

N. GREGORY

MANKIW

PRINCIPLES OF

ECONOMICS

Eight Edition

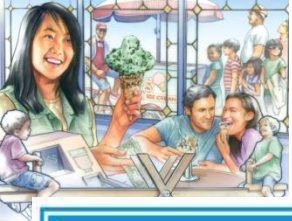


CHAPTER

4

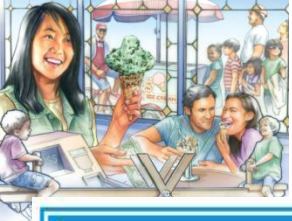
The Market Forces of Supply and Demand

PowerPoint Slides prepared by:
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Eastern Illinois University



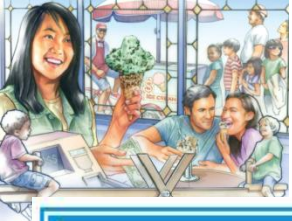
Markets and Competition, Part 1

- Supply and demand
 - Words economists use most often
 - The forces that make market economies work
 - Refer to the behavior of people as they interact with one another in competitive markets



Markets and Competition, Part 2

- Market
 - A group of buyers and sellers of a particular good or service
 - Buyers as a group
 - Determine the demand for the product
 - Sellers as a group
 - Determine the supply of the product



Markets and Competition, Part 3

- Markets take many forms
 - Highly organized
 - Markets for many agricultural commodities
 - Less organized
 - Market for ice cream in a particular town



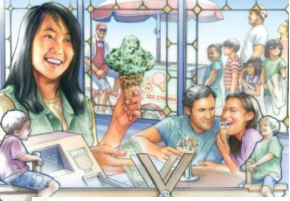
Markets and Competition, Part 4

- **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, Part 5

- Perfectly competitive market
 - Goods offered for sale are all exactly the same
 - Buyers and sellers are so numerous
 - 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, Part 6

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



Demand, Part 1

- Quantity demanded
 - Amount of a good that buyers are willing and able to purchase
- 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



Demand, Part 2

- Demand

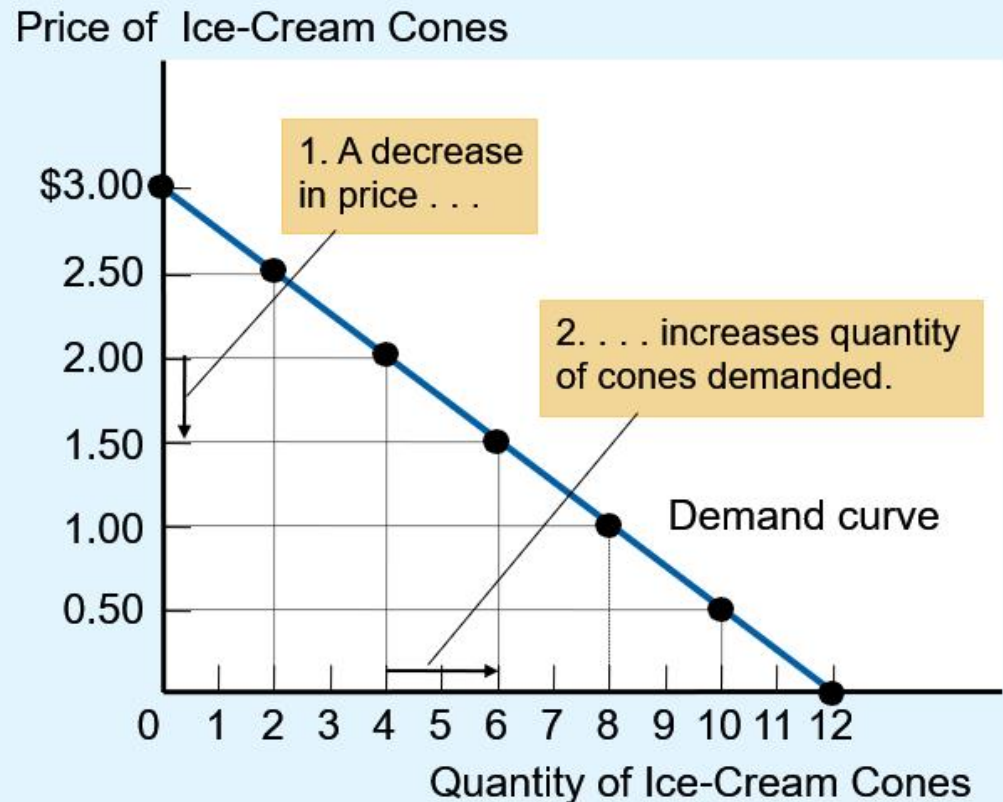
- Relationship between the price of a good and quantity demanded
- Demand schedule: a table
- Demand curve: a graph
 - Price on the vertical axis
 - Quantity on the horizontal axis

- Individual demand

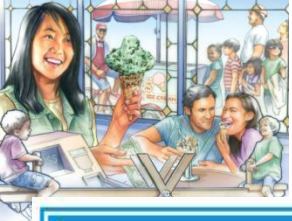
- An individual's demand for a product

Figure 1 Catherine's Demand Schedule and Demand Curve

Price of Ice-Cream Cone	Quantity of Cones Demanded
\$0.00	12 cones
0.50	10
1.00	8
1.50	6
2.00	4
2.50	2
3.00	0



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.



Demand, Part 3

- Market demand
 - Sum of all individual demands for a good or service
- Market demand curve
 - Sum the individual demand curves horizontally
 - Total quantity demanded of a good varies
 - As the price of the good varies
 - Other things constant

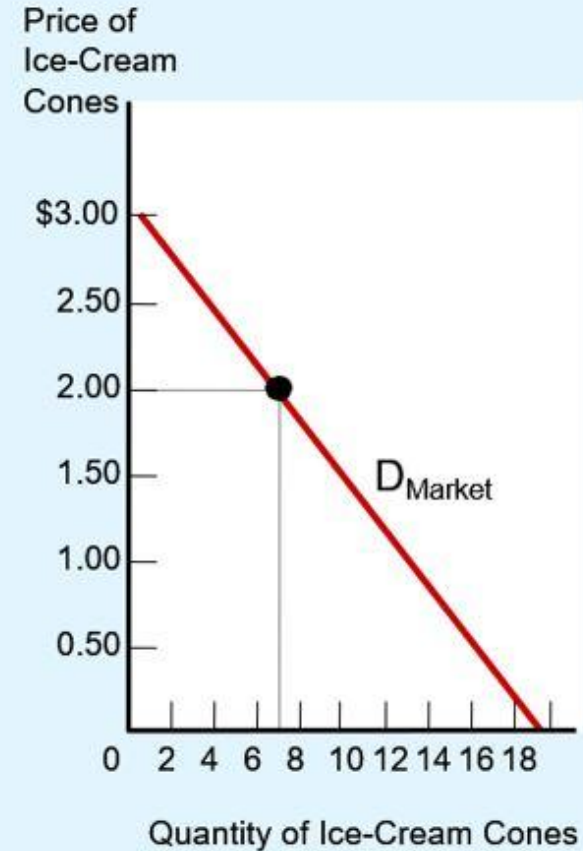
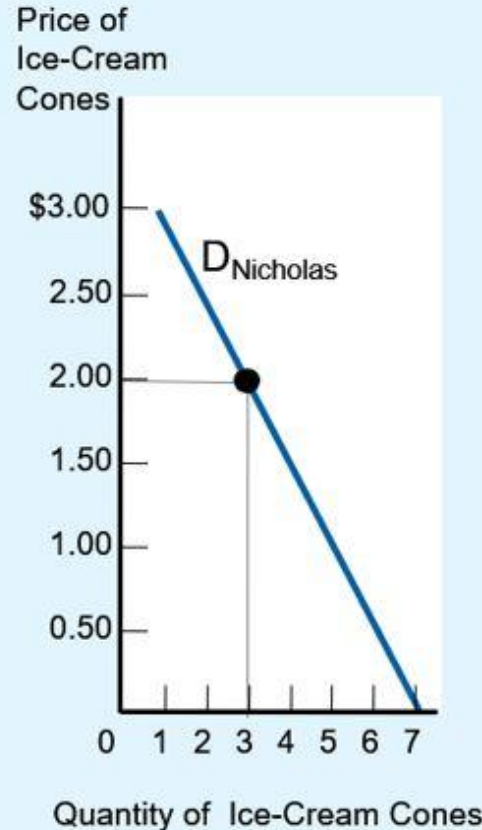
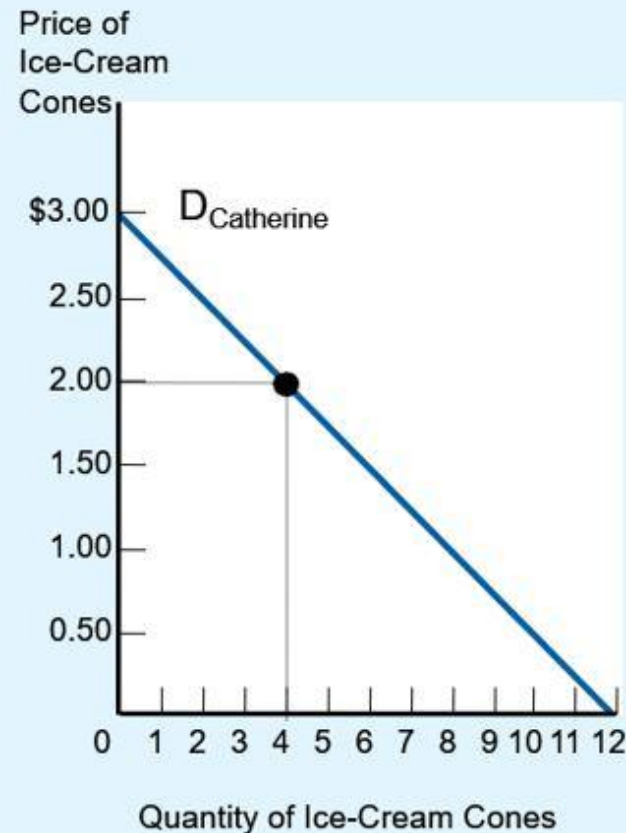
Figure 2 Market Demand as the Sum of Individual Demands, Part 1

