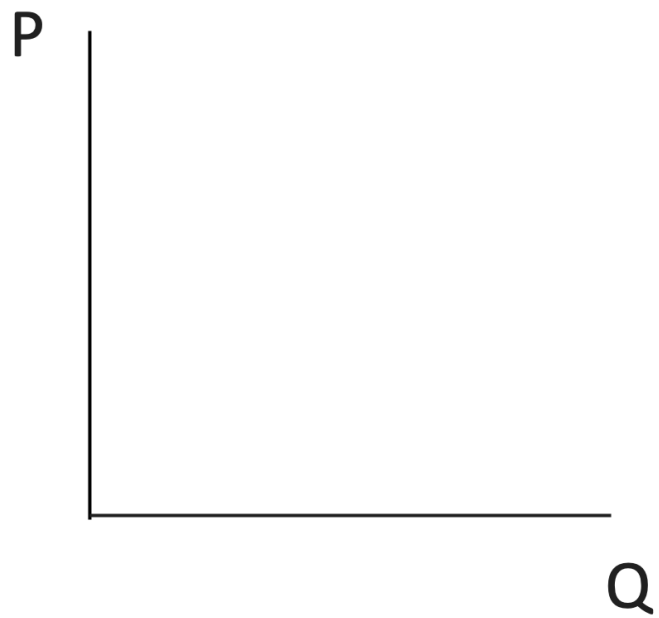


Event: Price of peanut butter increases

Peanut butter:

Movement along
the demand curve



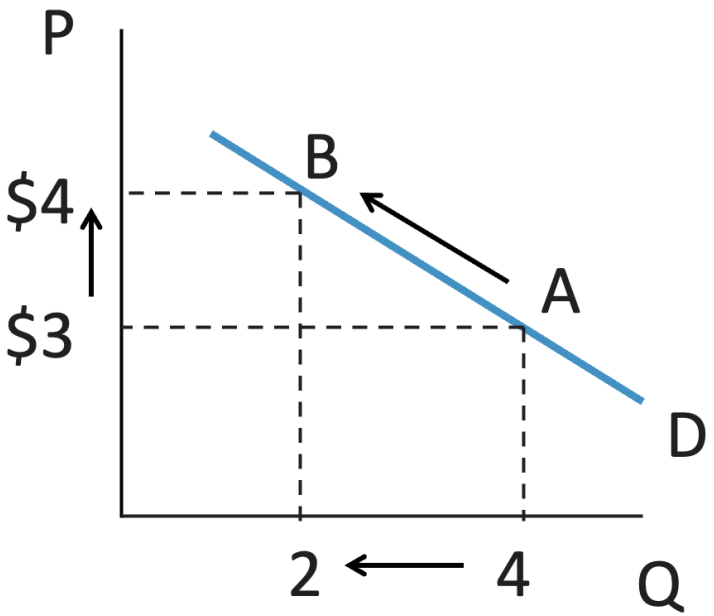


Price of Related Goods

Event: Price of peanut butter increases

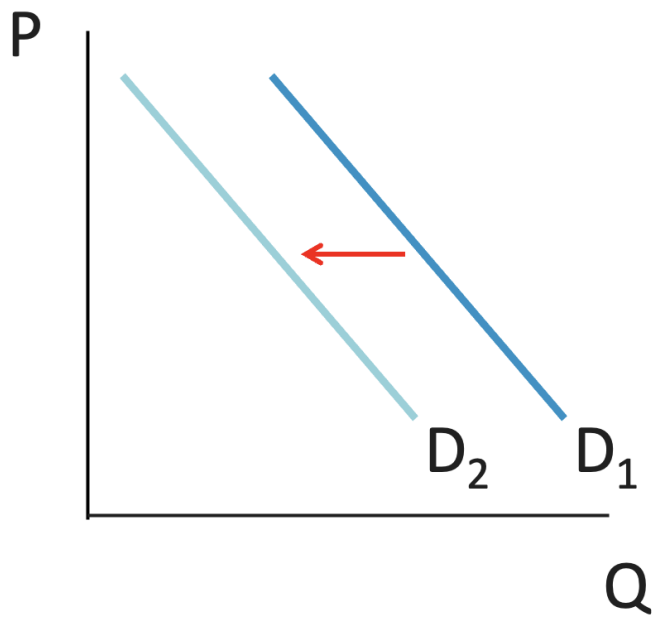
Peanut butter:

Movement along the demand curve



Jelly:

A shift in demand

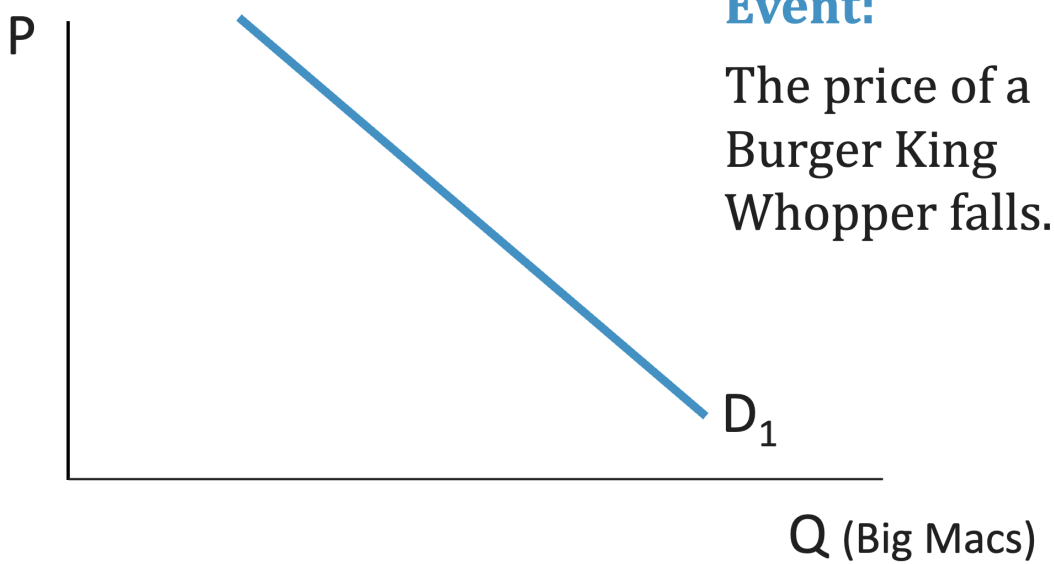


Factors That Shift Demand

3. Changes in tastes and preferences
   - A good may become more fashionable or may go out of style
   - A good may come into or go out of season.
   - **Example:** Skinny jeans, Stanleys, pumpkin spice
4. Price expectations
   - Our consumption today may depend on what we think the price may be tomorrow.
   - **Example:** Get gas now or later?
5. Number of buyers
   - More individual buyers means more market demand.
   - **Example:** Demand for beer in college towns during summer?
6. Taxes and subsidies
   - Excise taxes raise the cost to consumers.
   - Subsidies encourage consumers to buy more goods.
   - **Example:** Tax: Cigarettes, gas; Subsidy: Solar panels, electric cars

Polling Question 2

If demand is currently represented by D_1, what will happen under the stated event?



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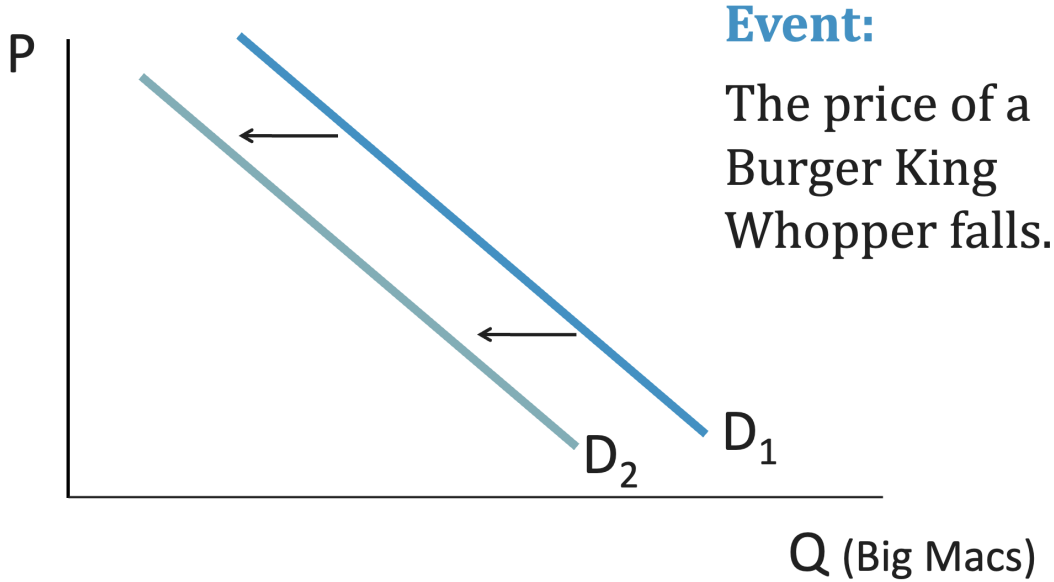

