Figure 3

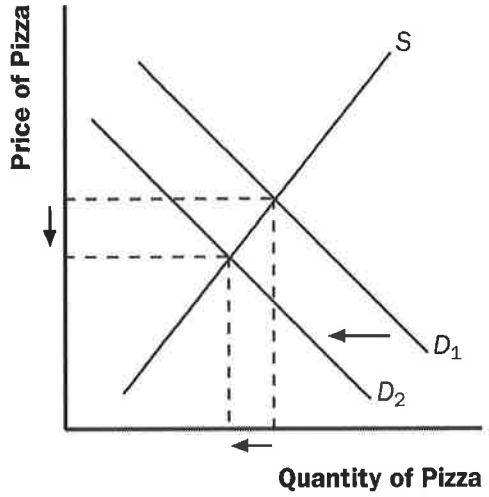

Figure 4

Questions for Review

1. A competitive market is a market in which there are many buyers and many sellers of an identical product so that each has a negligible impact on the market price. Another type of market is a monopoly, in which there is only one seller. There are also other markets that fall between perfect competition and monopoly.

2. The quantity of a good that buyers demand is determined by the price of the good, income, the prices of related goods, tastes, expectations, and the number of buyers.

3. The demand schedule is a table that shows the relationship between the price of a good and the quantity demanded. The demand curve is the downward-sloping line relating price and quantity demanded. The demand schedule and demand curve are related because the demand curve is simply a graph showing the points in the demand schedule.

   The demand curve slopes downward because of the law of demand—other things being equal, when the price of a good rises, the quantity demanded of the good falls. People buy less of a good when its price rises, both because they cannot afford to buy as much and because they switch to purchasing other goods.

4. A change in consumers' tastes leads to a shift of the demand curve. A change in price leads to a movement along the demand curve.

5. Because Popeye buys more spinach when his income falls, spinach is an inferior good for him. Because he buys more spinach and the price of spinach is unchanged, his demand curve for spinach shifts out as a result of the decrease in his income.

6. The quantity of a good that sellers supply is determined by the price of the good, input prices, technology, expectations, and the number of sellers.

7. A supply schedule is a table showing the relationship between the price of a good and the quantity a producer is willing and able to supply. The supply curve is the upward-sloping line relating price and quantity supplied. The supply schedule and the supply curve are related because the supply curve is simply a graph showing the points in the supply schedule.

   The supply curve slopes upward because when the price is high, suppliers' profits increase, so they supply more output to the market. The result is the law of supply—other things being equal, when the price of a good rises, the quantity supplied of the good also rises.

8. A change in producers' technology leads to a shift in the supply curve. A change in price leads to a movement along the supply curve.

9. The equilibrium of a market is the point at which the quantity demanded is equal to quantity supplied. If the price is above the equilibrium price, sellers want to sell more than buyers want to buy, so there is a surplus. Sellers try to increase their sales by cutting prices. That continues until they reach the equilibrium price. If the price is below the equilibrium price, buyers want to buy more than sellers want to sell, so there is a shortage. Sellers can raise their price without losing customers. That continues until they reach the equilibrium price.

10. When the price of an ink pen falls, the demand for pencils declines, because ink pens and pencils are substitutes and people want to buy more ink pens. When we say the demand for pencils declines, we mean that the demand curve for pencils shifts to the left as in Figure 5. The supply curve for pencils is not affected. With a shift to the left in the demand curve, the equilibrium price and quantity both decline, as the figure shows. Thus, the quantity of pencils supplied and demanded both fall. In sum, supply is unchanged, demand is decreased, quantity supplied declines, quantity demanded declines, and the price falls.