Price of Ice-Cream Cone	Catherine	Nicholas	Market
0.00 dollar	12	7	19 cones
0.5 dollar	10	6	16 cones
1.00 dollar	8	5	13 cones
1.50 dollars	6	4	10 cones
2.00 dollars	4	3	7 cones
2.50 dollars	2	2	4 cones
3.00 dollars	0	1	1 cone

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 \$2.00, 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, Part 2

Catherine's demand + Nicholas's demand = Market demand

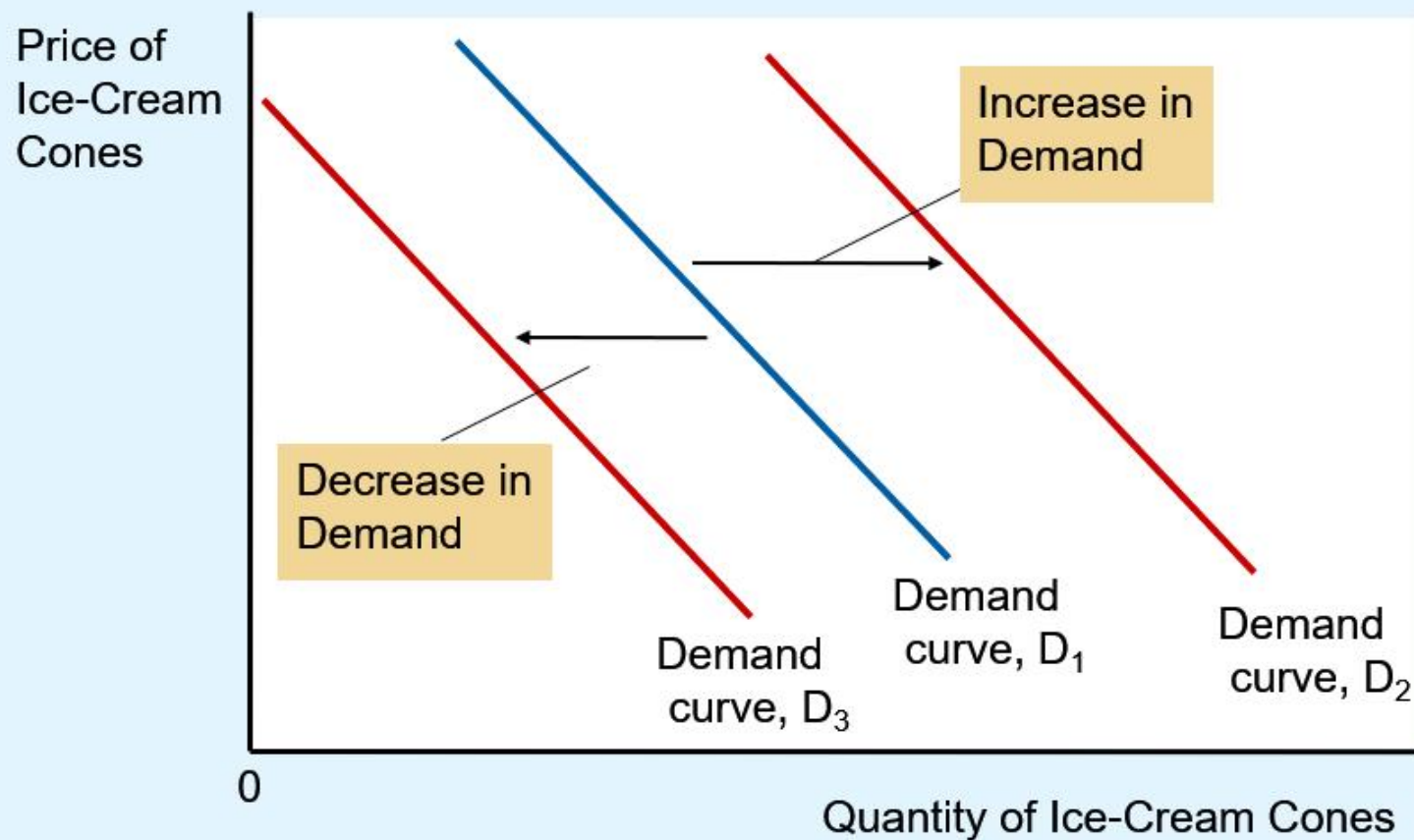




Demand, Part 4

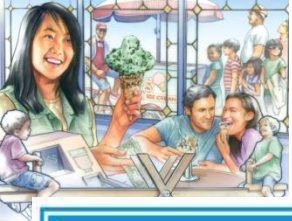
- Shifts in the demand curve
 - Increase in demand
 - Any change that increases the quantity demanded at every price
 - Demand curve shifts right
 - Decrease in demand
 - Any change that decreases the quantity demanded at every price
 - Demand curve shifts left

Figure 3 Shifts in the Demand Curve



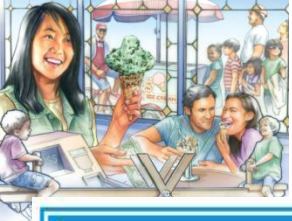
Any change that raises the quantity that buyers wish to purchase at any given price shifts the demand curve to the right.

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



Demand, Part 5

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



Demand, Part 6

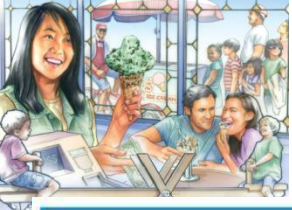
- Income

- Normal good

- Other things constant
 - An increase in income leads to an increase in demand

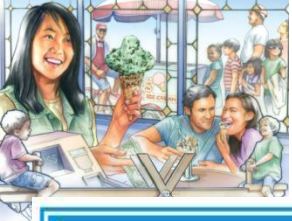
- Inferior good

- Other things constant
 - An increase in income leads to a decrease in demand



Demand, Part 7

- 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, Part 8

- 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

Table 1 Variables That Influence Buyers

Variable	A change in this variable
Price of the good itself	Represents a movement along the demand curve
Income	Shifts the demand curve
Prices of related goods	Shifts the demand curve
Tastes	Shifts the demand curve
Expectations	Shifts the demand curve
Number of buyers	Shifts the demand curve

This table lists the variables that affect how much of any good consumers choose to buy. Notice the special role that the price of the good plays: A change in the good's price represents a movement along the demand curve, whereas a change in one of the other variables shifts the demand curve.