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Polling Question 3

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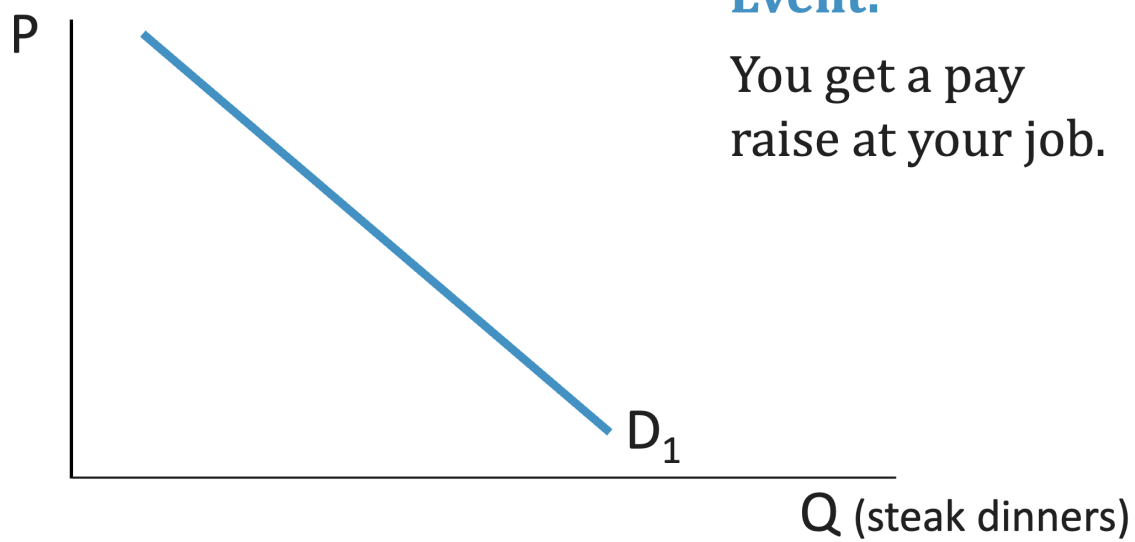

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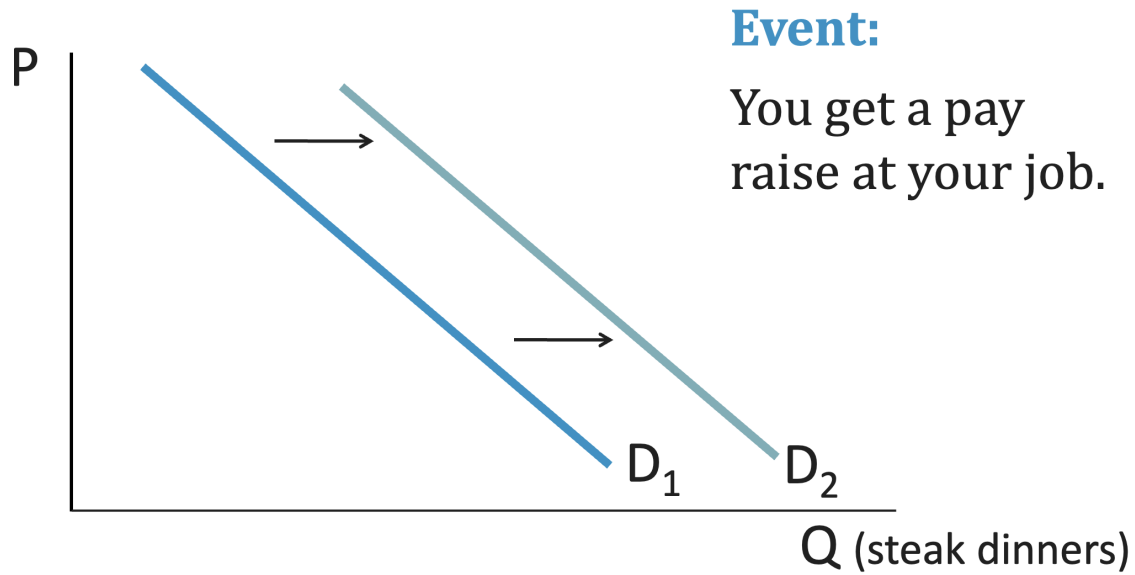

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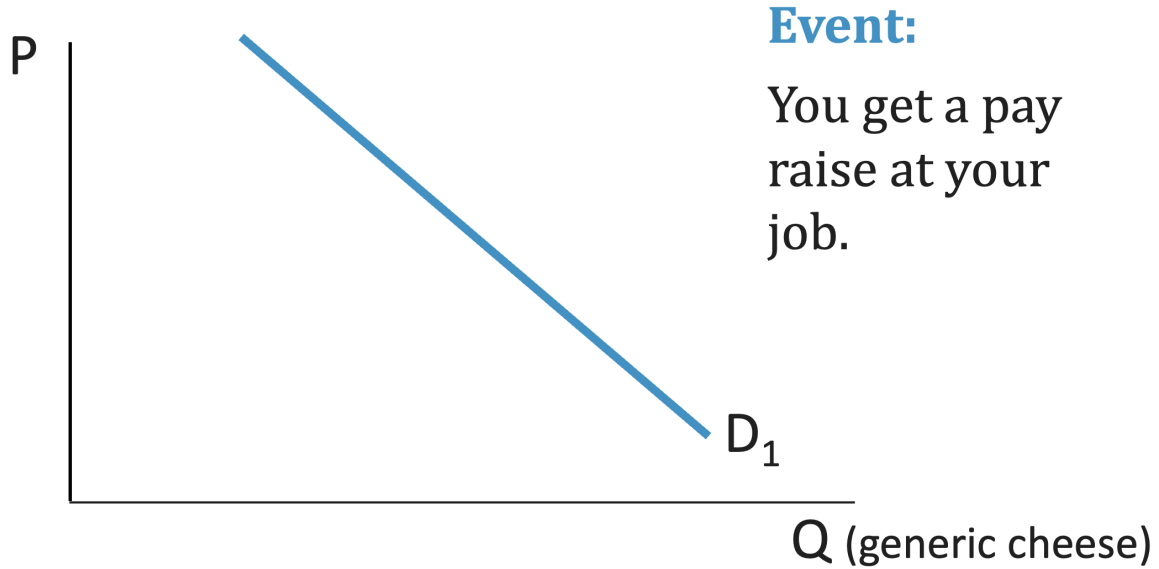
C. Demand will increase

D. Demand will decrease

Polling Question 4

If demand is currently represented by D_1, what will happen under the stated event?



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Polling Question 4

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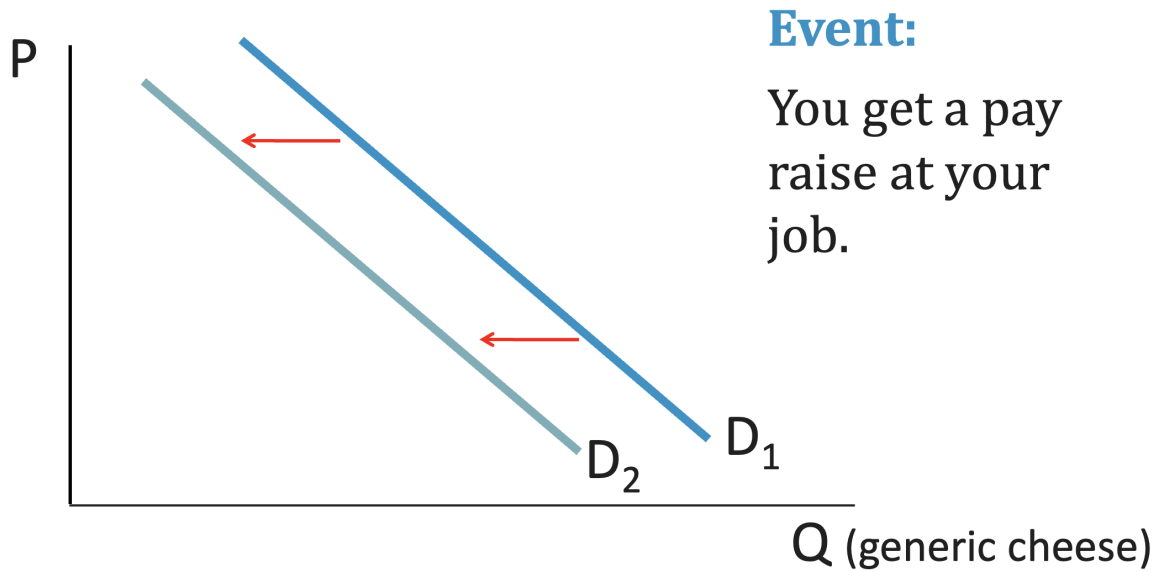

A. Quantity demanded will increase

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C. Demand will increase

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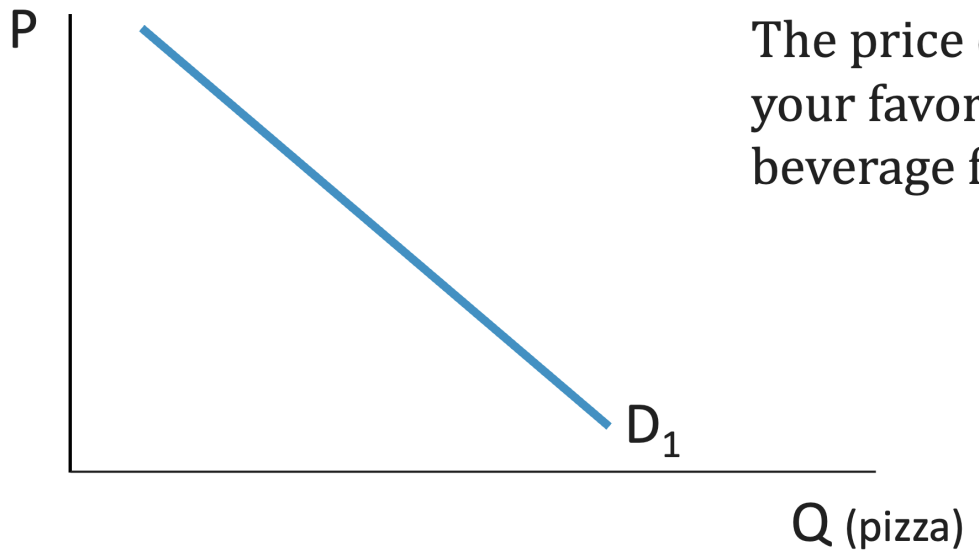
Polling Question 5

If demand is currently represented by D_1, what will happen under the stated event?