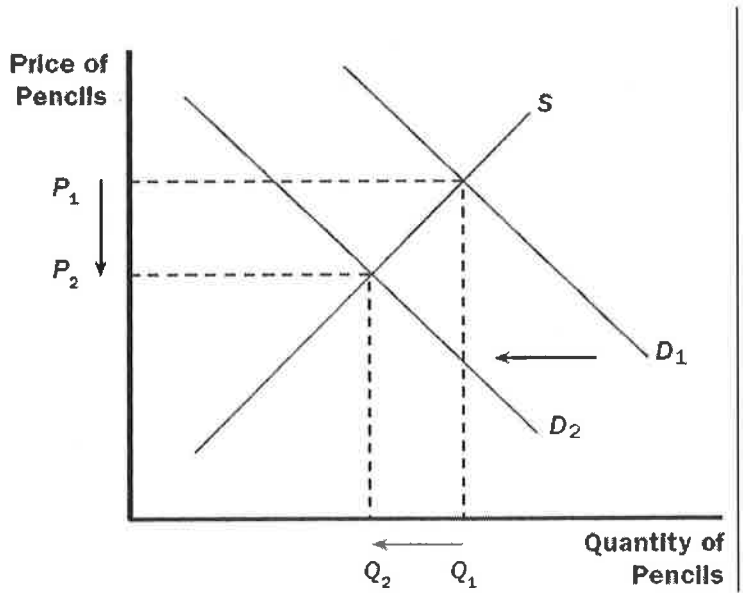

Figure 5

11. Prices play a vital role in market economies because they bring markets into equilibrium. If the price is different from its equilibrium level, quantity supplied and quantity demanded are not equal. The resulting surplus or shortage leads suppliers to adjust the price until equilibrium is restored. Prices thus serve as signals that guide economic decisions and allocate scarce resources.

Problems and Applications

1. a. Cold weather damages the orange crop, reducing the supply of oranges. This can be seen in Figure 6 as a shift to the left in the supply curve for oranges. The new equilibrium price is higher than the old equilibrium price.

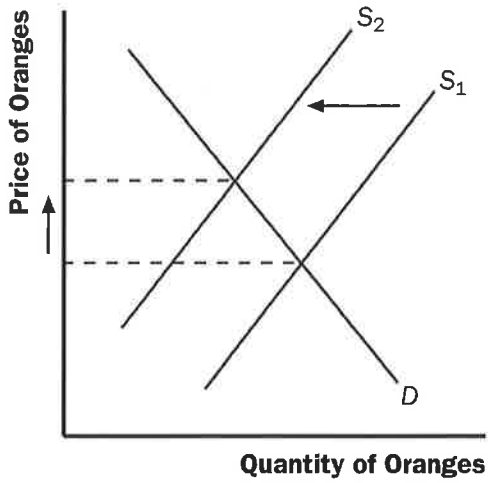

Figure 6

b. People often travel to the Caribbean from New England to escape cold weather, so the demand for Caribbean hotel rooms is high in the winter. In the summer, fewer people travel to the Caribbean, because northern climes are more pleasant. The result, as shown in Figure 7, is a shift to the left in the demand curve. The equilibrium price of Caribbean hotel rooms is thus lower in the summer than in the winter, as the figure shows.

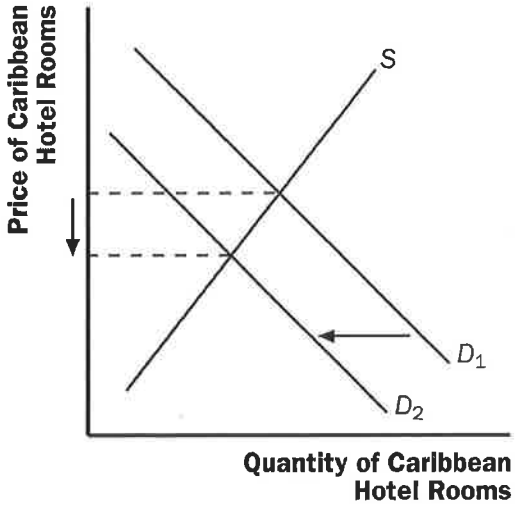

Figure 7

c. When a war breaks out in the Middle East, many markets are affected. Because a large proportion of oil production takes place there, the war disrupts oil supplies, shifting the supply curve for gasoline to the left, as shown in Figure 8. The result is a rise in the equilibrium price of gasoline. With a higher price for gasoline, the cost of operating a gas-guzzling automobile like a Cadillac will increase. As a result, the demand for used Cadillacs will decline, as people in the market for cars will not find Cadillacs as attractive. In addition, some people who already own Cadillacs will try to sell them. The result is that the demand curve for used Cadillacs shifts to the left, while the supply curve shifts to the right, as shown in Figure 9. The result is a decline in the equilibrium price of used Cadillacs.