Two ways to reduce the quantity of smoking demanded, Part 1

1. Shift the demand curve for cigarettes and other tobacco products
2. Try to raise the price of cigarettes



“What is the best way to stop this?”



Two ways to reduce the quantity of smoking demanded, Part 2

1. Shift the demand curve for cigarettes and other tobacco products
 - Public service announcements
 - Mandatory health warnings on cigarette packages
 - Prohibition of cigarette advertising on television
- If successful
 - Shift demand curve to the left

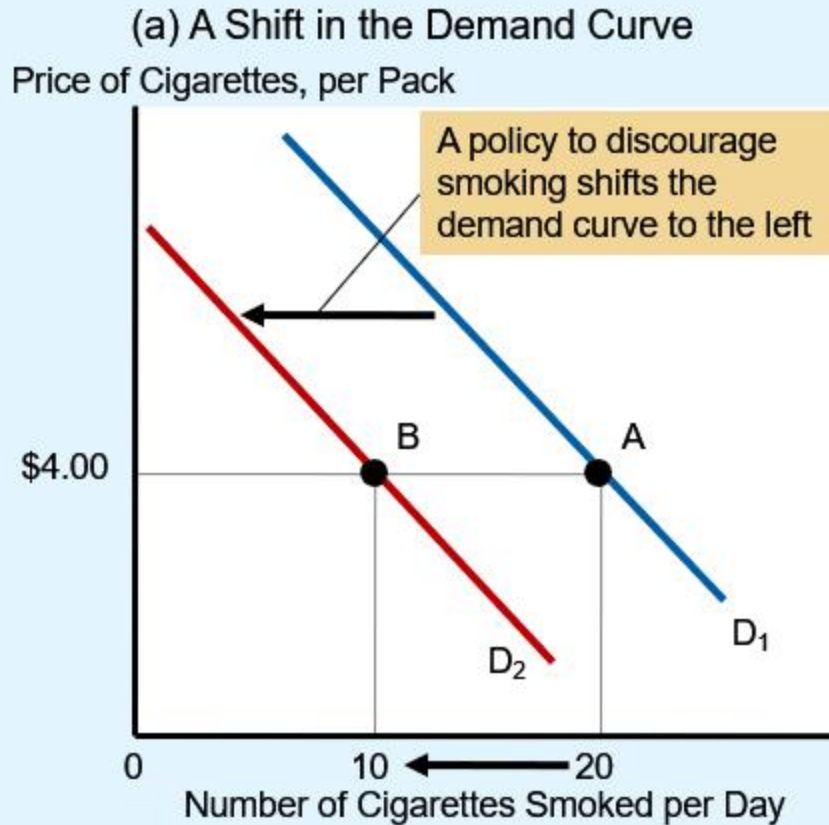


Two ways to reduce the quantity of smoking demanded, Part 3

2. Try to raise the price of cigarettes

- Tax the manufacturer: higher price
- Movement along demand curve
 - 10% \uparrow in price \rightarrow 4% \downarrow in smoking
 - Teenagers: 10% \uparrow in price \rightarrow 12% \downarrow in smoking
- Demand for cigarettes vs. demand for marijuana
 - Appear to be complements

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



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 .

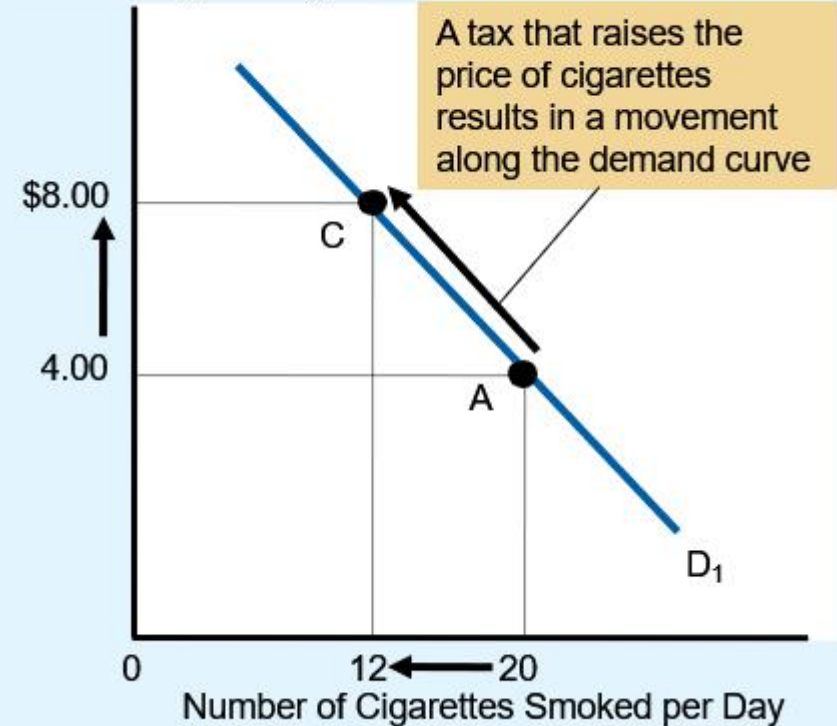
At a price of \$4.00 per pack, the quantity demanded falls from 20 to 10 cigarettes per day, as reflected by the shift from point A to point B.

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

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 \$4.00 to \$8.00, the quantity demanded falls from 20 to 12 cigarettes per day, as reflected by the movement from point A to point C.

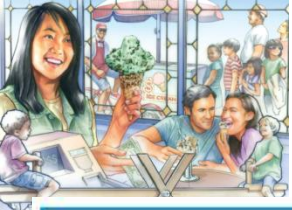
(b) A Movement along the Demand Curve
Price of Cigarettes, per Pack





Supply, Part 1

- Quantity supplied
 - Amount of a good
 - Sellers are willing and able to sell
- 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

