Chapter 4

The Market Forces of Supply and Demand

Markets and Competition

- Market
  - Where **buyers** and **sellers** of a particular good or service **meet**.
  - Buyers
    - Determine the **demand** for the product
  - Sellers
    - Determine the **supply** of the product

Markets and Competition

- **Competitive** market
  - Market in which there are **many buyers and many sellers**
  - Each has a **negligible impact** on market price
  - **Price and quantity** are determined by all buyers and sellers
    - As they interact in the marketplace

Markets and Competition

- **Perfectly competitive** market
  - **Goods** offered for sale are all **exactly the same**
  - Many buyers and sellers
    - No single buyer or seller has any influence over the market price
    - **Price takers**
  - At the market price
    - Buyers can buy all they want
    - Sellers can sell all they want

Markets and Competition

- Monopoly
  - The only seller in the market
  - Sets the price
- Other markets
  - Between perfect competition and monopoly

Demand

- Law of demand
  - Other things equal
  - When the price of a good rises, the quantity demanded of the good falls
  - When the price falls, the quantity demanded rises

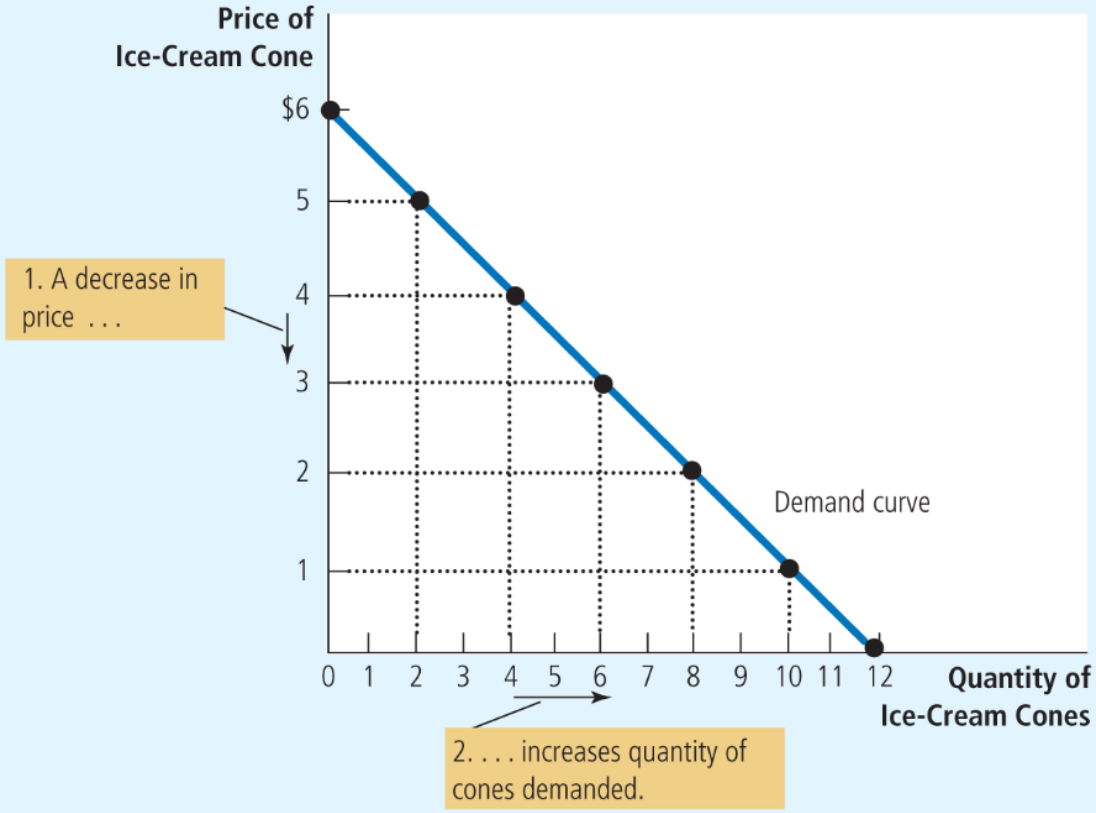
Figure 1 Catherine's Demand Schedule and Demand Curve

FIGURE 1

Catherine's Demand Schedule and Demand Curve

The demand schedule is a table that shows the quantity demanded at each price. The demand curve, which graphs the demand schedule, illustrates how the quantity demanded of the good changes as its price varies. Because a lower price increases the quantity demanded, the demand curve slopes downward.

Price of Ice-Cream Cone	Quantity of Cones Demanded
$0	12 cones
1	10
2	8
3	6
4	4
5	2
6	0



Demand

- Market demand
  - Sum of all individual demands for a good or service
- Market demand curve
  - Sum the individual demand curves horizontally

Figure 2 Market Demand as the Sum of Individual Demands, Part 1

The quantity demanded in a market is the sum of the quantities demanded by all the buyers at each price. Thus, the market demand curve is found by adding horizontally the individual demand curves. At a price of $4, Catherine demands 4 ice-cream cones and Nicholas demands 3 ice-cream cones. The quantity demanded in the market at this price is 7 cones.

FIGURE 2

Market Demand as the Sum of Individual Demands

Price of Ice-Cream Cone	Catherine		Nicholas		Market
$0	12	+	7	=	19 cones
1	10		6		16
2	8		5		13
3	6		4		10
4	4		3		7
5	2		2		4
6	0		1		1

Figure 2 Market Demand as the Sum of Individual Demands, Part 2

The quantity demanded in a market is the sum of the quantities demanded by all the buyers at each price. Thus, the market demand curve is found by adding horizontally the individual demand curves. At a price of $4, Catherine demands 4 ice-cream cones and Nicholas demands 3 ice-cream cones. The quantity demanded in the market at this price is 7 cones.