Event:

The price of your favorite beverage falls.

A. Quantity demanded will increase

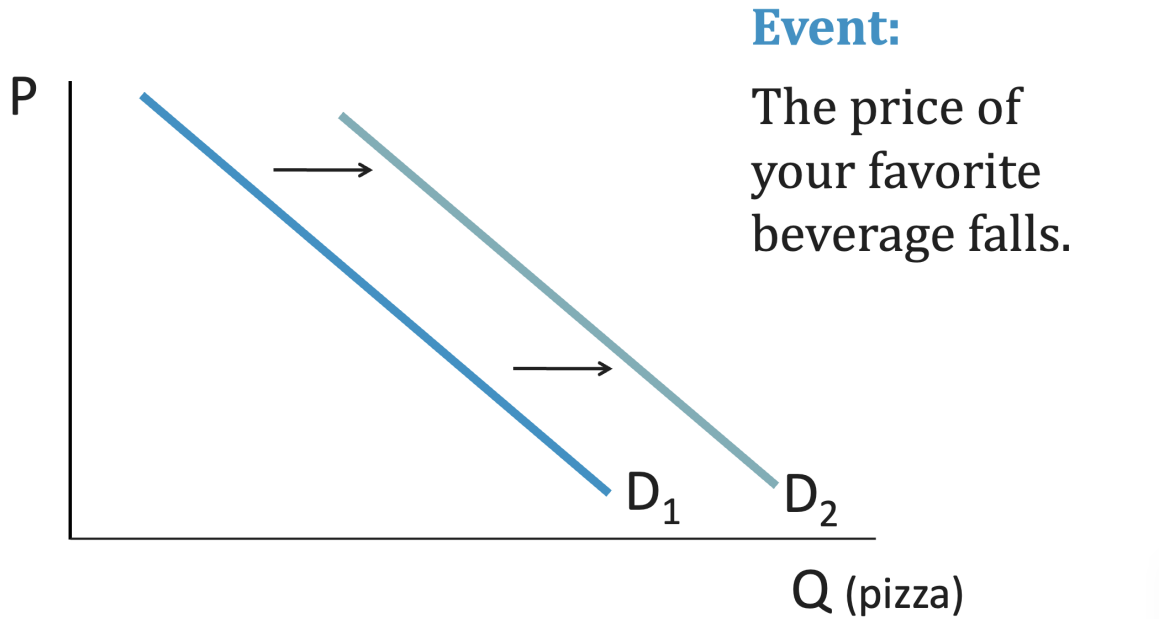
B. Quantity demanded will decrease

C. Demand will increase

D. Demand will decrease

Polling Question 5

If demand is currently represented by D_1, what will happen under the stated event?



A. Quantity demanded will increase

B. Quantity demanded will decrease

C. Demand will increase

D. Demand will decrease

Supply

- **Quantity supplied**
  - The amount of the good or service that producers are willing and able to sell at the current price
  - **Example:** I am willing to teach for 8 hours a day if I can sell my labor for $100 an hour
- **Law of Supply**
  - All else equal, there is a direct relationship between price and quantity supplied.
  - If price $\downarrow$, quantity supplied $\downarrow$
  - If price $\uparrow$, quantity supplied $\uparrow$

Supply

- Supply can be represented two ways:

1. **Supply schedule:**
   - Table showing the relationship between price and quantity supplied
2. **Supply curve:**
   - Graph of the relationship between price and quantity supplied

- "Supply" represents the relationship between price and quantity supplied. "Quantity supplied" is just one point in that relationship.

Supply

Pure Food Fish's Supply Schedule	
Price of Salmon (per pound)	**Pounds of Salmon Supplied**
$20.00	800
$17.50	700
$15.00	600
$12.50	500
$10.00	400
$ 7.50	300
$ 5.00	200
$ 2.50	100
$ 0.00	0

Higher price

Higher quantity supplied

Lower price

Lower quantity supplied

Market Supply

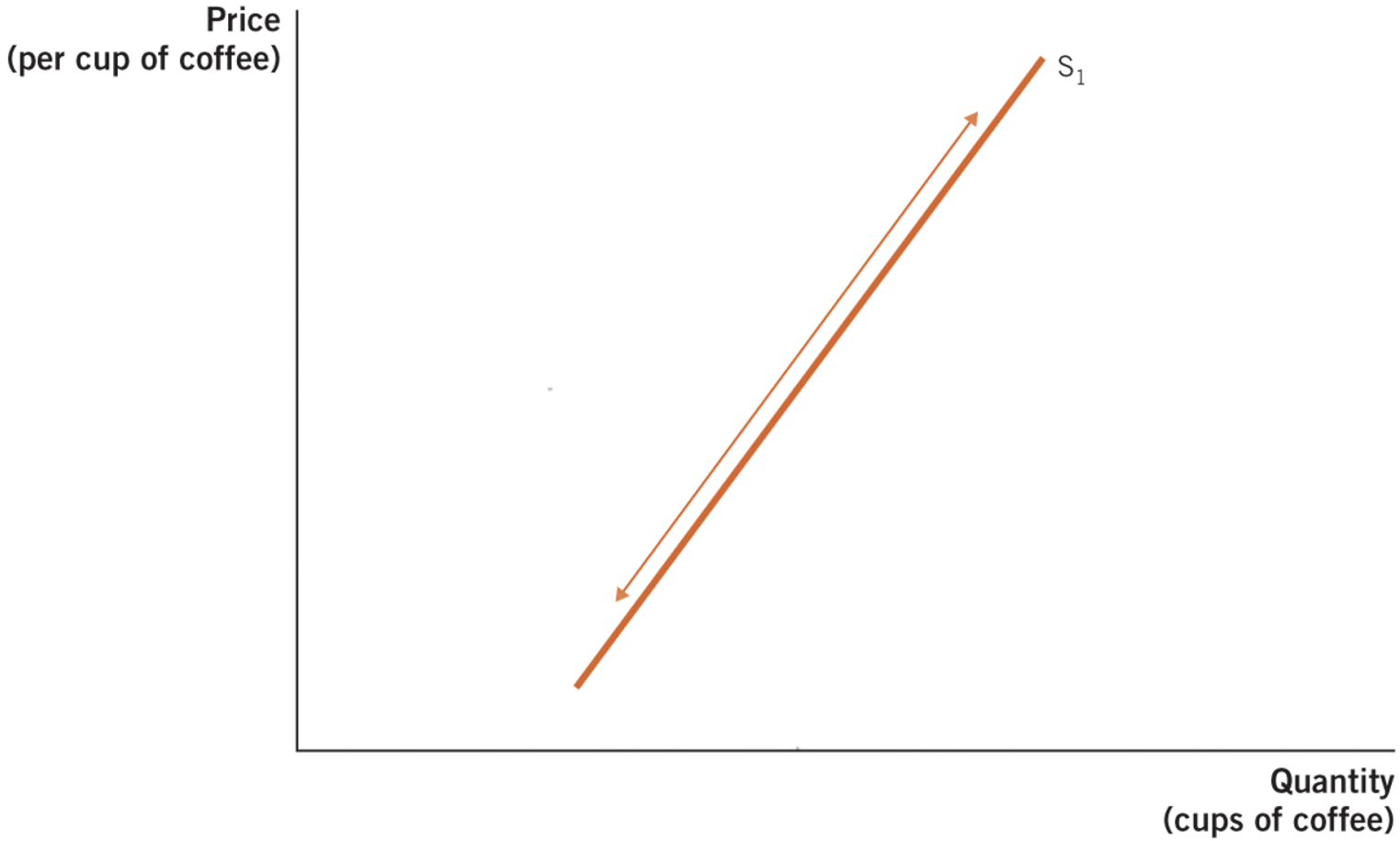
- **Market supply:** Horizontal sum of all individual quantities supplied by each seller in the market at each price

Price of Salmon		Pure Food Fish's Supply		City Fish's Supply		Market Supply
$20.00		800		200		1000
$17.50		700		175		875
$15.00		600		150		750
$12.50		500	+	125	=	625
$10.00		400		100		500
$ 7.50		300		75		375
$ 5.00		200		50		250
$ 2.50		100		25		125
$ 0.00		0		0		0

Change in Quantity Supplied versus Change in Supply

- **Change in quantity supplied**
  - Movement along a supply curve
  - Caused by a change in the price of the good
  - Different point on the same supply curve
- **Change in supply**
  - Shift in the supply curve
    - Entire supply curve will shift to the left or right.
  - Caused by a change in nonprice factors
  - Different supply curves move to the left or right.