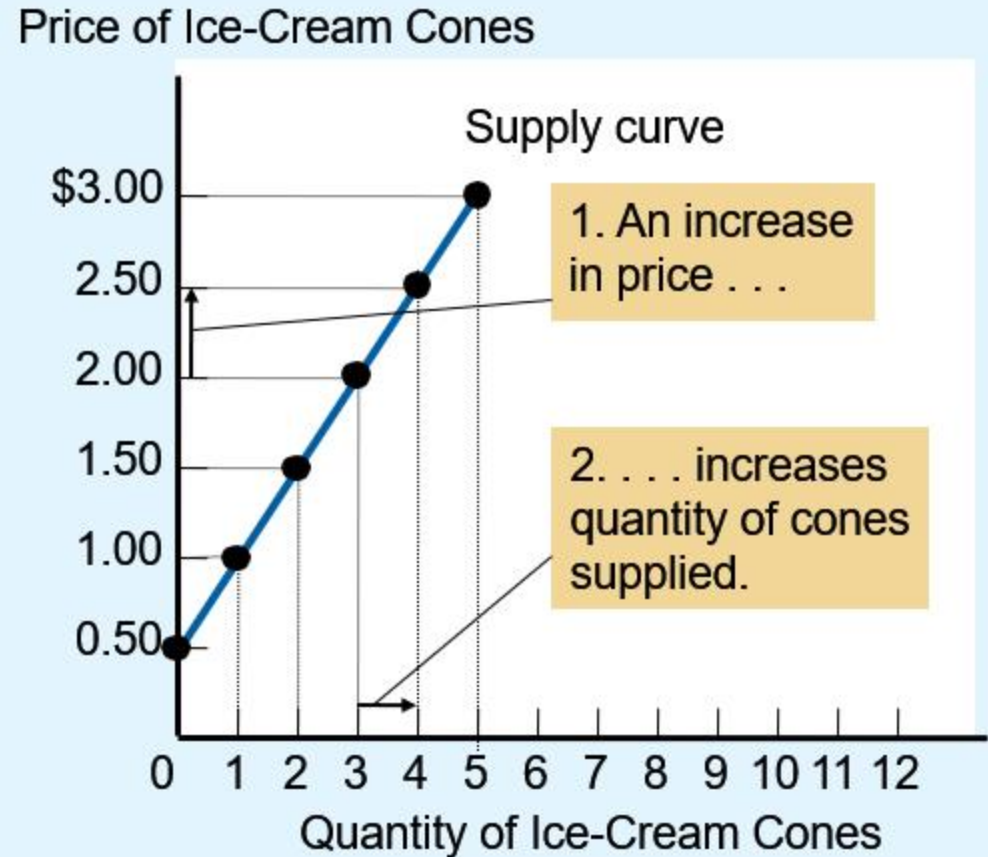


Supply, Part 2

- Supply
 - Relationship between the price of a good and the quantity supplied
 - Supply schedule: a table
 - Supply curve: a graph
 - Price on the vertical axis
 - Quantity on the horizontal axis
- Individual supply
 - A seller's individual supply

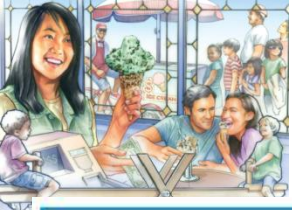
Figure 5 Ben's Supply Schedule and Supply Curve

Price of Ice-cream Cone	Quantity Of Cones Supplied
\$0.00	0 cones
0.50	0
1.00	1
1.50	2
2.00	3
2.50	4
3.00	5



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.



Supply, Part 3

- **Market supply**
 - Sum of the supplies of all sellers for a good or service
- **Market supply curve**
 - Sum of individual supply curves horizontally
 - Total quantity supplied of a good varies
 - As the price of the good varies
 - All other factors that affect how much suppliers want to sell are hold constant

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

Price of ice-cream cone	Ben	Jerry	Market
0.00 dollar	0	0	0 cone
0.50 dollar	0	0	0 cone
1.00 dollar	1	0	1 cone
1.50 dollars	2	2	4 cones
2.00 dollars	3	4	7 cones
2.50 dollars	4	6	10 cones
3.00 dollars	5	8	13 cones

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 \$2.00, 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, Part 2

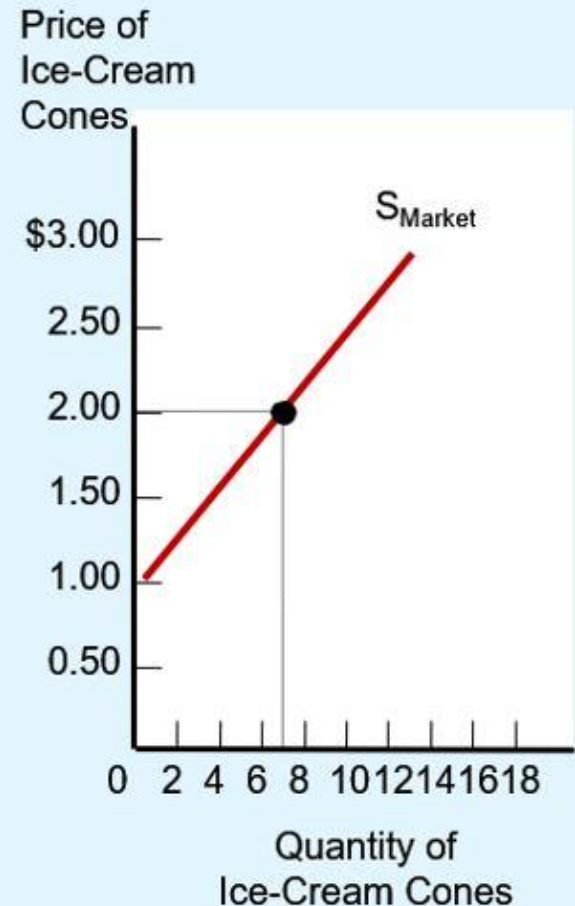
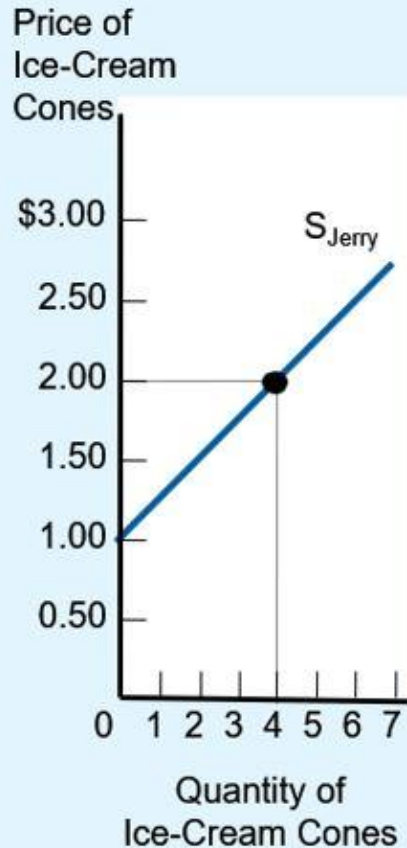
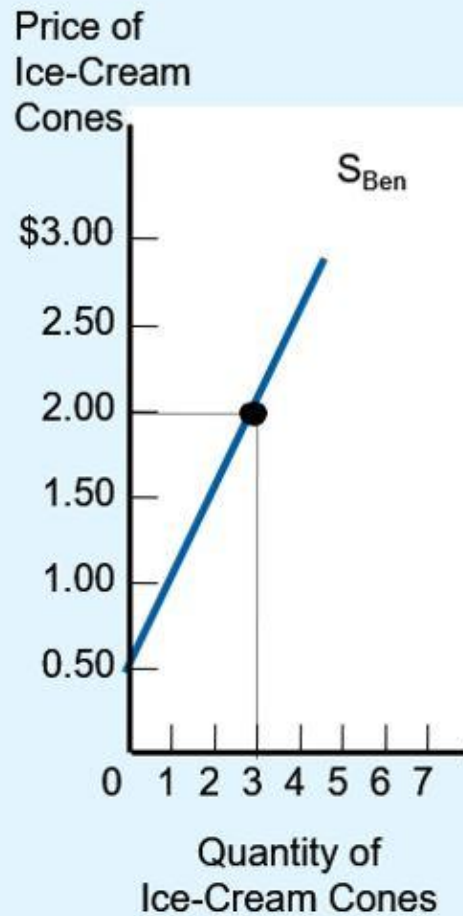
Ben's supply