FIGURE 2

Market Demand as the Sum of Individual Demands

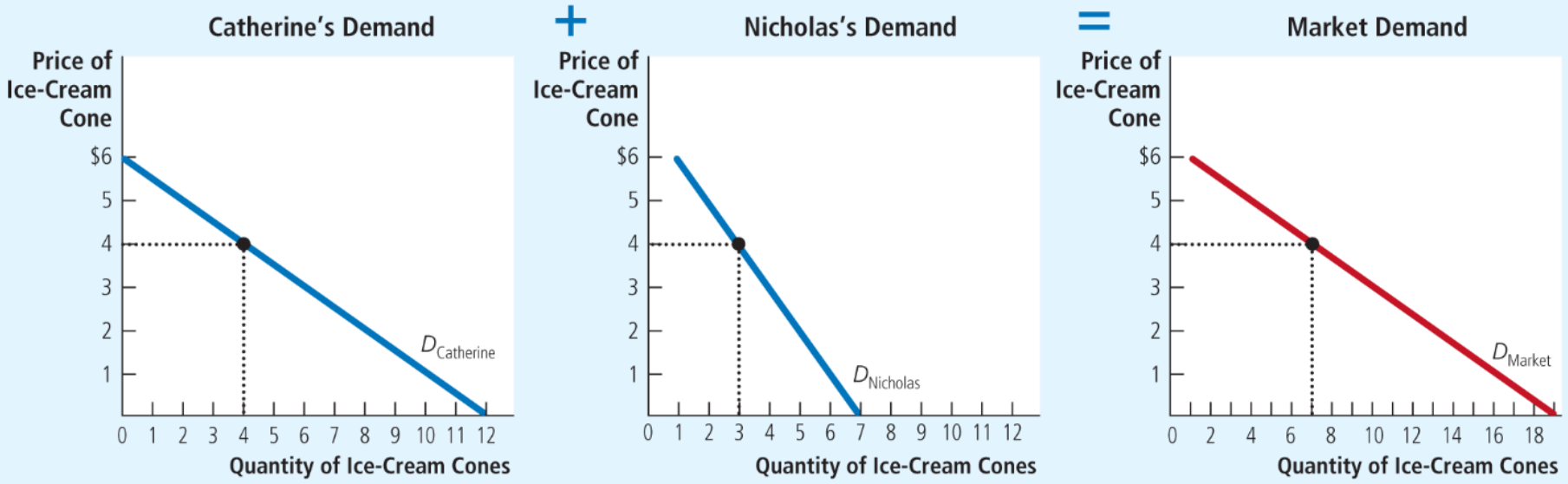
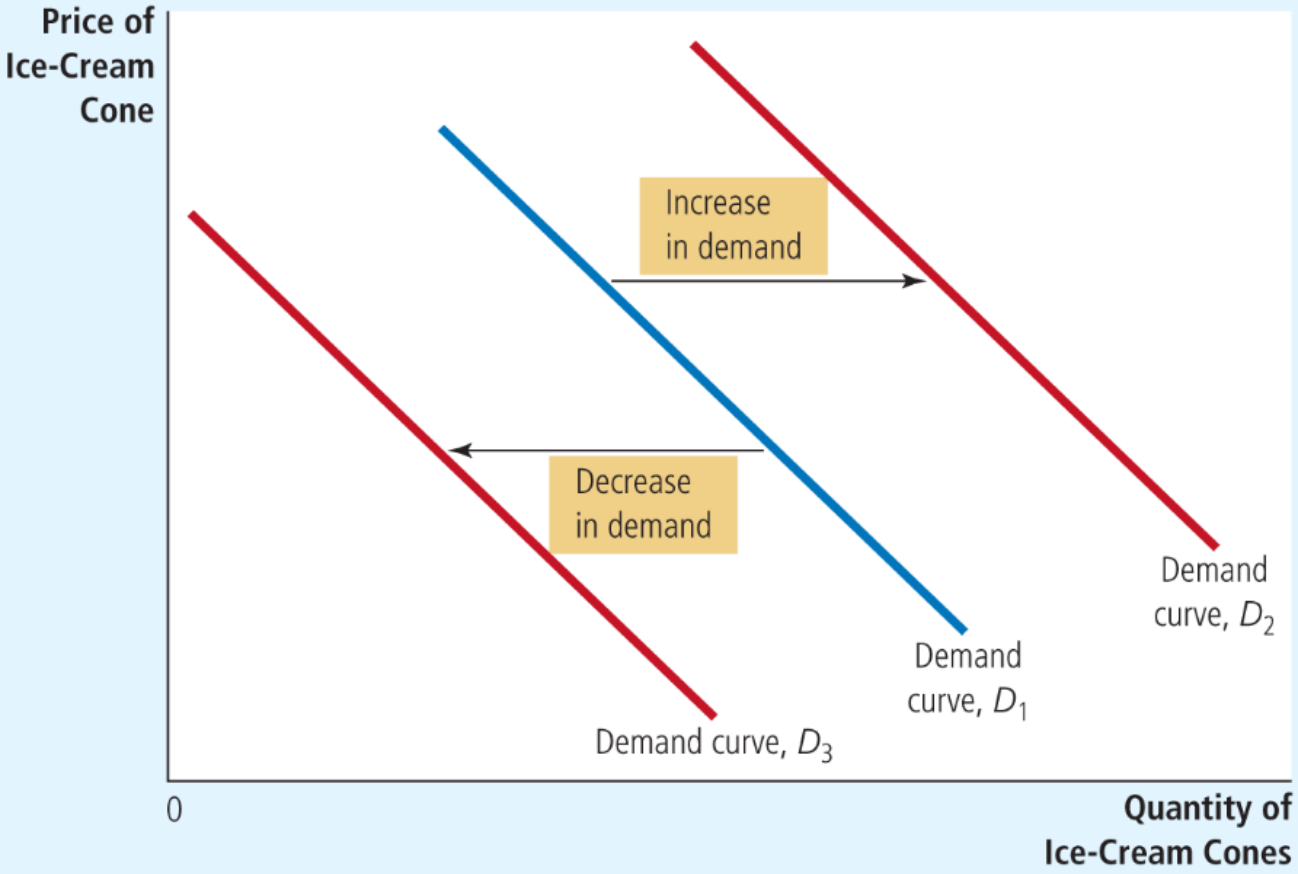