Change in Supply



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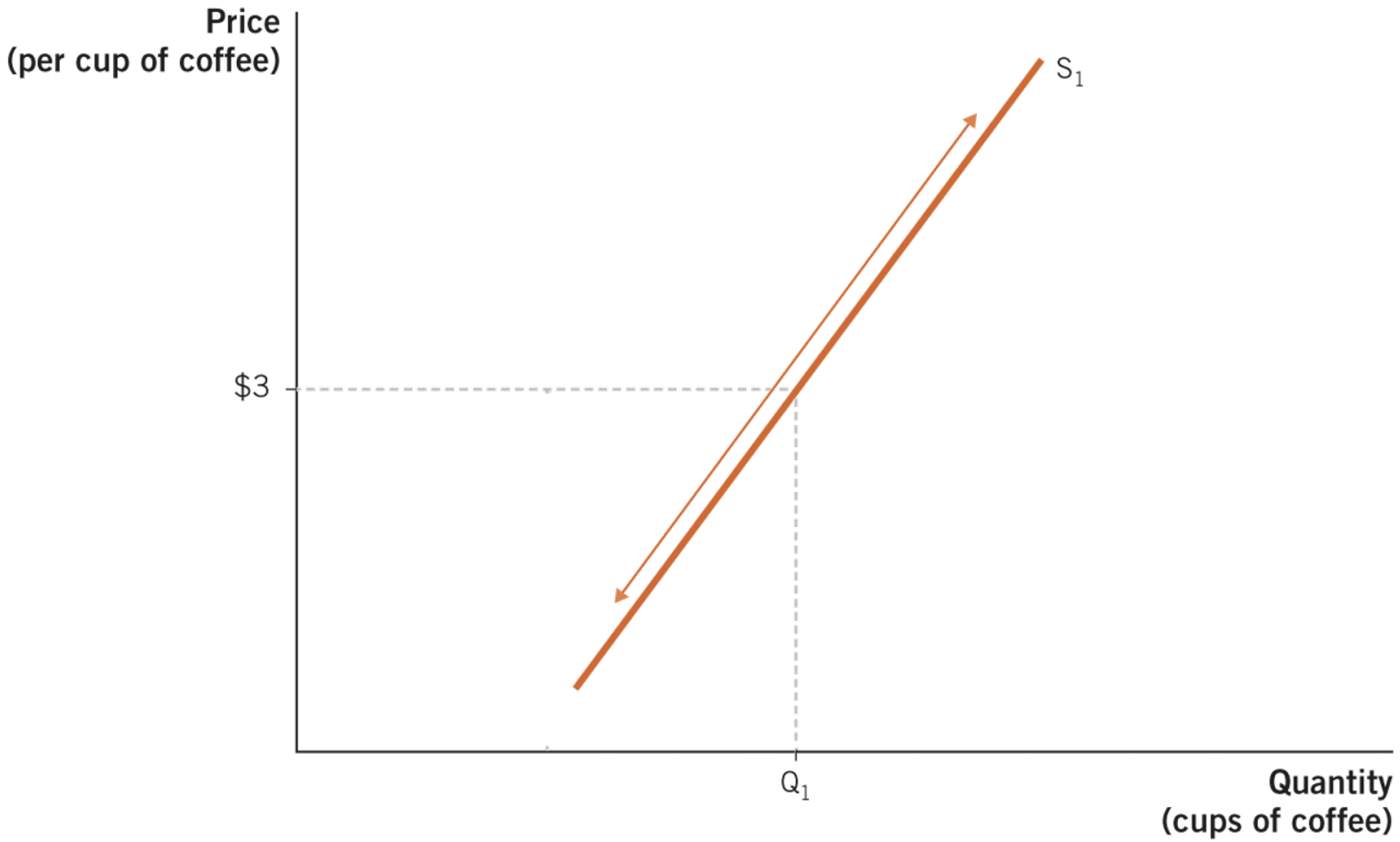

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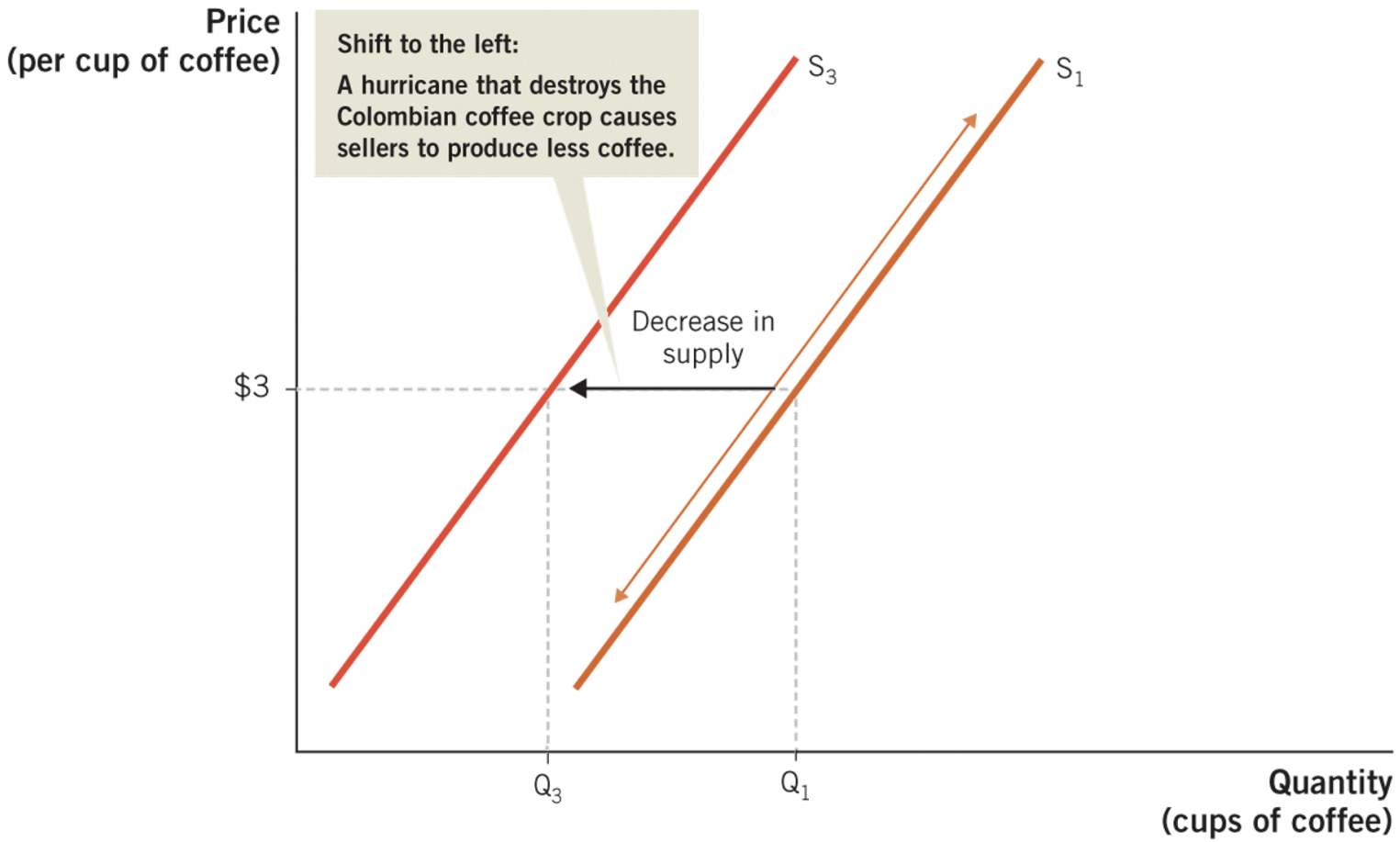

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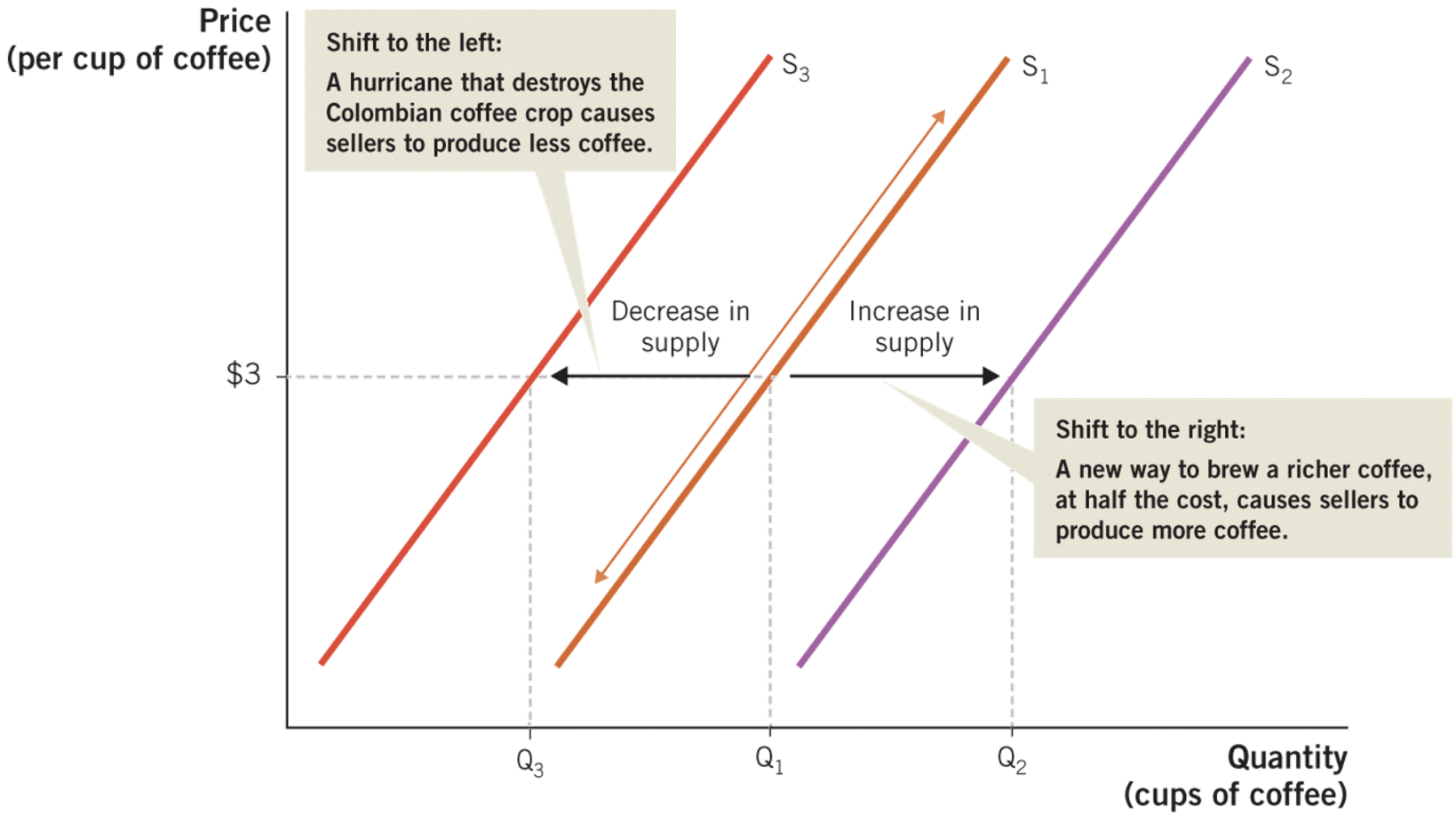


Factors That Shift Supply

1. The cost of inputs
   - **Inputs:** Resources used in the production process
   - **Example:** Cost of aluminum rises for iPhones
2. Changes in technology or production process
   - **Technology:** Knowledge that producers have about how to produce a product
   - **Example:** Henry Ford assembly line
3. Taxes and subsidies
   - **Tax:**
     - Tax paid by producer $\rightarrow$ added cost of production
     - **Example:** Carbon tax
   - **Subsidy:**
     - Opposite of a tax; government pays sellers to produce goods
     - Reduces the cost of production
     - **Example:** Farming subsidies

Factors That Shift Supply

4. Number of firms in the industry
   - More individual sellers mean more market supply.
   - **Example:** Chicken restaurants by campus
5. Price expectations
   - Higher price expected tomorrow? If so, delay sales until the future if possible
   - **Example:** Do you sell your stocks?