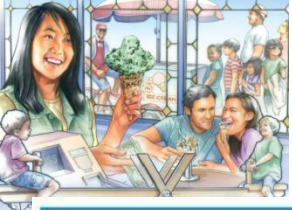


Jerry's supply



Market supply

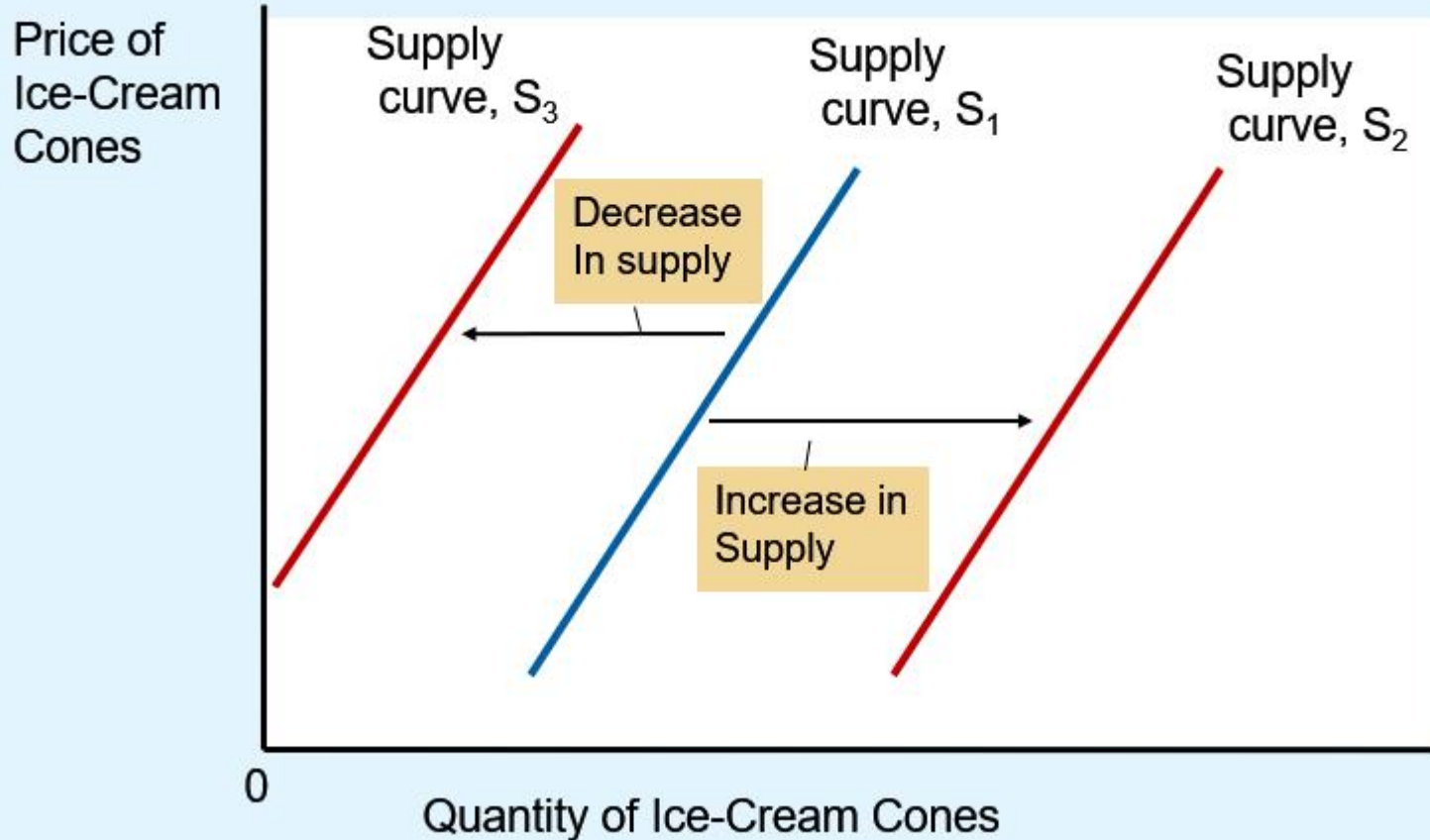




Supply, Part 4

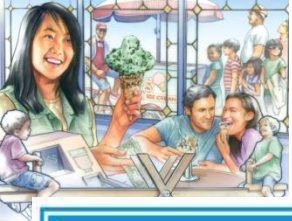
- Shifts in supply
 - Increase in supply
 - Any change that increases the quantity supplied at every price
 - Supply curve shifts right
 - Decrease in supply
 - Any change that decreases the quantity supplied at every price
 - Supply curve shifts left

Exhibit 7 Shifts in the Supply Curve



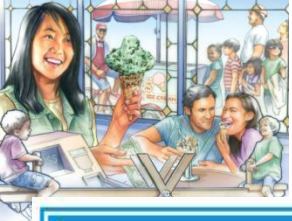
Any change that raises the quantity that sellers wish to produce at any given price shifts the supply curve to the right.

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



Supply, Part 5

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



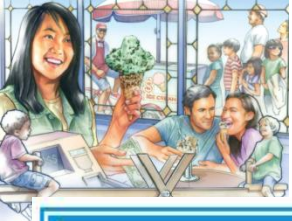
Supply, Part 6

- 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



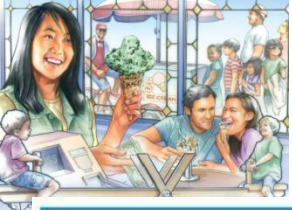
Supply, Part 7

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

Table 2 Variables That Influence Sellers

Variable	A change in this variable
Price of the good itself	Represents a movement along the supply curve
Input prices	Shifts the supply curve
Technology	Shifts the supply curve
Expectations	Shifts the supply curve
Number of sellers	Shifts the supply curve

This table lists the variables that affect how much of any good producers choose to sell. Notice the special role that the price of the good plays: A change in the good's price represents a movement along the supply curve, whereas a change in one of the other variables shifts the supply curve.



Supply and Demand Together, Part 1

- **Equilibrium**

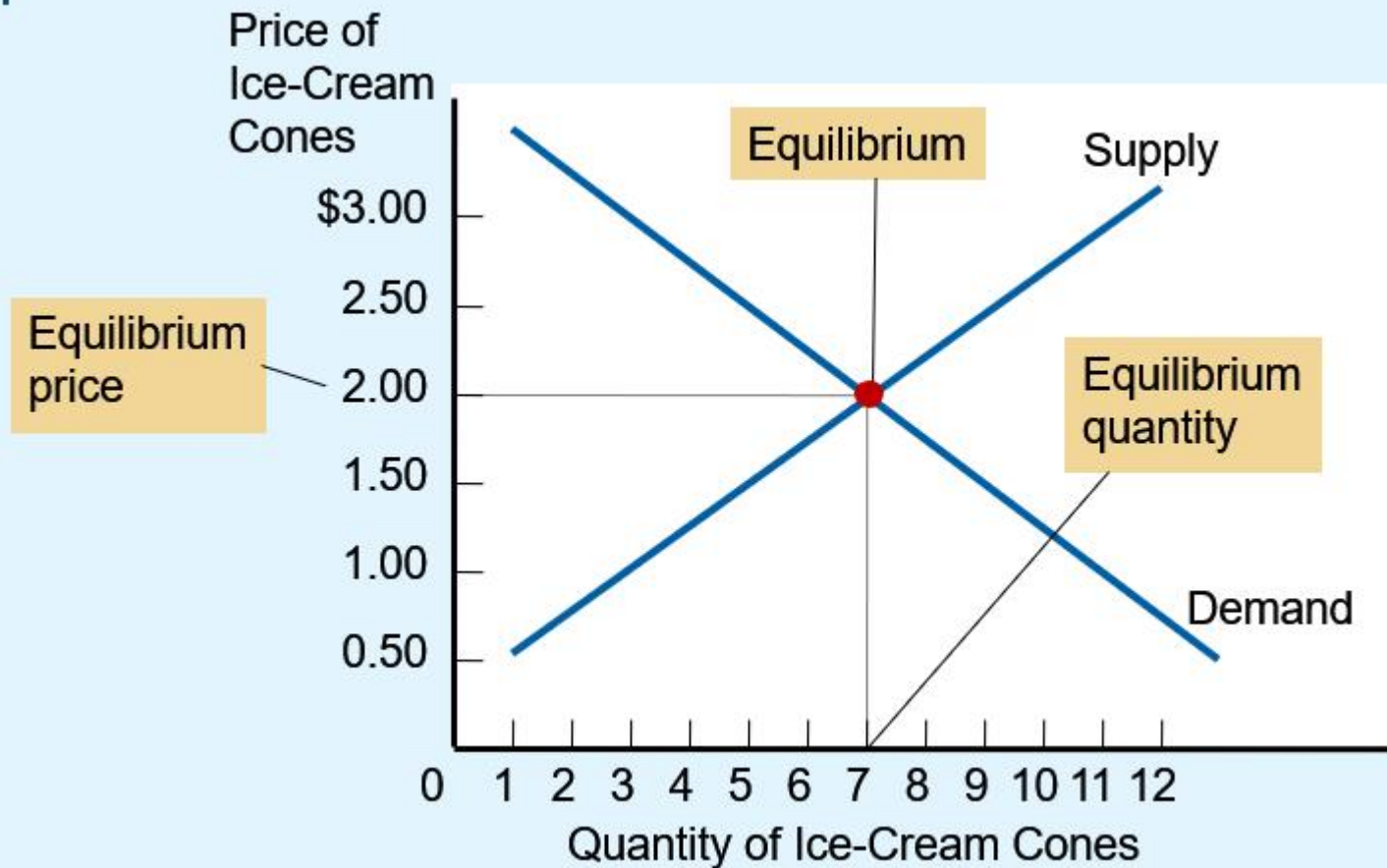
- Various forces are in balance
- A situation in which market price has reached the level where
 - Quantity supplied = Quantity demanded
- Supply and demand curves intersect



Supply and Demand Together, Part 2

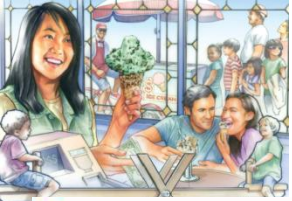
- **Equilibrium price**
 - Balances quantity supplied and quantity demanded
 - Market-clearing price
- **Equilibrium quantity**
 - Quantity supplied and quantity demanded at the equilibrium price

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.