Figure 3 Shifts in the Demand Curve



Any change that raises the quantity that buyers wish to purchase at any given price shifts the demand curve to the right.
Any change that lowers the quantity that buyers wish to purchase at any given price shifts the demand curve to the left.

Demand

- Variables that can shift the demand curve
  - Income
  - Prices of related goods
  - Tastes
  - Expectations
  - Number of buyers

Demand

- **Income**
  - **Normal good**
    - Other things constant
    - An increase in income leads to an **increase** in demand
  - **Inferior good**
    - Other things constant
    - An increase in income leads to a **decrease** in demand

Demand

- **Prices of related goods**
  - **Substitutes**, two goods
    - An increase in the price of one
    - Leads to an **increase** in the demand for the other
  - **Complements**, two goods
    - An increase in the price of one
    - Leads to a **decrease** in the demand for the other

Demand

- Tastes
  - Change in tastes: changes the demand
- Expectations about the future
  - Expect an increase in income
    - Increase in current demand
  - Expect higher prices
    - Increase in current demand
- Number of buyers, increases
  - Market demand increases

Figure 4 Shifts in the Demand Curve versus Movements along the Demand Curve (a)

FIGURE 4

Shifts in the Demand Curve versus Movements along the Demand Curve

If warnings on cigarette packages convince smokers to smoke less, the demand curve for cigarettes shifts to the left. In panel (a), the demand curve shifts from D_1 to D_2. At a price of $4 per pack, the quantity demanded falls from 20 to 10 cigarettes per day, as reflected by the shift from point A to point B.

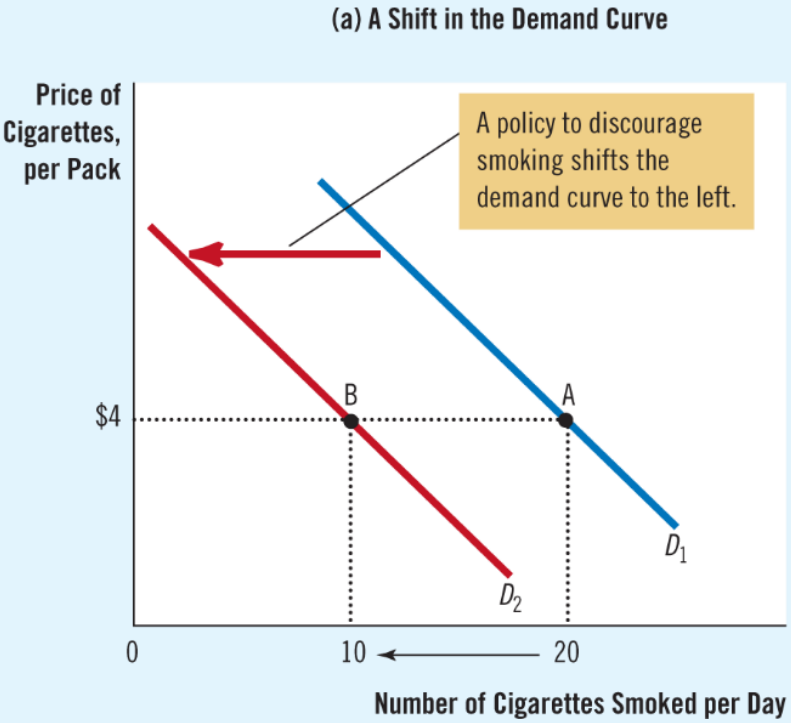
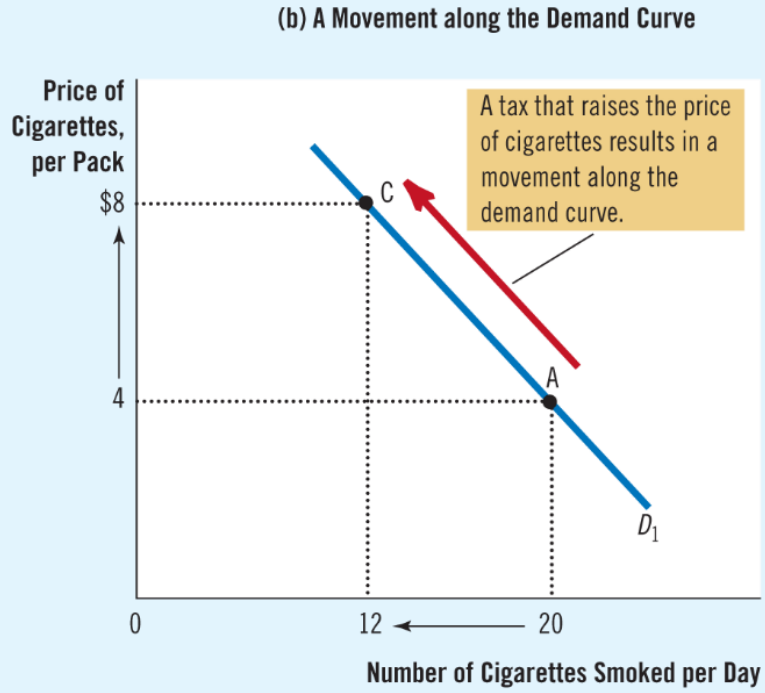