Polling Question 6

Assume the price of cheese decreases. What will happen in the pizza market?

A. The supply of pizza increases.

B. The supply of pizza decreases.

C. The quantity supplied of pizza increases.

D. The quantity supplied of pizza decreases.

Polling Question 7

Which of the following will cause the supply curve for oranges to shift to the left?

A. The government begins subsidizing orange growers.

B. A study is released showing oranges improve eyesight.

C. An ice storm strikes Florida.

D. A new orange juice commercial airs on TV.

Polling Question 8

Which of the following will most likely cause a decrease in the supply of most fruits and vegetables?

A. an increase in demand for meat

B. the introduction of an environmentally friendly pesticide

C. a decrease in the price of corn and rice

D. harsh punishments for farmers who hire undocumented workers

Bringing Supply and Demand Together

- How is the price of a good determined?
  - Through the market forces of supply and demand
- **Law of supply and demand**
  - The market price of any good will adjust to bring the quantity supplied and quantity demanded into balance.
- The real power and potential of supply and demand analysis is how it predicts prices and output in the entire market.

Supply and Demand

- **Equilibrium price**
  - The price at which quantity supplied is equal to quantity demanded
  - The price that "clears the market"
- **Equilibrium quantity**
  - The quantity at which quantity demanded is equal to quantity supplied
- At market equilibrium:
  - All buyers can find sellers.
  - All sellers can find buyers.
  - Everyone is happy.

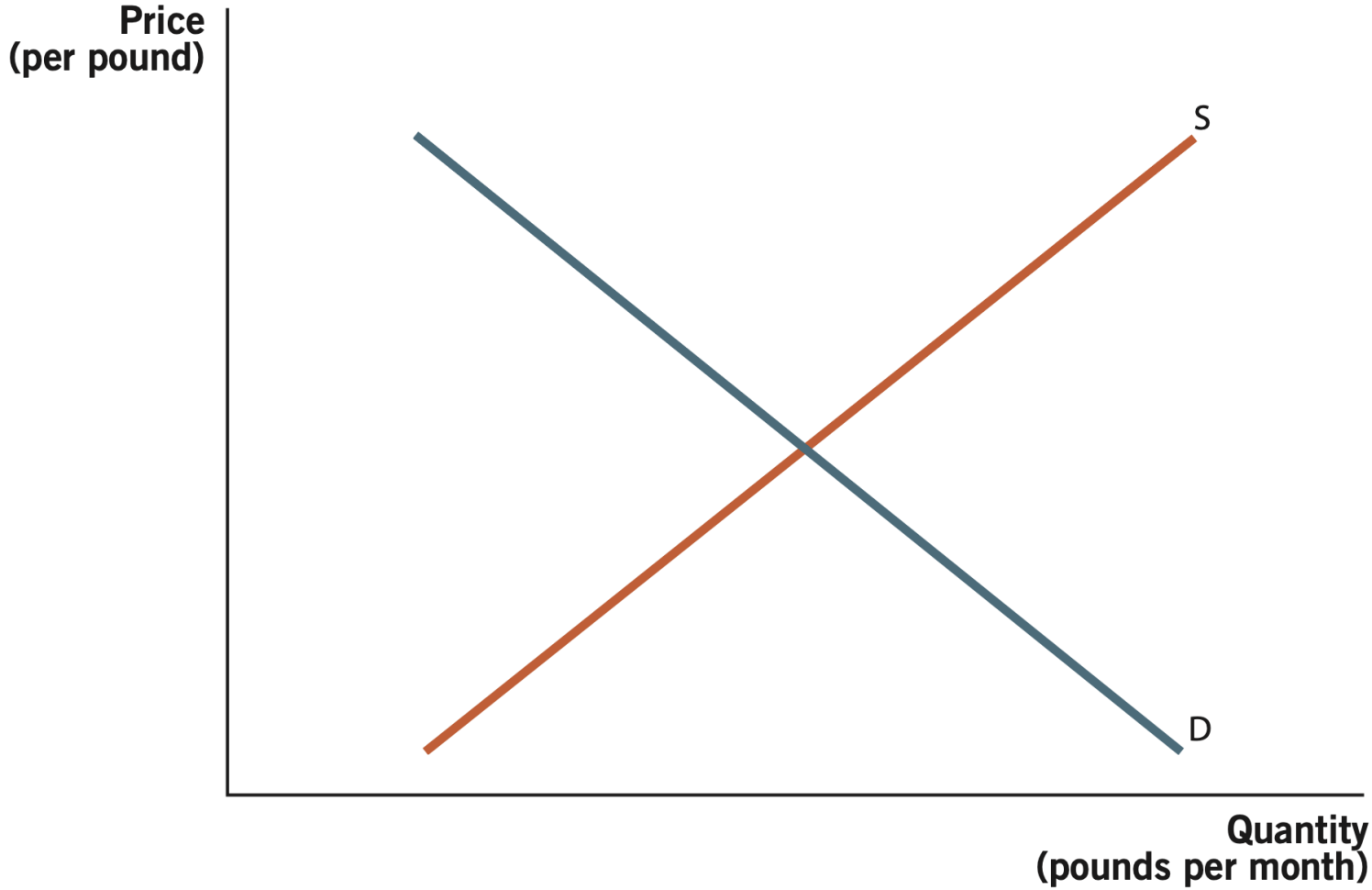
Equilibrium

- How do we determine equilibrium?
- **Graphically**: It's where the supply and demand curve intersect
- **Mathematically**: It's where the demand function equals the supply function
  - **Demand function**: $Q_D = a - bP$
  - **Supply function**: $Q_S = c + dP$
  - P: price
- **Example:** Suppose that the demand and supply for sushi are given by the following equations: $Q_D = 70–5P$ and $Q_S = 10 + 10P$.
- What is the equilibrium price?
  - $Q_S = Q_D \implies 10 + 10P = 70 - 5P$
  - $15P = 60 \implies P = \$4$
- How many sushi rolls are supplied/demanded?
  - $Q_S = 10 + 10P \implies Q_S = 10 + 10(4)$
  - $Q_S = 50$

Shortages and Surpluses

- **Shortage**
  - Occurs when $Q_D > Q_S$
  - Occurs at any price below equilibrium
  - Price will rise over time toward equilibrium.
- Why does price rise over time with a shortage?
  - Consumers will "outbid" other consumers.
- **Surplus**
  - Occurs when $Q_S > Q_D$
  - Occurs at any price above equilibrium
  - Price will fall over time toward equilibrium.
- Why does price fall over time with a surplus?
  - Firms will lower prices to get rid of mounting inventories.