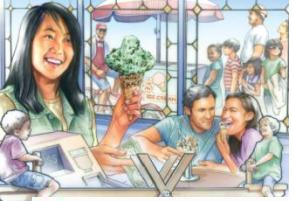
Here the equilibrium price is \$2.00: At this price, 7 ice-cream cones are supplied and 7 ice-cream cones are demanded.



Supply and Demand Together, Part 3

- Surplus

- Quantity supplied $>$ Quantity demanded
- Excess supply
- Downward pressure on price
 - Movements along the demand and supply curves
 - Increase in quantity demanded
 - Decrease in quantity supplied

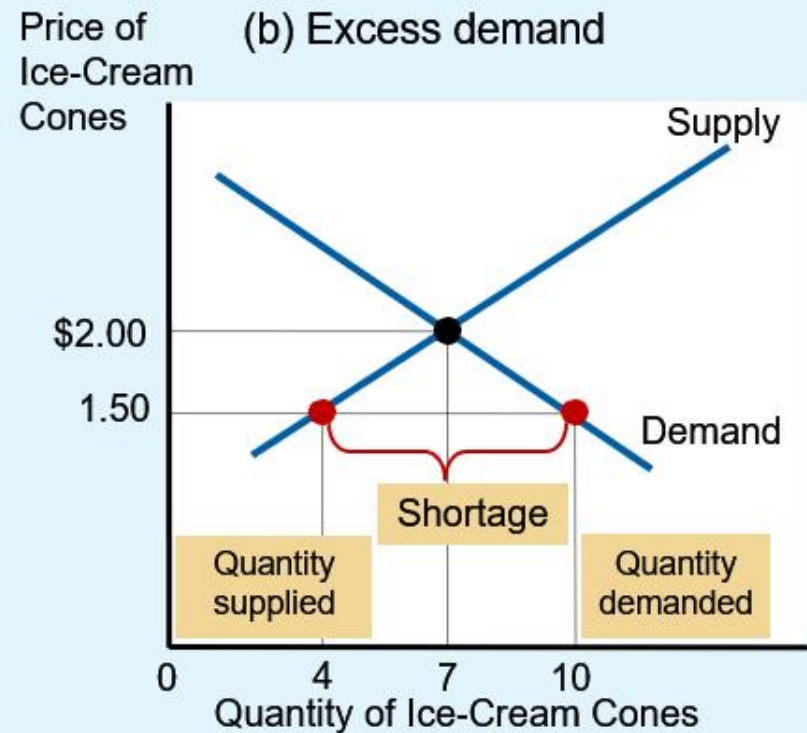
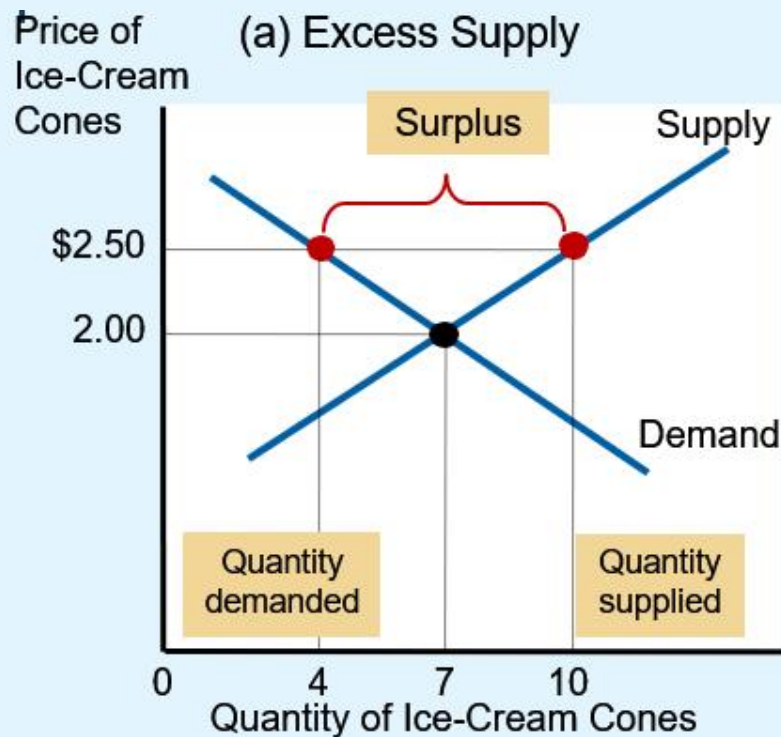


Supply and Demand Together, Part 4

- Shortage

- Quantity demanded $>$ Quantity supplied
- Excess demand
- Upward pressure on price
 - Movements along the demand and supply curves
 - Decrease in quantity demanded
 - Increase in quantity supplied

Figure 9 Markets Not in Equilibrium



In panel (a), there is a surplus. Because the market price of \$2.50 is above the equilibrium price, the quantity supplied (10 cones) exceeds the quantity demanded (4 cones). Suppliers try to increase sales by cutting the price of a cone, and this moves the price toward its equilibrium level.

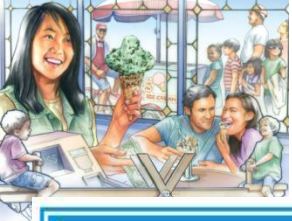
In panel (b), there is a shortage. Because the market price of \$1.50 is below the equilibrium price, the quantity demanded (10 cones) exceeds the quantity supplied (4 cones). With too many buyers chasing too few goods, suppliers can take advantage of the shortage by raising the price. Hence, in both cases, the price adjustment moves the market toward the equilibrium of supply and demand.



Supply and Demand Together, Part 5

- Law of supply and demand
 - The price of any good adjusts
 - To bring the quantity supplied and the quantity demanded for that good into balance
 - In most markets
 - Surpluses and shortages are temporary





Supply and Demand Together, Part 6

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

Table 3 Three Steps for Analyzing Changes in Equilibrium

1. Decide whether the event shifts the supply or demand curve (or perhaps both).
2. Decide in which direction the curve shifts.
3. Use the supply-and demand diagram to see how the shift changes the equilibrium price and quantity.