Figure 4 Shifts in the Demand Curve versus Movements along the Demand Curve (b)

FIGURE 4

Shifts in the Demand Curve versus Movements along the Demand Curve

By contrast, if a tax raises the price of cigarettes, the demand curve does not shift. Instead, we observe a movement to a different point on the demand curve. In panel (b), when the price rises from $4 to $8, the quantity demanded falls from 20 to 12 cigarettes per day, as reflected by the movement from point A to point C.



Supply

- Law of supply
  - Other things equal
  - When the price of a good rises, the quantity supplied of the good also rises
  - When the price falls, the quantity supplied falls as well

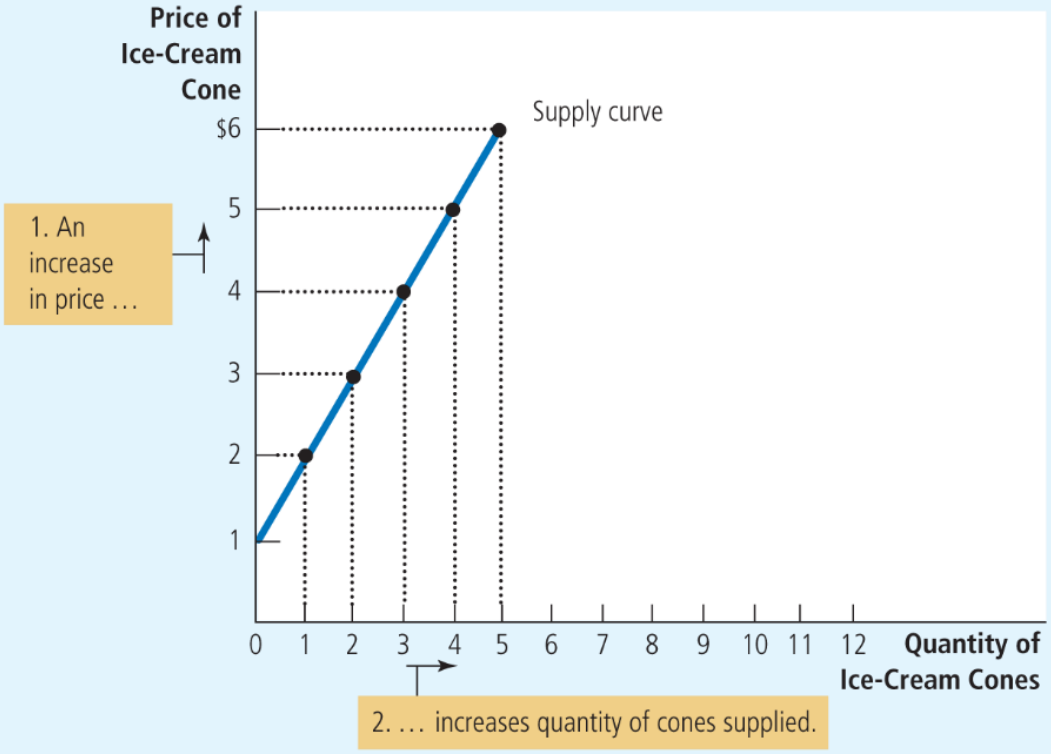
Figure 5 Ben's Supply Schedule and Supply Curve

FIGURE 5

Ben's Supply Schedule and Supply Curve

The supply schedule is a table that shows the quantity supplied at each price. This supply curve, which graphs the supply schedule, illustrates how the quantity supplied of the good changes as its price varies. Because a higher price increases the quantity supplied, the supply curve slopes upward.

Price of Ice-Cream Cone	Quantity of Cones Supplied
$0	0 cones
1	0
2	1
3	2
4	3
5	4
6	5



Supply

- Market supply
  - Sum of the supplies of all sellers for a good or service
- Market supply curve
  - Sum of individual supply curves horizontally

Figure 6 Market Supply as the Sum of Individual Supplies, Part 1

The quantity supplied in a market is the sum of the quantities supplied by all the sellers at each price. Thus, the market supply curve is found by adding horizontally the individual supply curves. At a price of $4, Ben supplies 3 ice-cream cones and Jerry supplies 4 ice-cream cones. The quantity supplied in the market at this price is 7 cones.