Supply and Demand



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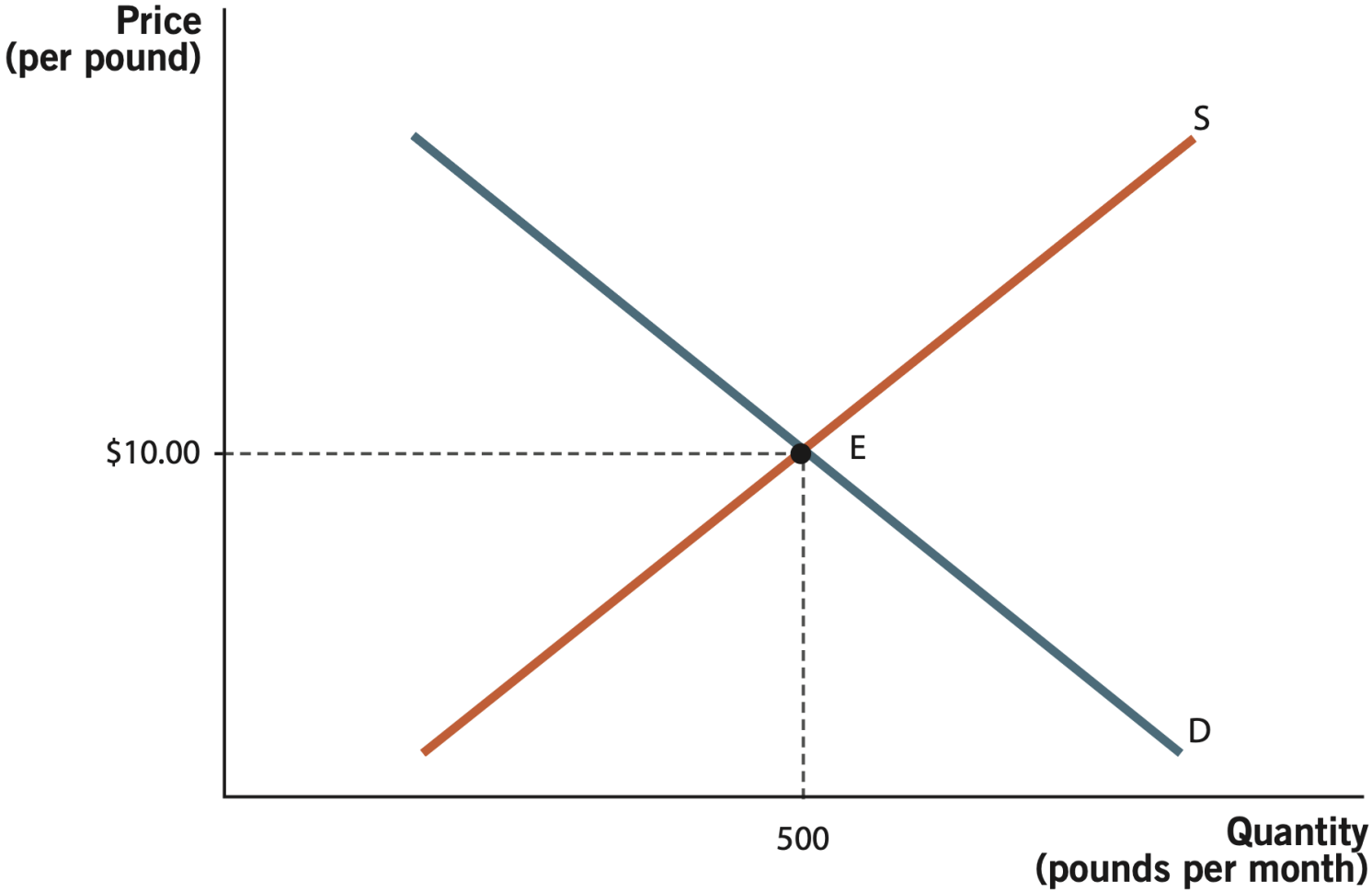

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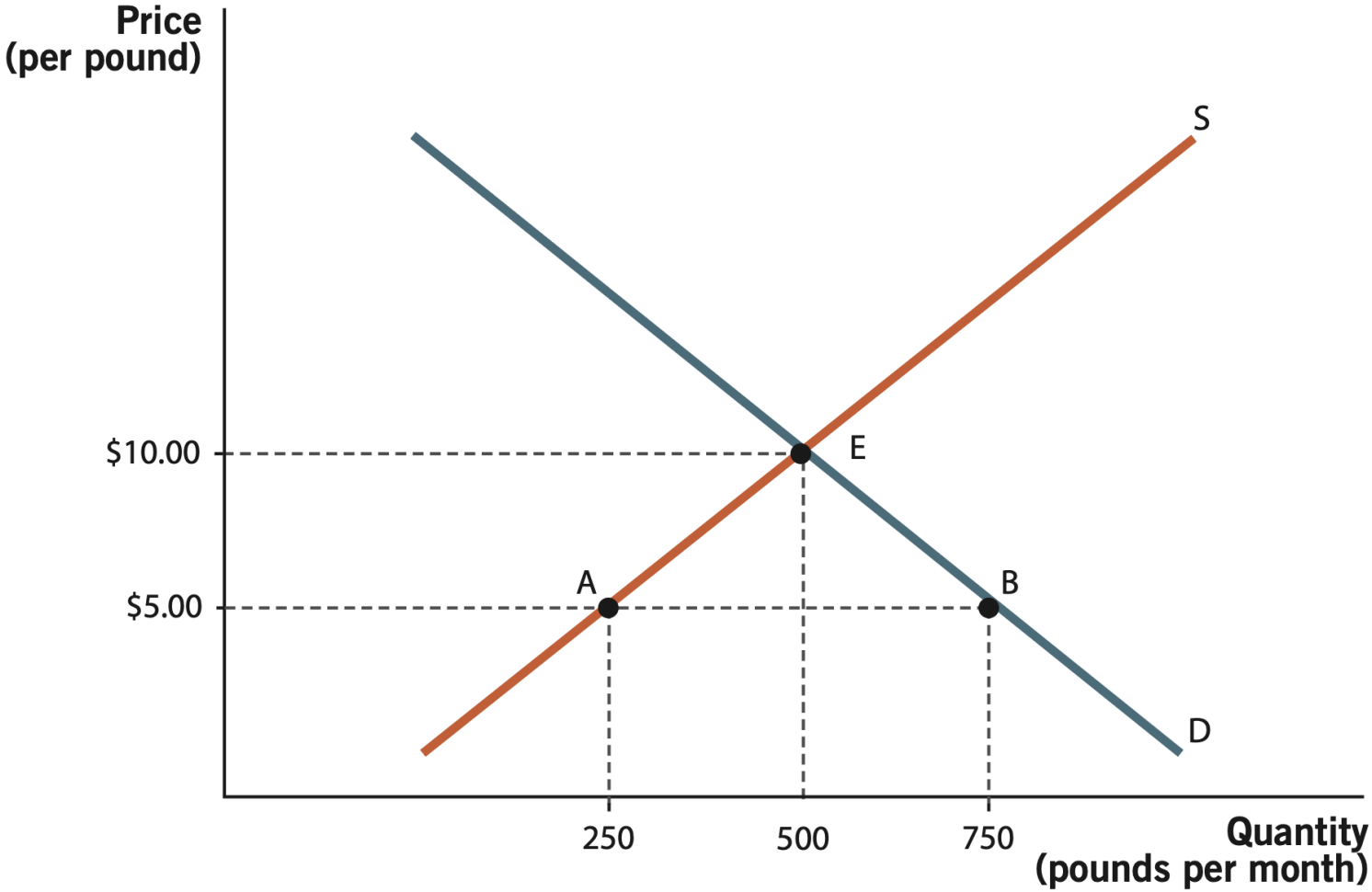

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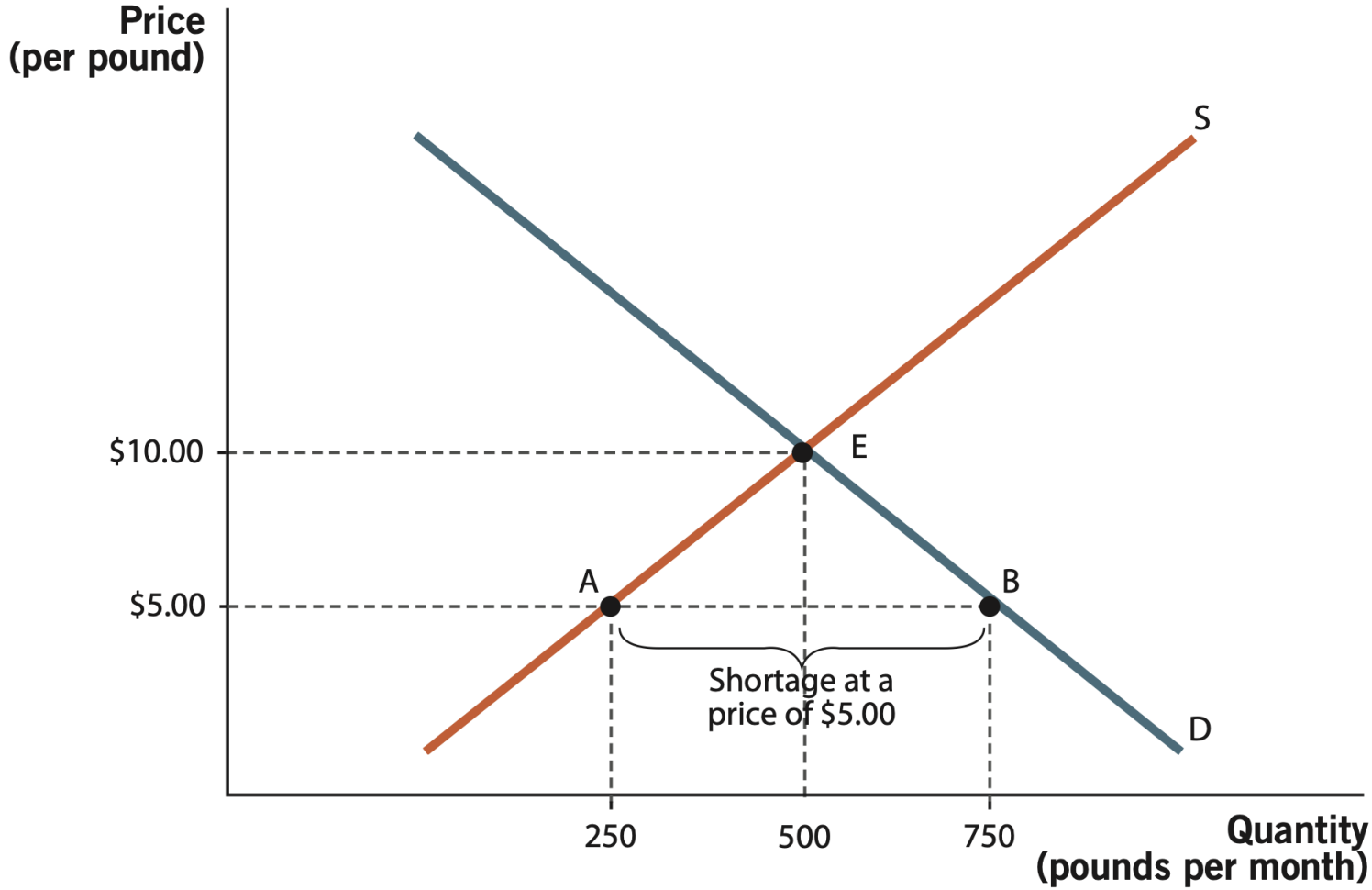