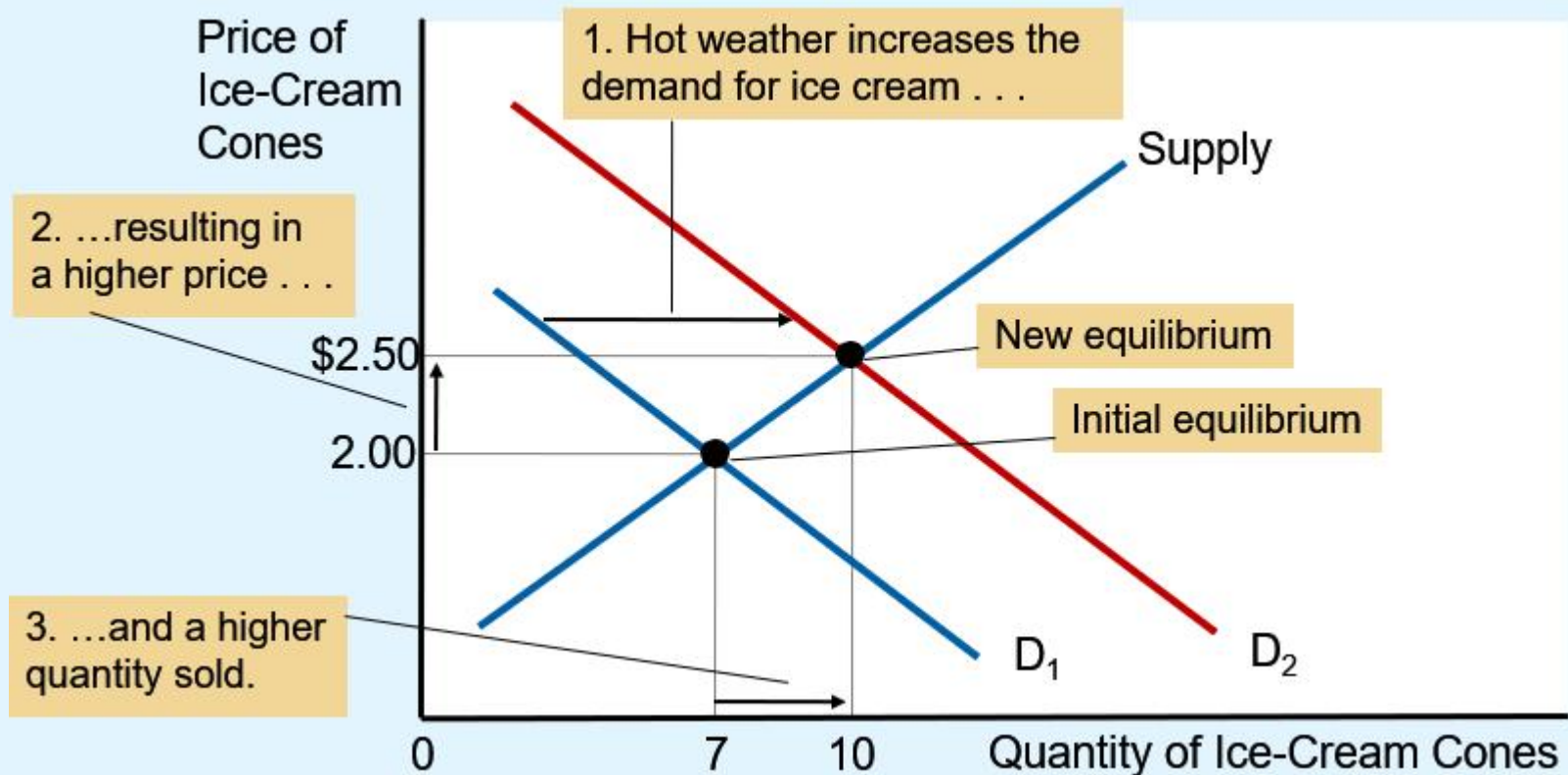


Supply and Demand Together, Part 7

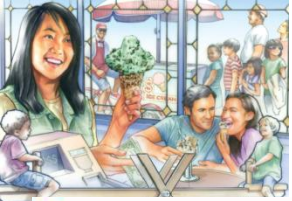
A change in market equilibrium due to a shift in demand

- 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



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 \$2.00 to \$2.50 and the equilibrium quantity to rise from 7 to 10 cones.



Supply and Demand Together, Part 8

- Shifts vs. movements along curves
 - Shift in the supply curve
 - Change in supply
 - Movement along a fixed supply curve
 - Change in the quantity supplied
 - Shift in the demand curve
 - Change in demand
 - Movement along a fixed demand curve
 - Change in the quantity demanded

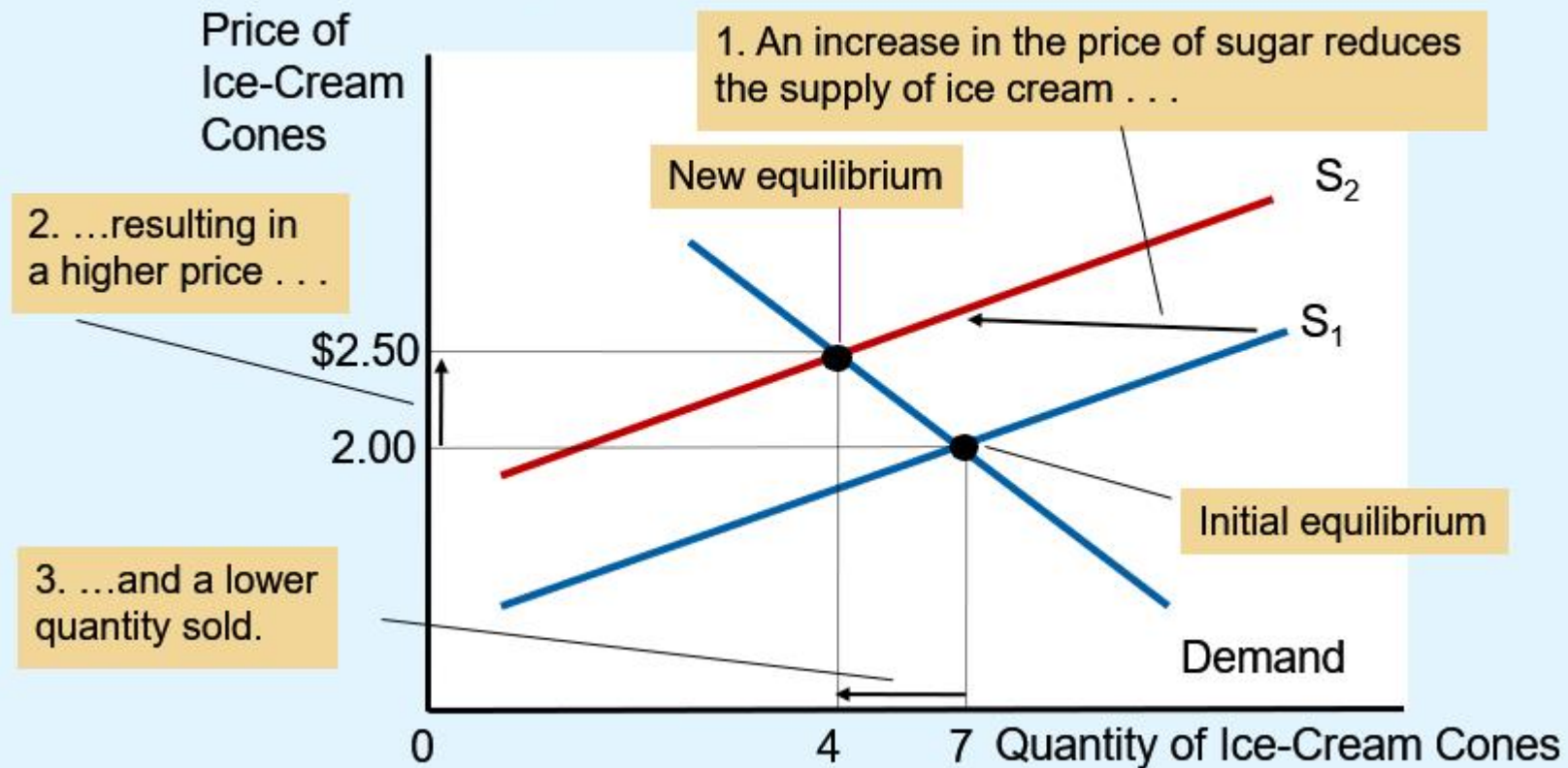


Supply and Demand Together, Part 9

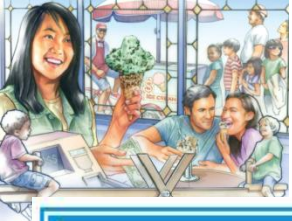
A change in market equilibrium due to a shift in supply

- 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



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 \$2.00 to \$2.50 and the equilibrium quantity to fall from 7 to 4 cones.