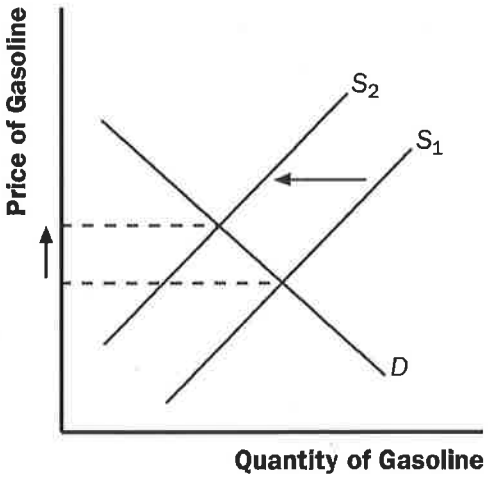

Figure 8

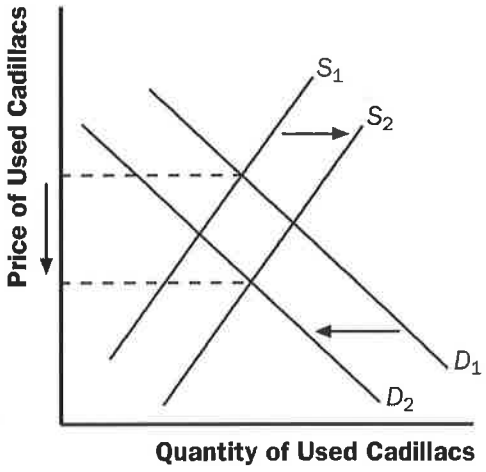

Figure 9

2. The statement that "an increase in the demand for notebooks raises the quantity of notebooks demanded, but not the quantity supplied," in general, is false. As Figure 10 shows, the increase in demand for notebooks results in an increased quantity supplied. The only way the statement

would be true is if the supply curve was a vertical line, as shown in Figure 11.

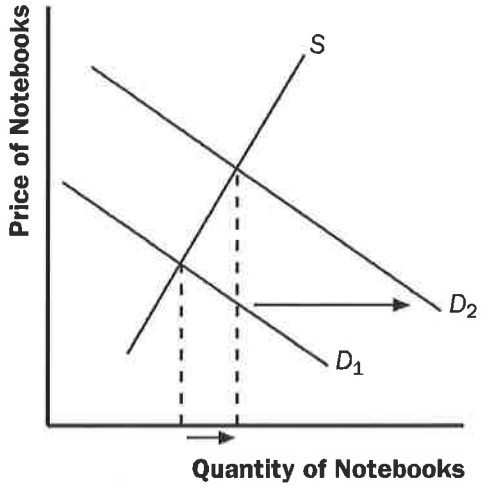

Figure 10

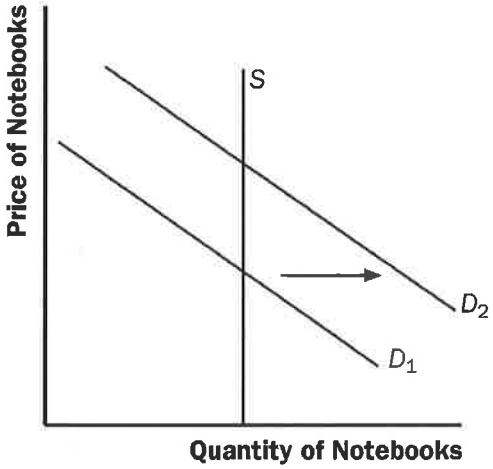

Figure 11

3. a. If the price of grain used to feed hens falls, the supply of eggs will rise. Demand will not be affected. The result is a fall in the price and an increase in the quantity sold, as Figure 12 shows.