FIGURE 6

Market Supply as the Sum of Individual Supplies

Price of Ice-Cream Cone	Ben		Jerry		Market
$0	0	+	0	=	0 cones
1	0		0		0
2	1		0		1
3	2		2		4
4	3		4		7
5	4		6		10
6	5		8		13

Figure 6 Market Supply as the Sum of Individual Supplies, Part 2

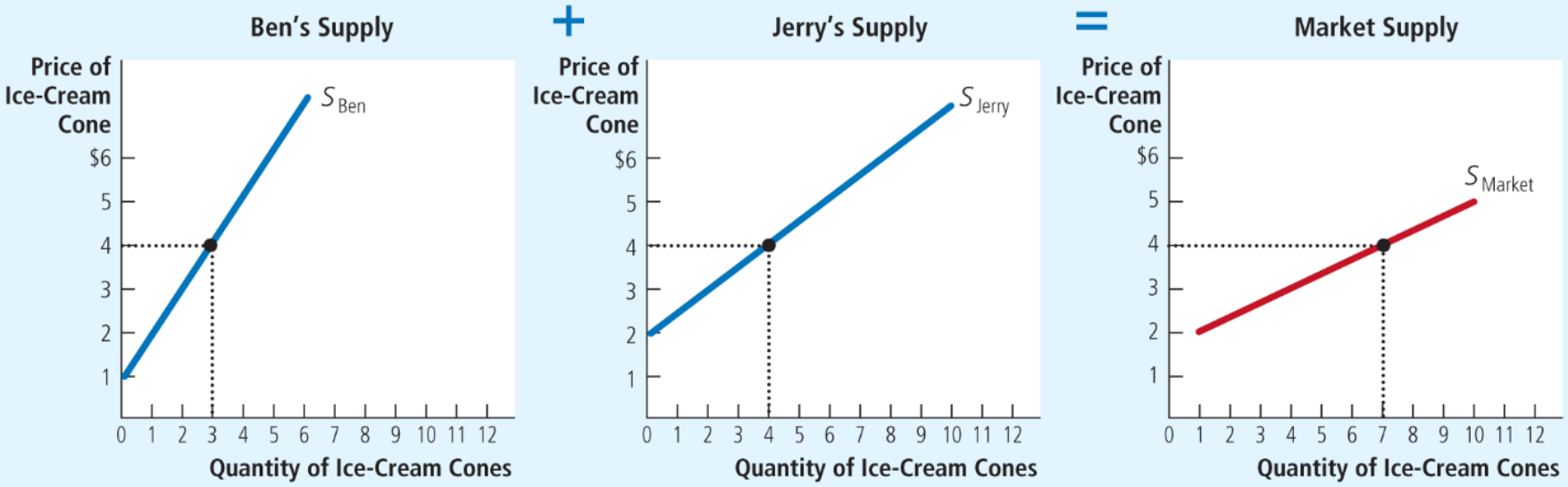
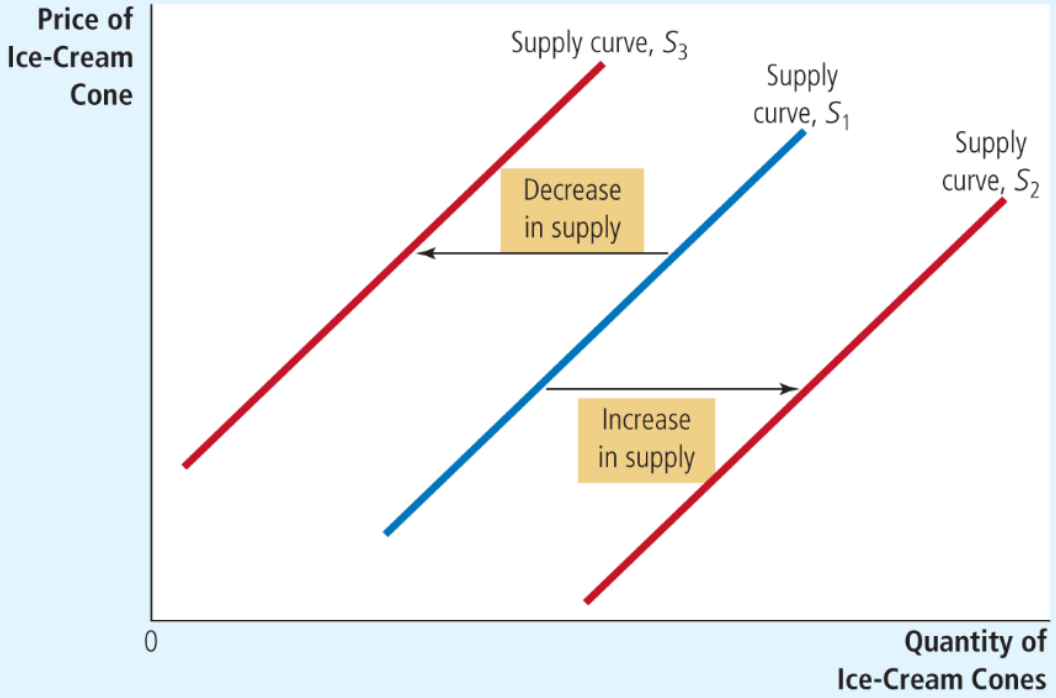


Exhibit 7 Shifts in the Supply Curve

FIGURE 7

Shifts in the Supply Curve

Any change that raises the quantity that sellers wish to produce at any given price shifts the supply curve to the right. Any change that lowers the quantity that sellers wish to produce at any given price shifts the supply curve to the left.