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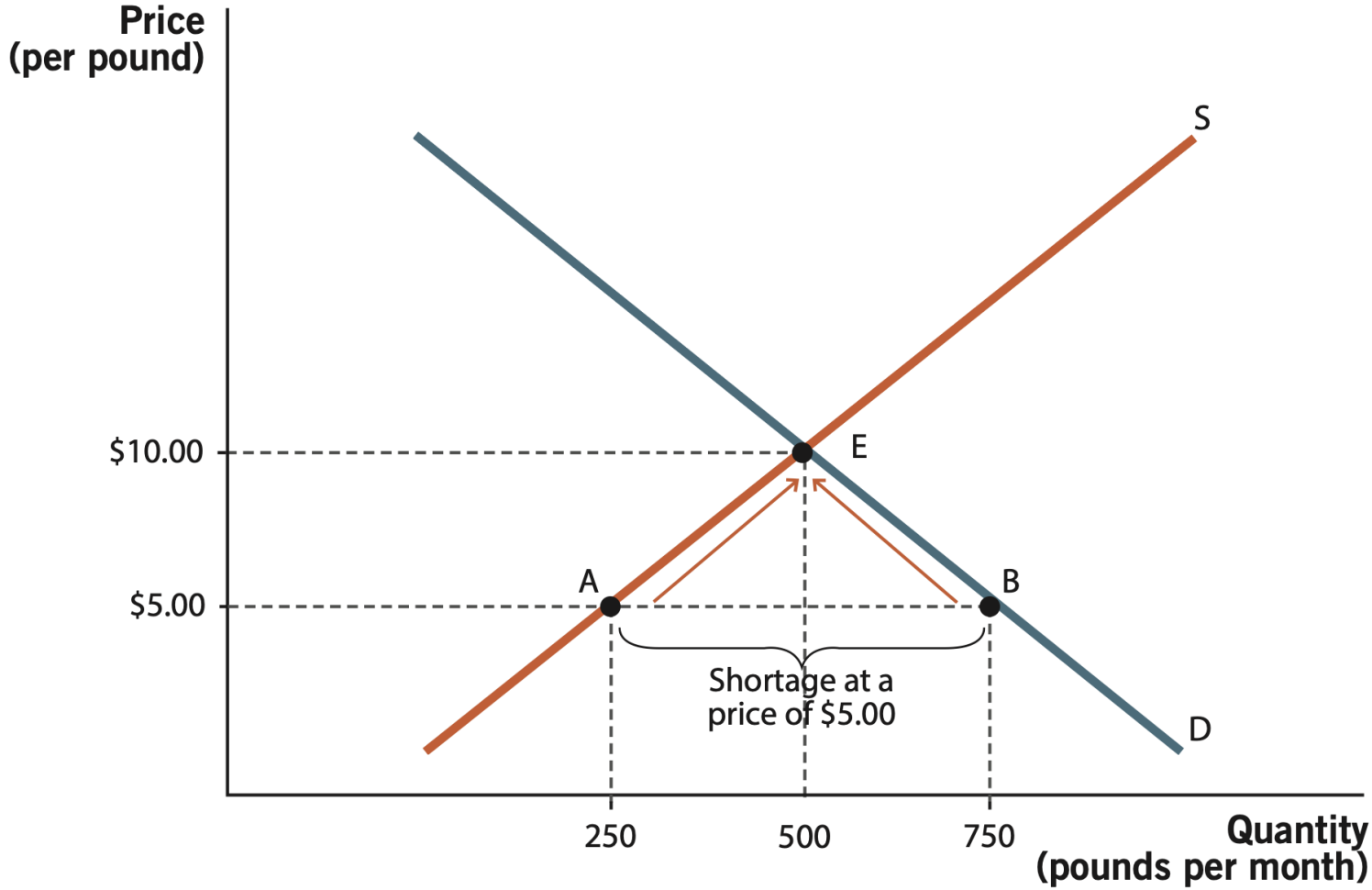