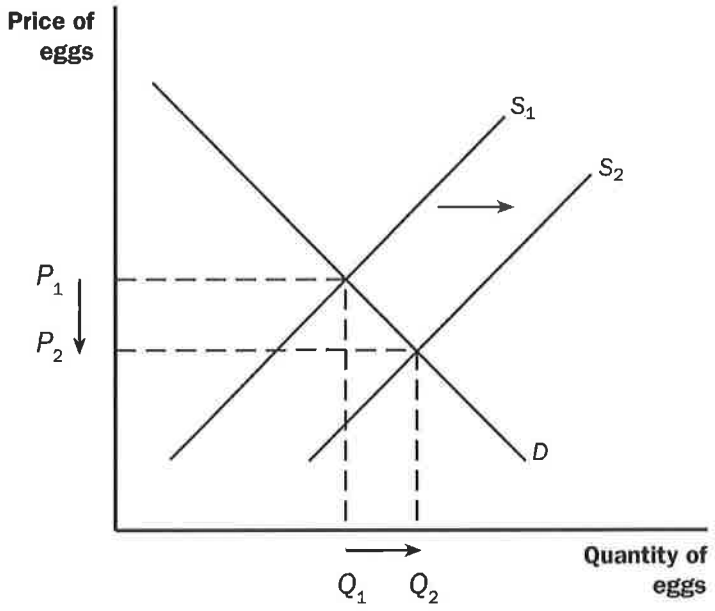

Figure 12

b. If the price of bacon falls, the demand for eggs will rise because eggs and bacon are complements. Supply will not be affected. The result is an increase in both the price of eggs and the quantity sold, as Figure 13 shows.

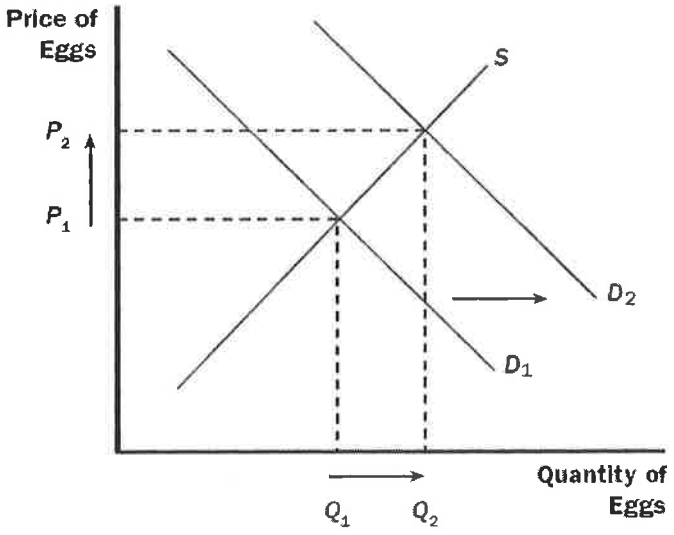

Figure 13

c. A new study that indicates that eating eggs is hazardous to one's health will cause a decline in the demand for eggs. Supply is not affected. The result is a decline in the price of eggs and a decrease in the quantity sold, as Figure 14 shows.

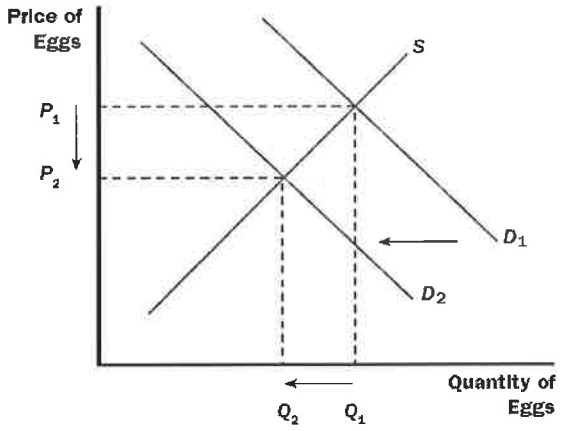

Figure 14

d. If the number of egg-producing farms falls, the supply of eggs will decline. Demand is not affected. The equilibrium price of eggs will fall and quantity of eggs sold rises, as Figure 15 shows.