Supply

- Variables that can shift the supply curve
  - Input prices
  - Technology
  - Expectations about future
  - Number of sellers

Supply

- Input prices
  - Supply is **negatively** related to prices of inputs
  - Higher input prices: decrease in supply
- Technology
  - Advance in technology: reduces firms' costs: increase in supply

Supply

- Expectations about future
  - Affect current supply
  - Expected higher prices
    - Decrease in current supply
- Number of sellers, increases
  - Market supply increases

Supply and Demand Together

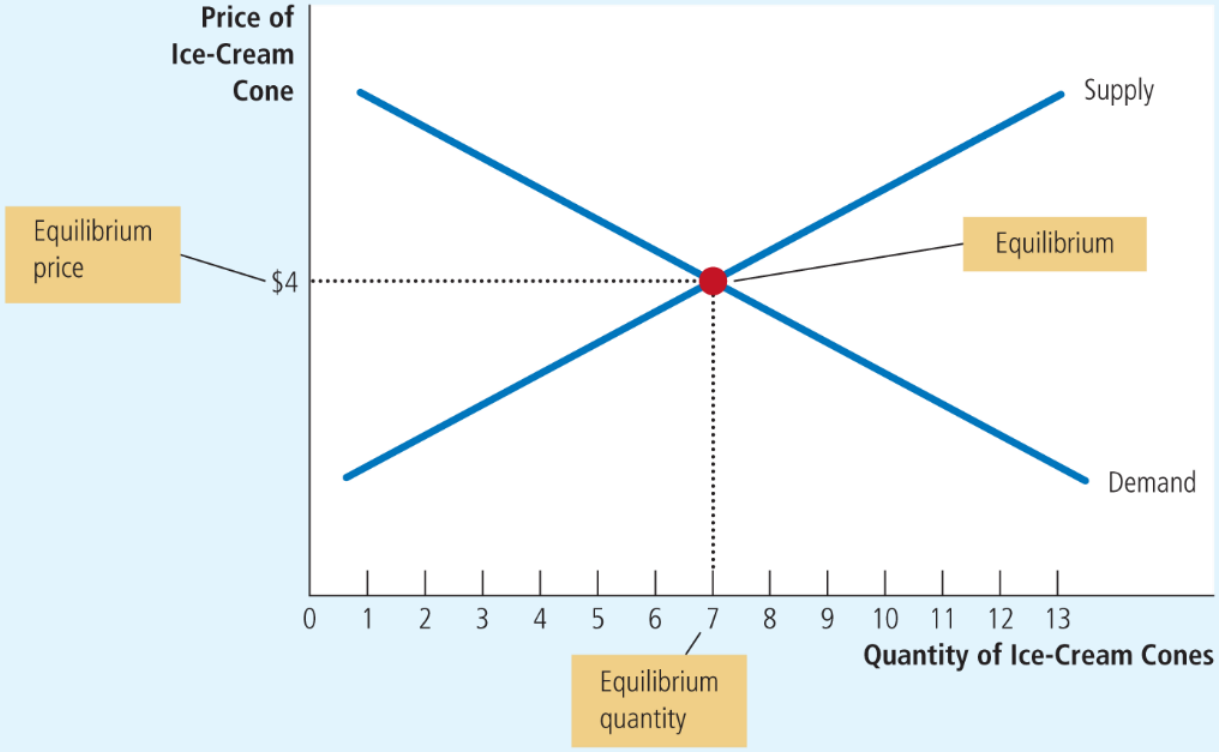
- Equilibrium
  - Supply and demand curves intersect

Figure 8 The Equilibrium of Supply and Demand

FIGURE 8

The Equilibrium of Supply and Demand

The equilibrium is found where the supply and demand curves intersect. At the equilibrium price, the quantity supplied equals the quantity demanded. Here the equilibrium price is $4: At this price, 7 ice-cream cones are supplied and 7 ice-cream cones are demanded.



Supply and Demand Together

- Surplus
  - Quantity supplied > Quantity demanded
  - Excess supply
  - Downward pressure on price

Supply and Demand Together, Part 4

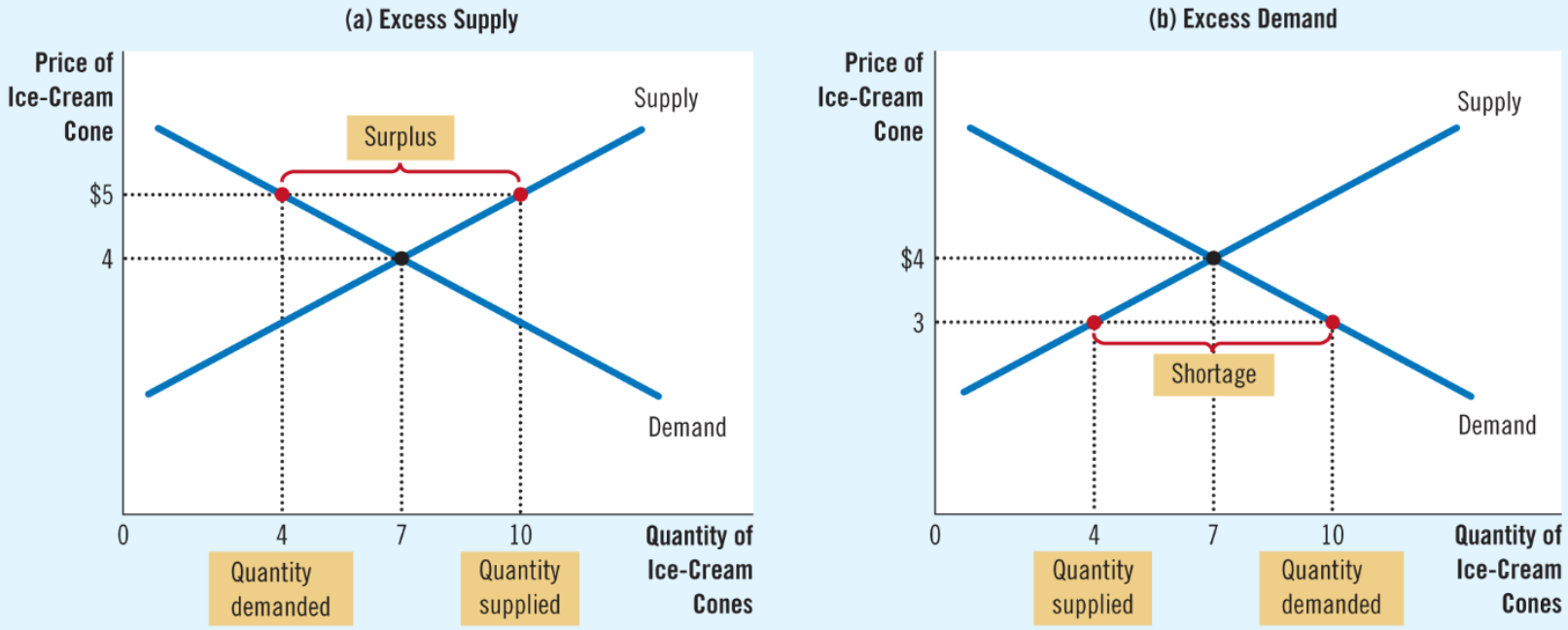
- Shortage
  - Quantity demanded > Quantity supplied
  - Excess demand
  - Upward pressure on price