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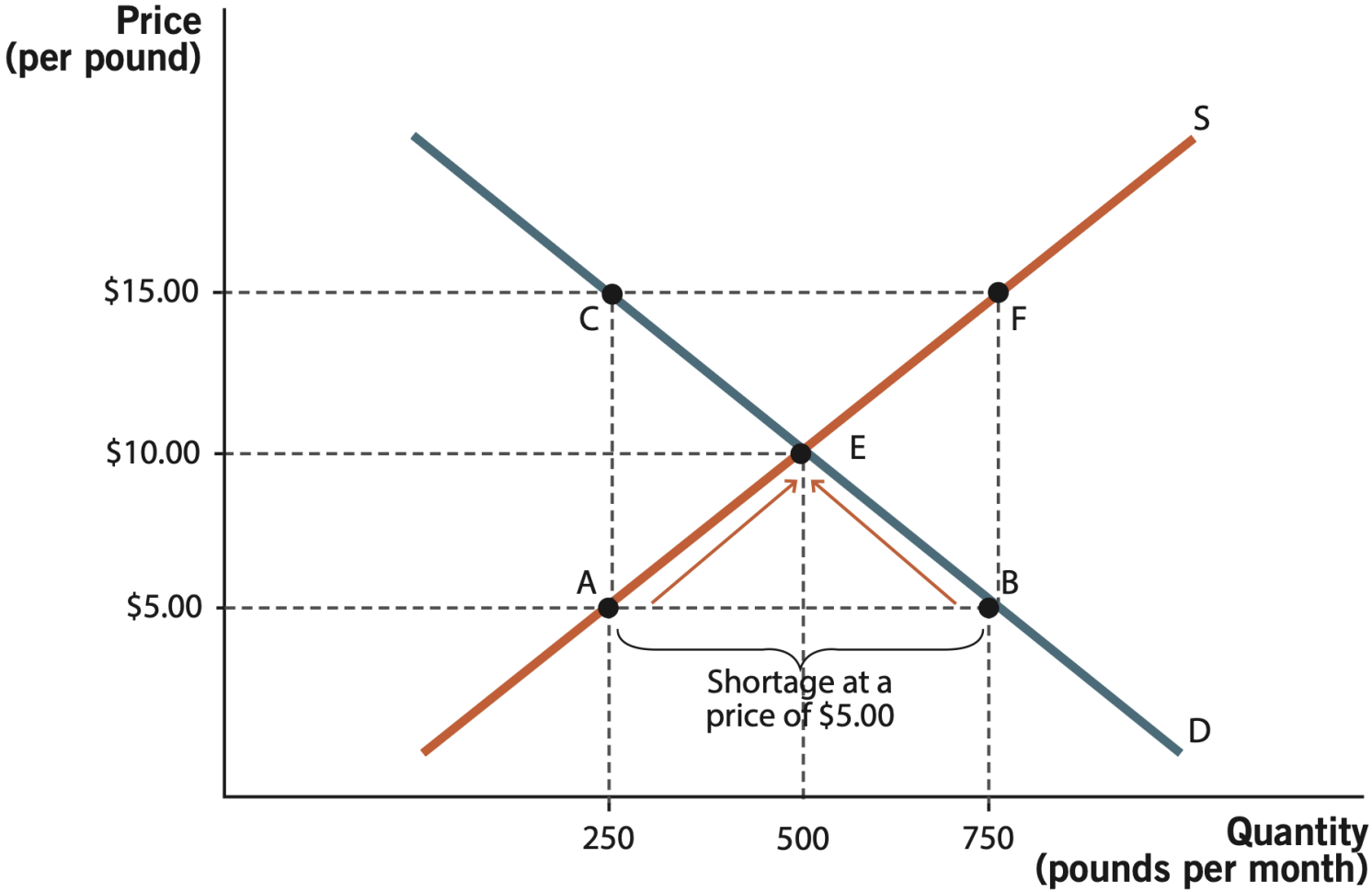
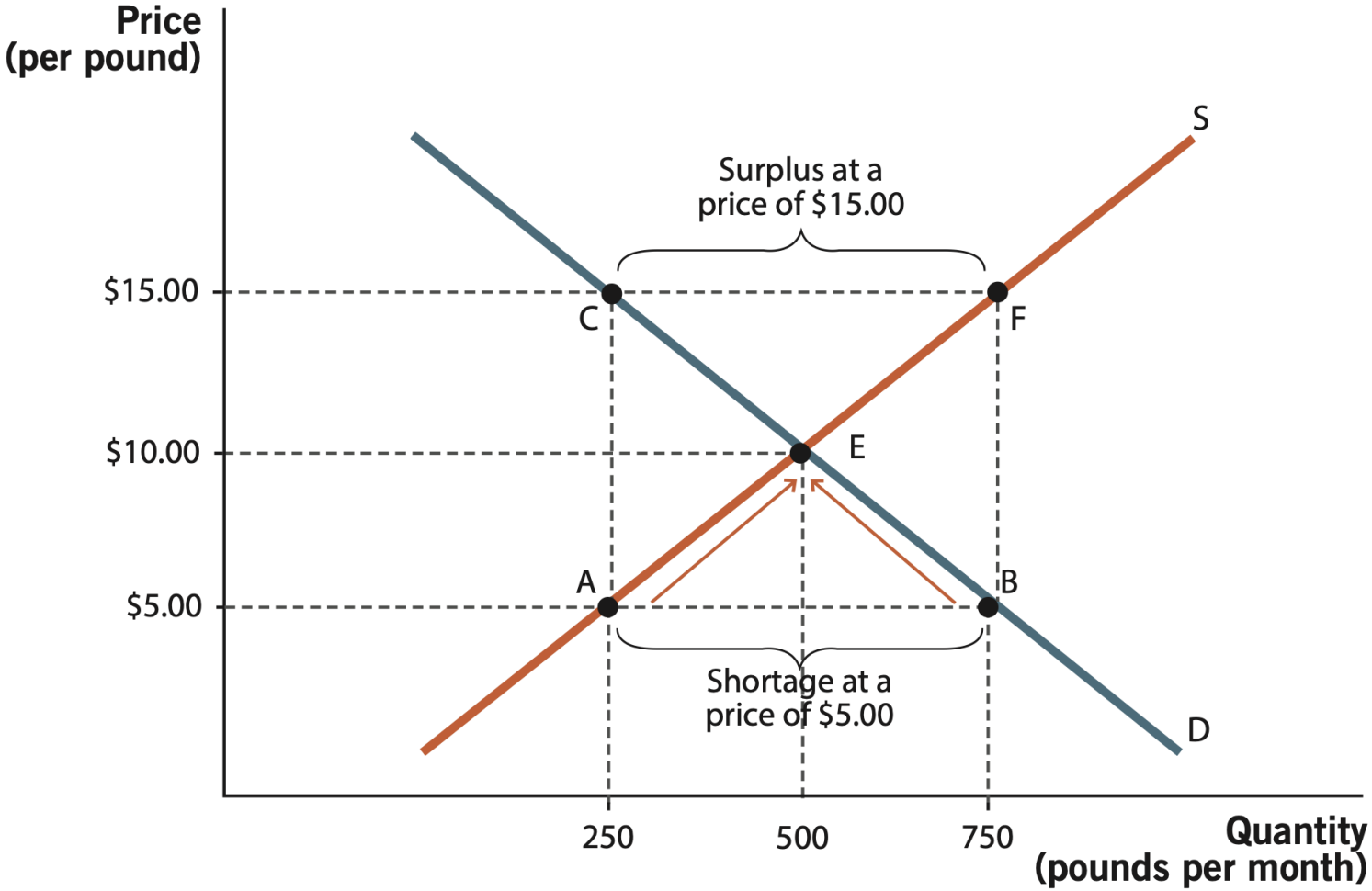
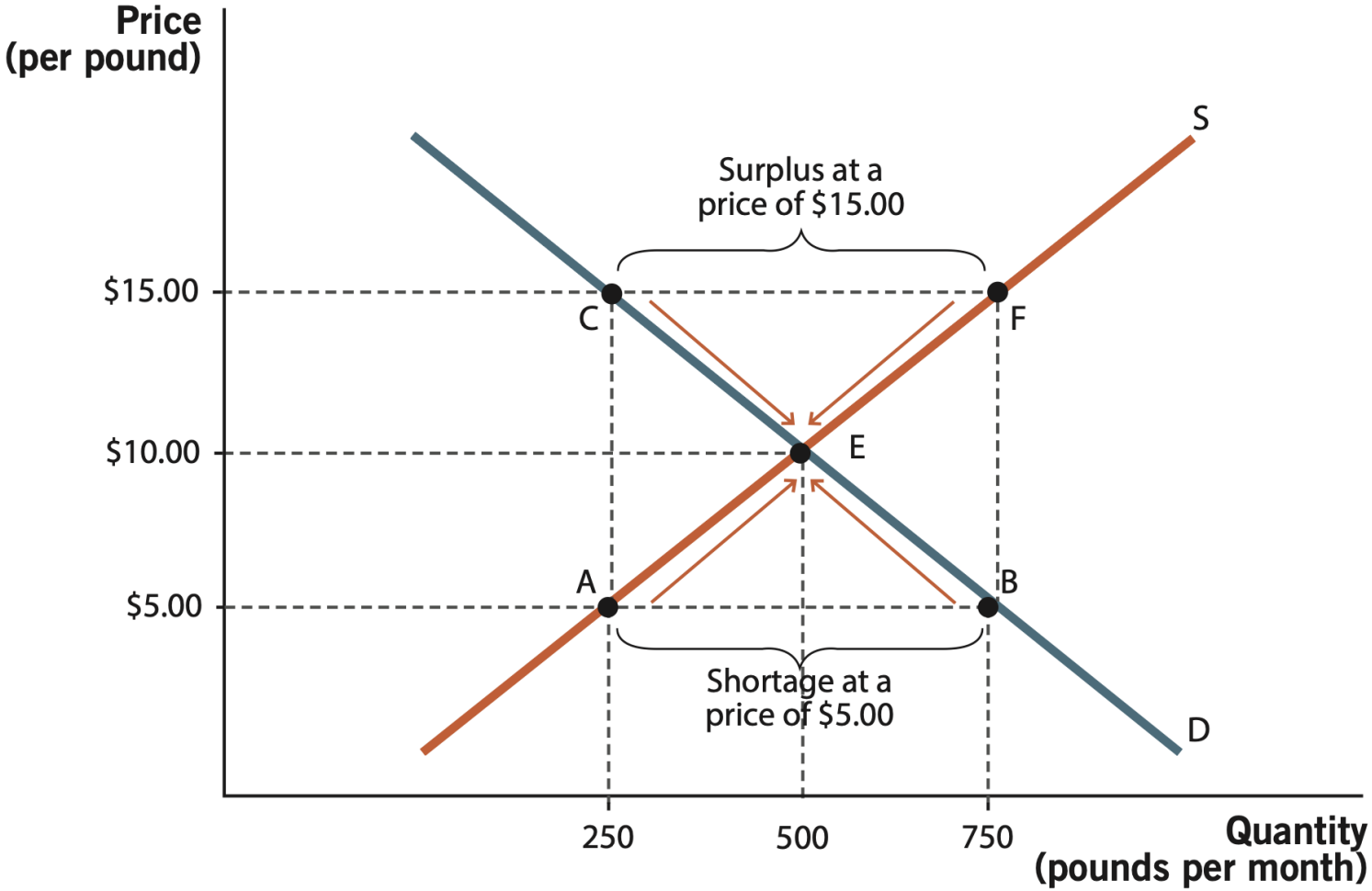


Supply and Demand



Supply and Demand



Polling Question 9

Suppose there is a shortage in the market for avocados. Assuming a competitive and unrestrained market, what happens over time?

A. The price of avocados will fall, and the shortage will worsen.

B. The price of avocados will rise, and the market will eventually reach equilibrium.

C. The price of avocados will rise, and a large surplus will be created.

D. Producers will stop growing avocados.

Polling Question 10

The demand and supply for KitKats is given by the following equations: $Q_D = 5 - P$ and $Q_S = 2 + 2P$. What is the equilibrium price?

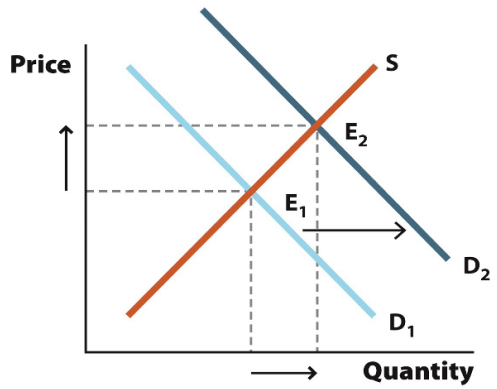
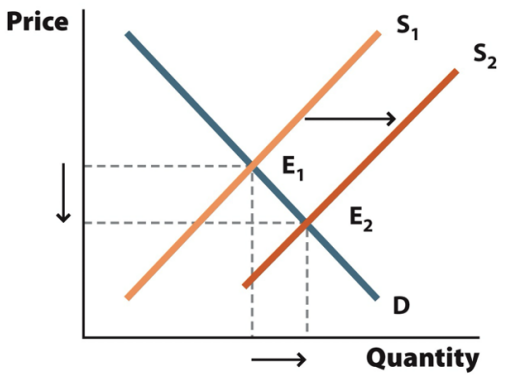
A. \$0.50

B. \$1.00

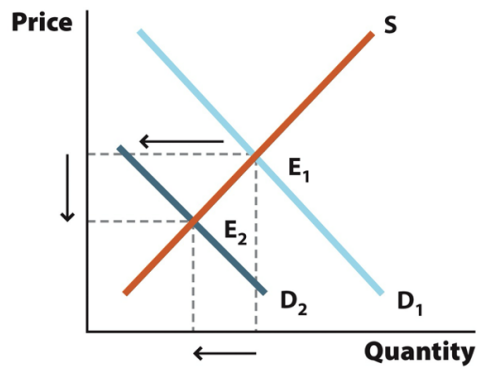
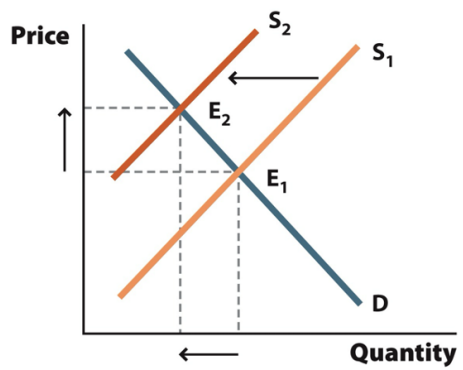
C. \$1.50

D. \$2.00

Graphs of Shifts

Change	Illustration	Impact on Price and Quantity
Demand increases		The demand curve shifts to the right. As a result, the equilibrium price and equilibrium quantity increase.
Supply increases		The supply curve shifts to the right. As a result, the equilibrium price decreases and the equilibrium quantity increases.

Graphs of Shifts

Change	Illustration	Impact on Price and Quantity
Demand decreases		The demand curve shifts to the left. As a result, the equilibrium price and the equilibrium quantity decrease.
Supply decreases		The supply curve shifts to the left. As a result, the equilibrium price increases and the equilibrium quantity decreases.

Summary

- If you take away just one thing from this course, it will probably be supply and demand.
  - Powerful tool for explaining market changes
- In competitive markets, supply and demand allow prices to adjust toward equilibrium.
  - This means there are no surpluses or shortages.