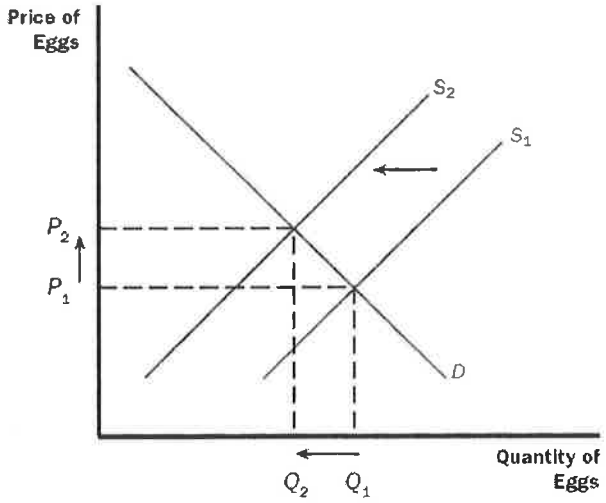

Figure 15

e. During Easter weekend, the demand for eggs rises. Supply is not affected. As a result, both the equilibrium price and the equilibrium quantity rise, as Figure 13 shows.

4. a. DVDs and TV screens are likely to be complements because you cannot watch a DVD without a television. DVDs and movie tickets are likely to be substitutes because a movie can be watched at a theater or at home. TV screens and movie tickets are likely to be substitutes for the same reason.

b. The technological improvement would reduce the cost of producing a TV screen, shifting the supply curve to the right. The demand curve would not be affected. The result is that the equilibrium price will fall, while the equilibrium quantity will rise. This is shown in Figure 16.

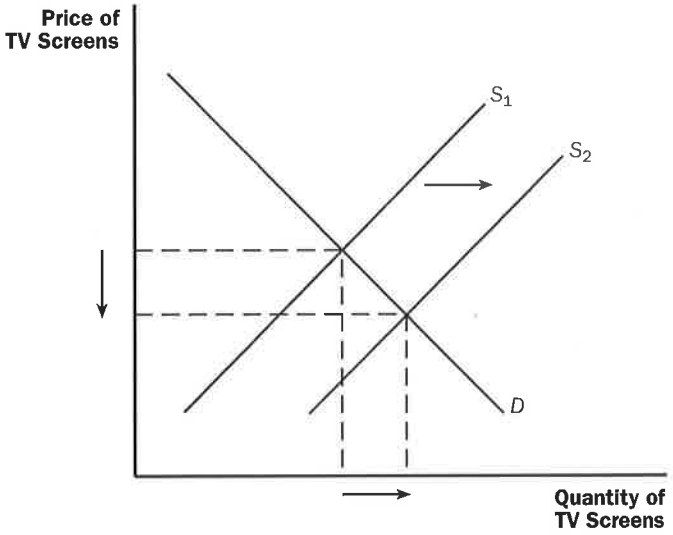

Figure 16

c. The reduction in the price of TV screens would lead to an increase in the demand for DVDs because TV screens and DVDs are complements. The effect of this increase in the demand for DVDs is an increase in both the equilibrium price and quantity, as shown in Figure 17.

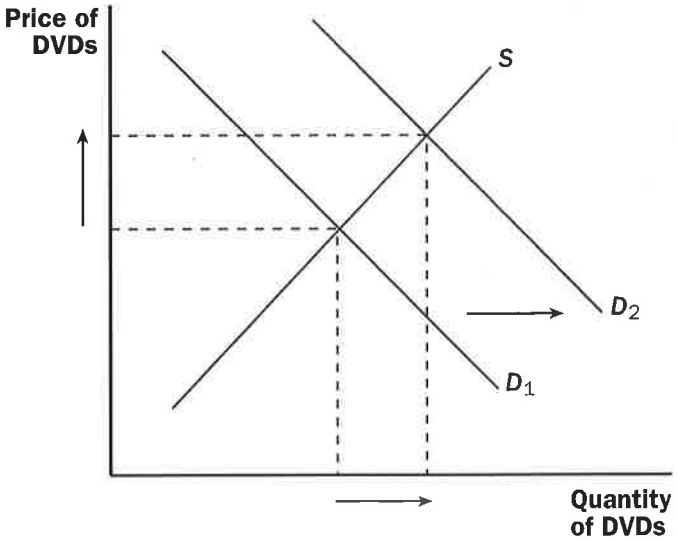

Figure 17

d. The reduction in the price of TV screens would cause a decline in the demand for movie tickets because TV screens and movie tickets are substitute goods. The decline in the demand for movie tickets would lead to a decline in the equilibrium price and quantity sold. This is shown in Figure 18.