Figure 9 Markets Not in Equilibrium

In panel (a), there is a surplus. Because the market price of $5 is above the equilibrium price, the quantity supplied (10 cones) exceeds the quantity demanded (4 cones). Producers try to increase sales by cutting the price of a cone, which moves the price toward its equilibrium level. In panel (b), there is a shortage. Because the market price of $3 is below the equilibrium price, the quantity demanded (10 cones) exceeds the quantity supplied (4 cones). With too many buyers chasing too few goods, producers can take advantage of the shortage by raising the price. Hence, in both cases, the price adjustment moves the market toward the equilibrium of supply and demand.

FIGURE 9

Markets Not in Equilibrium



Supply and Demand Together

Three steps to analyzing changes in equilibrium

1. Decide whether **the event shifts** the **supply** curve, the **demand** curve, or, in some cases, both curves
2. Decide whether the curve **shifts** to the **right** or to the **left**
3. Use the **supply-and-demand diagram**
   - **Compare** the initial and the new **equilibrium**
   - Effects on equilibrium **price** and **quantity**

Supply and Demand Together

A change in market equilibrium due to a shift in demand

- One summer, very hot weather
- Effect on the market for ice cream?

1. Hot weather: **shifts** the **demand** curve (tastes)
2. Demand curve **shifts** to the **right**
3. Higher equilibrium price; higher equilibrium quantity