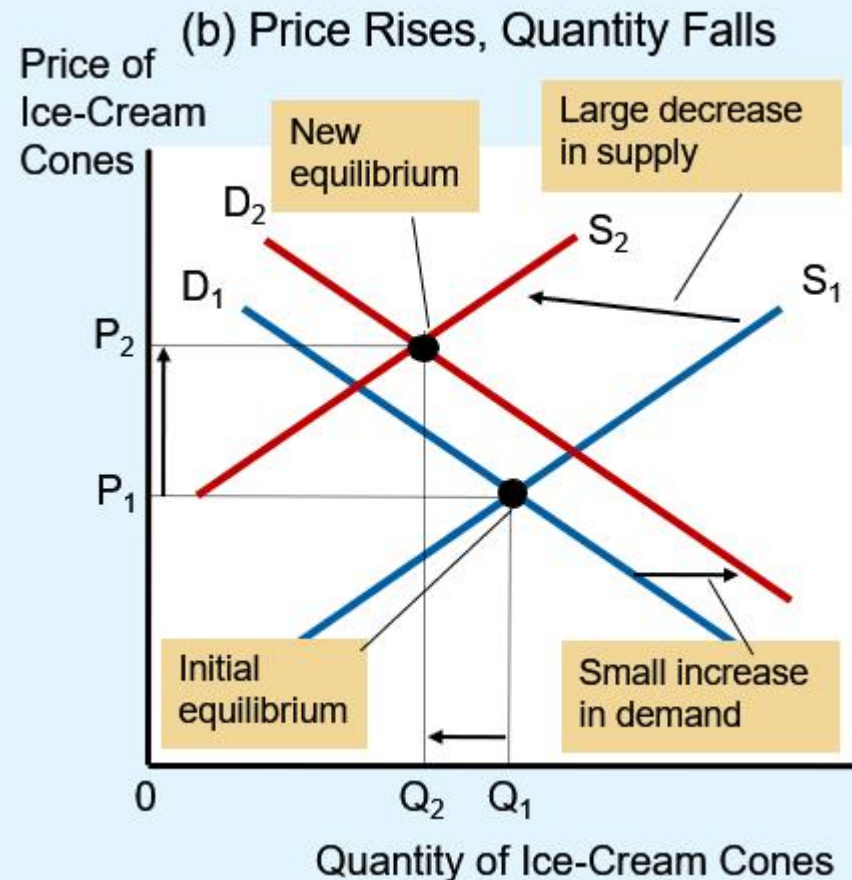
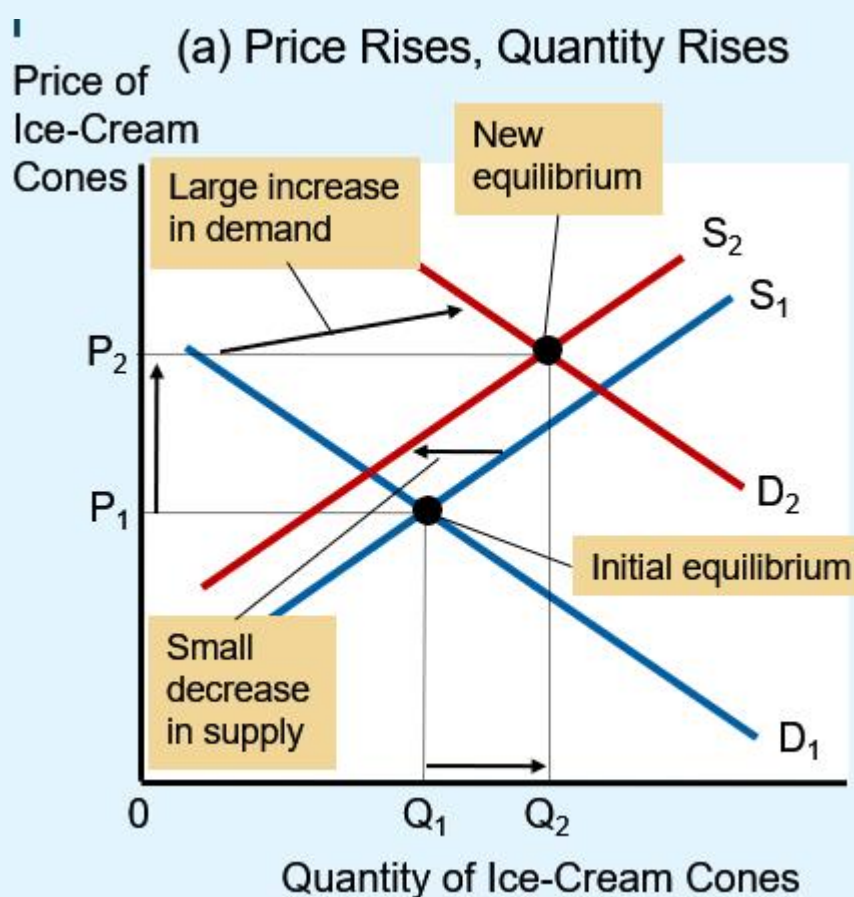


Supply and Demand Together, Part 10

Shifts in both supply and demand

- One summer: hurricane and heat wave
 1. Heat wave shifts the demand curve; hurricane shifts the supply curve
 2. Demand curve shifts to the right; Supply curve shifts to the left
 3. Equilibrium price raises
 - If demand increases substantially while supply falls just a little: equilibrium quantity rises
 - If supply falls substantially while demand rises just a little: equilibrium quantity falls

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 .

Table 4 What Happens to Price and Quantity When Supply or Demand Shifts?

	No Change in Supply	An Increase in Supply	A Decrease in Supply
No Change in Demand	P same; Q same	P down; Q up	P up; Q down
An Increase in Demand	P up; Q up	P ambiguous; Q up	P up; Q ambiguous
A Decrease in Demand	P down; Q down	P down; Q ambiguous	P ambiguous; Q down

As a quick quiz, make sure you can explain at least a few of the entries in this table using a supply-and-demand diagram.



How Prices Allocate Resources, Part 1

- Supply and demand together
 - Determine the prices of the economy's many different goods and services



"Two dollars"



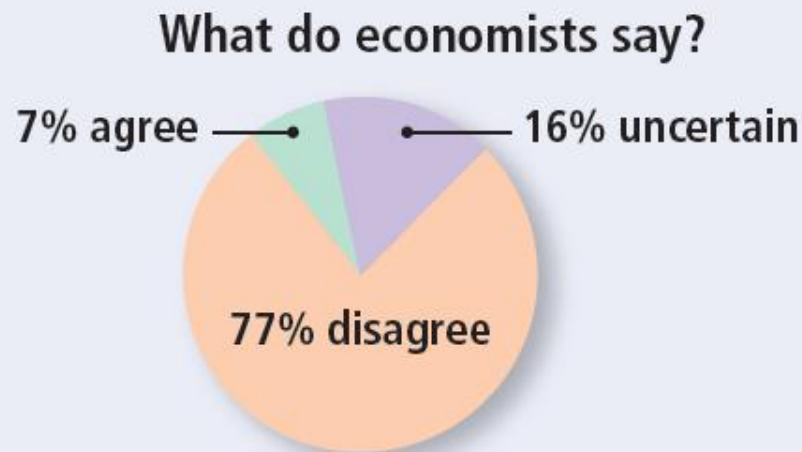
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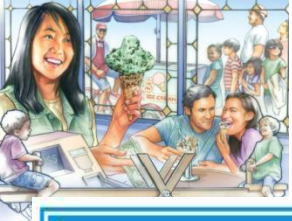
"—and seventy-five cents."

ASK THE EXPERTS

Price Gouging

“Connecticut should pass its Senate Bill 60, which states that during a ‘severe weather event emergency, no person within the chain of distribution of consumer goods and services shall sell or offer to sell consumer goods or services for a price that is unconscionably excessive.’”





How Prices Allocate Resources, Part 2

- Prices

- Signals that guide the allocation of resources
- Mechanism for rationing scarce resources
- Determine who produces each good and how much is produced