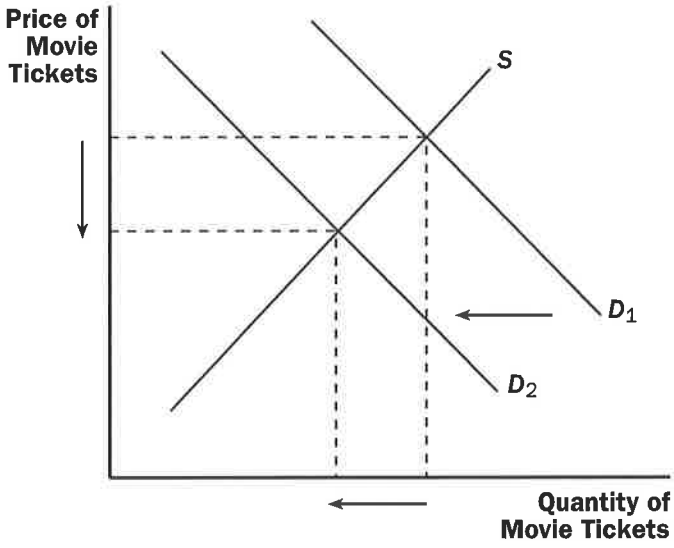

Figure 18

5. Technological advances that reduce the cost of producing computer chips represent a decline in an input price for producing a computer. The result is a shift to the right in the supply of computers, as shown in Figure 19. The equilibrium price falls and the equilibrium quantity rises, as the figure shows.

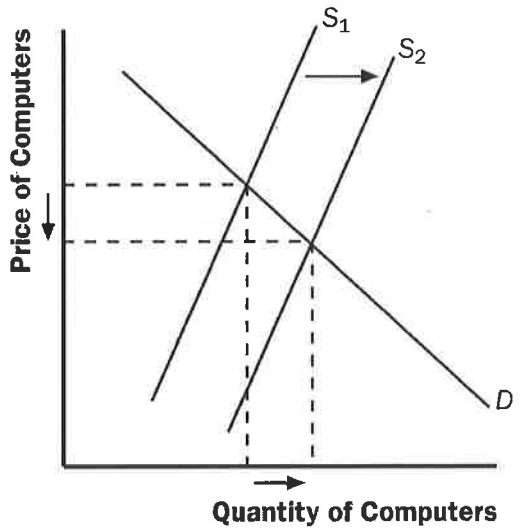

Figure 19

Because computer software is a complement to computers, the lower equilibrium price of computers increases the demand for software. As Figure 20 shows, the result is a rise in both the equilibrium price and quantity of software.

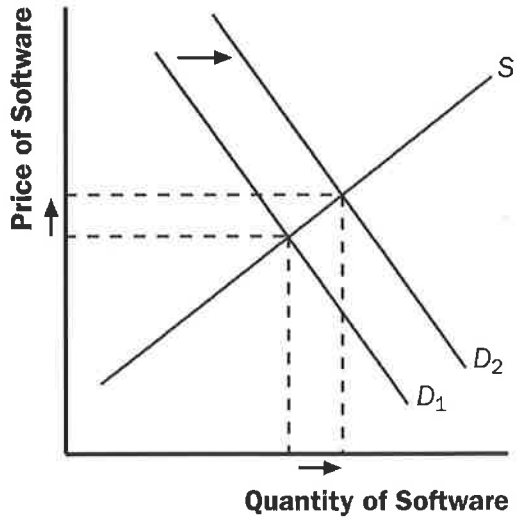

Figure 20

Because typewriters are substitutes for computers, the lower equilibrium price of computers reduces the demand for typewriters. As Figure 21 shows, the result is a decline in both the equilibrium price and quantity of typewriters.