Figure 10 How an Increase in Demand Affects the Equilibrium

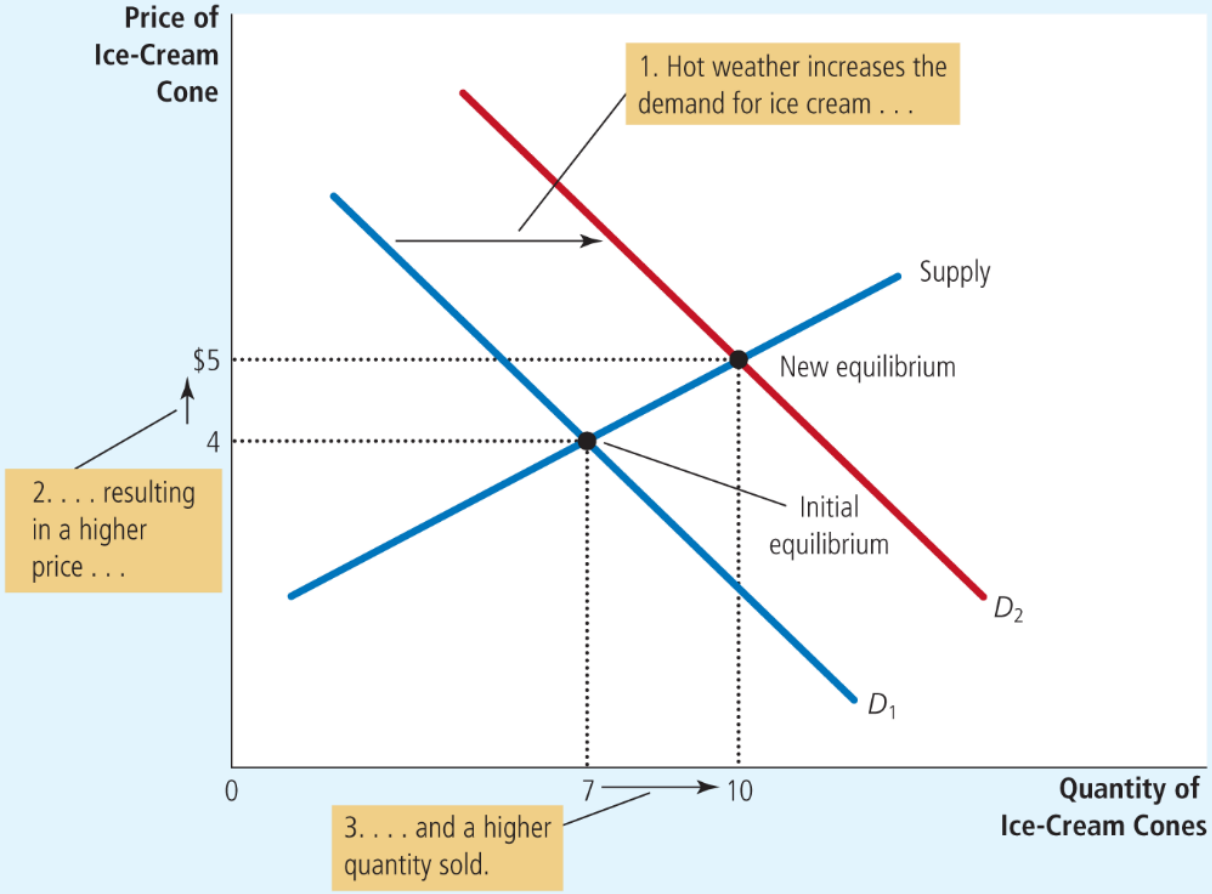


FIGURE 10

How an Increase in Demand Affects the Equilibrium

An event that raises quantity demanded at any given price shifts the demand curve to the right. The equilibrium price and the equilibrium quantity both rise. Here an abnormally hot summer causes buyers to demand more ice cream. The demand curve shifts from D_1 to D_2, which causes the equilibrium price to rise from $4 to $5 and the equilibrium quantity to rise from 7 to 10 cones.

Supply and Demand Together

A change in market equilibrium due to a shift in supply

- One summer, a hurricane destroys part of the sugarcane crop: higher price of sugar
- Effect on the market for ice cream?

1. Change in price of sugar: supply curve
2. Supply curve: shifts to the left
3. Higher equilibrium price; lower equilibrium quantity

Figure 11 How a Decrease in Supply Affects the Equilibrium

FIGURE 11

How a Decrease in Supply Affects the Equilibrium

An event that reduces quantity supplied at any given price shifts the supply curve to the left. The equilibrium price rises, and the equilibrium quantity falls. Here an increase in the price of sugar (an input) causes sellers to supply less ice cream. The supply curve shifts from S_1 to S_2, which causes the equilibrium price of ice cream to rise from $4 to $5 and the equilibrium quantity to fall from 7 to 4 cones.

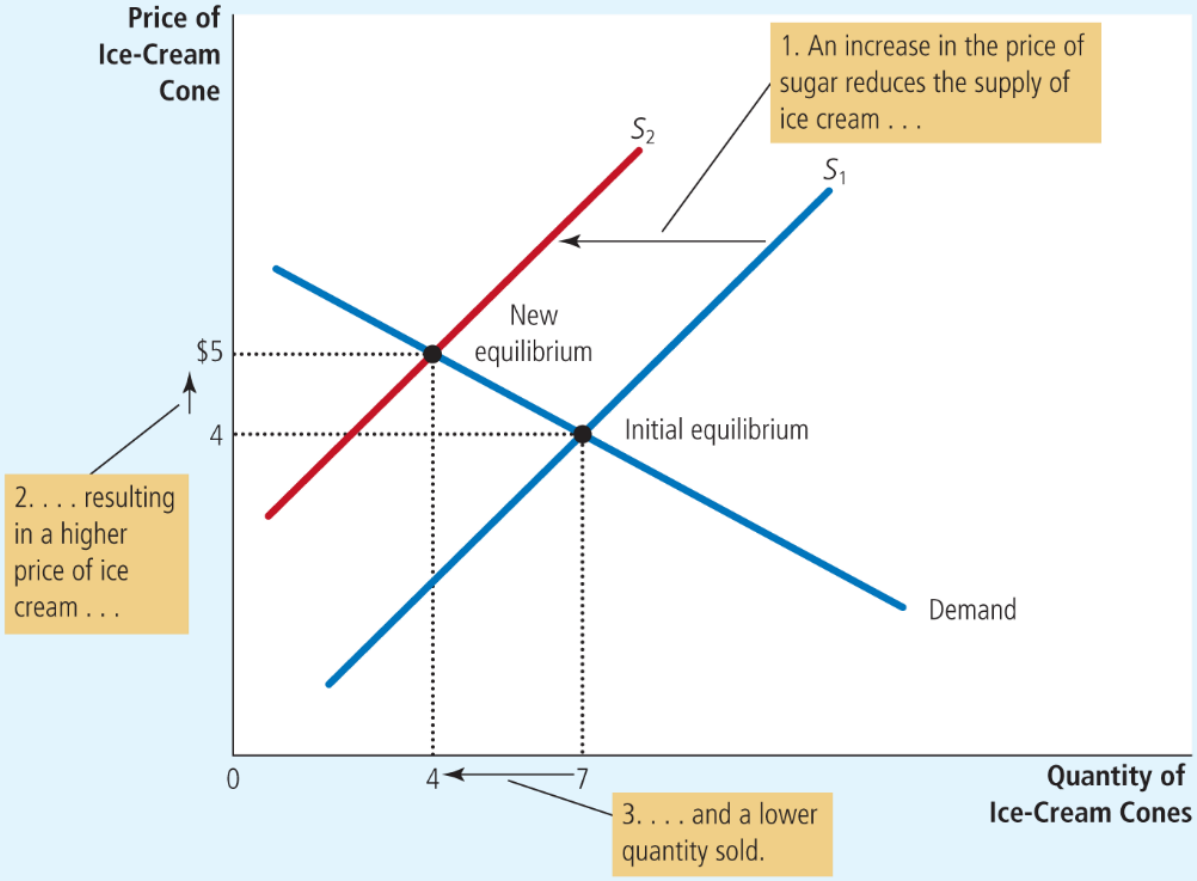


Figure 12 A Shift in Both Supply and Demand

Here we observe a simultaneous increase in demand and decrease in supply. Two outcomes are possible. In panel (a), the equilibrium price rises from P_1 to P_2, and the equilibrium quantity rises from Q_1 to Q_2. In panel (b), the equilibrium price again rises from P_1 to P_2, but the equilibrium quantity falls from Q_1 to Q_2.

FIGURE 12

A Shift in Both Supply and Demand