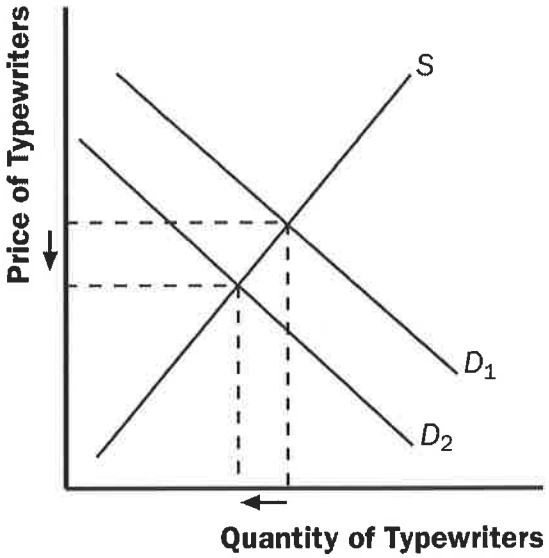

Figure 21

6. A movement along a supply curve is caused by a change in the price of the good. Thus, the statement that "As the price goes up, farmers have motivation to do anything they can to get their product to market" refers to a movement along the supply curve. A shift in the supply curve is caused by a change in a nonprice determinant of supply. Thus, the statement that "Political unrest overseas threatens to disrupt the supply of America's sweetest temptations" refers to a shift in the supply curve.

7. a. If the price of computer chips falls, the cost of producing computers declines. As a result, the supply of computers shifts to the right, as shown in Figure 22. The new equilibrium price is lower and the new equilibrium quantity of computers is higher.

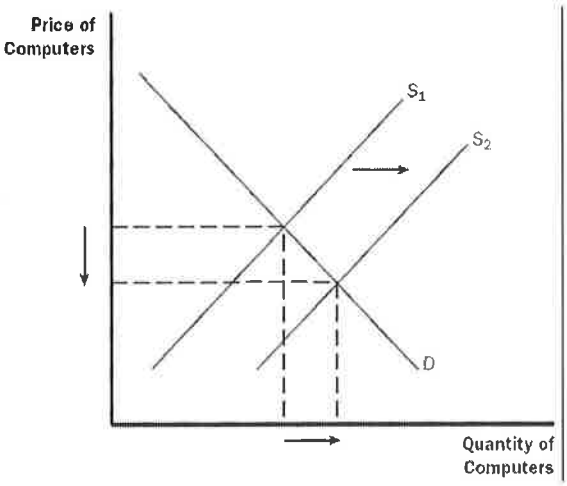

Figure 22

b. A rise in consumer income leads more people to buy computers, increasing the demand. The result, shown in Figure 23, is a rise in both the equilibrium price and quantity of computers.

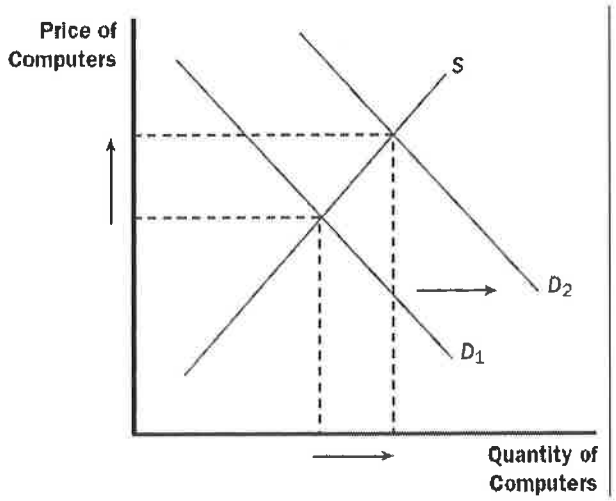

Figure 23

c. If the price of computer software rises, the demand for computers will fall because computers and software are complements. This is shown in Figure 24. The result is a decrease in both the equilibrium price and quantity of computers.

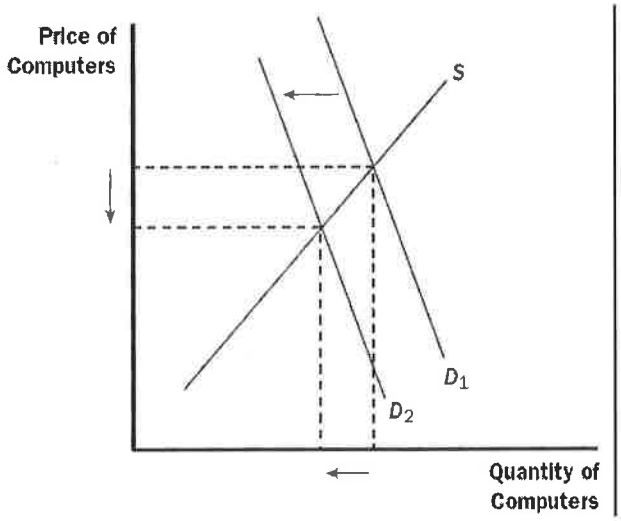

Figure 24

d. If universities require incoming freshmen to have their own personal computers, the demand for computers will rise. The result is a rise in the equilibrium price and an increase in the equilibrium quantity of computers, as shown in Figure 23.

8. A temporarily high birth rate in the year 2010 leads to opposite effects on the price of baby-

sitting services in the years 2015 and 2025. In the year 2015, there are more five-year olds who need sitters, so the demand for baby-sitting services rises, as shown in Figure 25. The result is a higher price for baby-sitting services in 2015. However, in the year 2025, the increased number of 15-year-olds shifts the supply of baby-sitting services to the right, as shown in Figure 26. The result is a decline in the price of baby-sitting services.

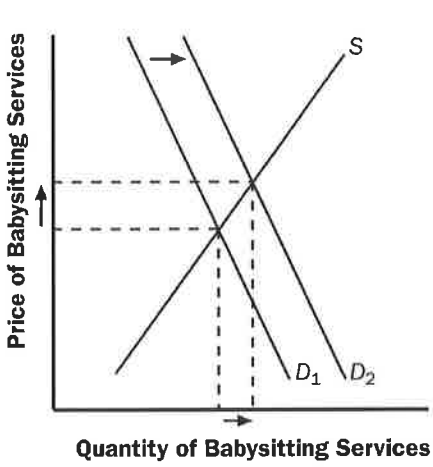

Figure 25

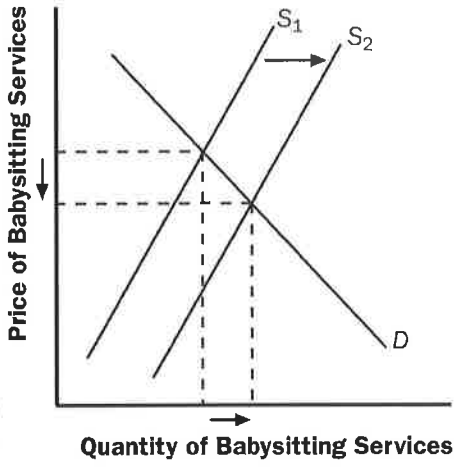

Figure 26

9. Ketchup is a complement for hot dogs. Therefore, when the price of hot dogs rises, the quantity demanded of hot dogs falls and this lowers the demand for ketchup. The end result is that both the equilibrium price and quantity of ketchup fall. Because the quantity of ketchup falls, the demand for tomatoes by ketchup producers falls, so the equilibrium price and quantity of tomatoes fall. When the price of tomatoes falls, producers of tomato juice face lower input prices, so the supply curve for tomato juice shifts out, causing the price of tomato juice to fall and the quantity of tomato juice to rise. The fall in the price of tomato juice causes people to substitute tomato juice for orange juice, so the demand for orange juice declines, causing the price and quantity of orange juice to fall. Now you can see clearly why a rise in the price of hot dogs leads to a fall in the price of orange juice!

10. Quantity supplied equals quantity demanded at a price of $1.50 and quantity of 145 hamburgers (Figure 27). If the price were greater than $1.50, quantity supplied would exceed quantity demanded, so suppliers would reduce the price to gain sales. If the price were less than $1.50, quantity demanded would exceed quantity supplied, so suppliers could raise the price without losing sales. In both cases, the price would continue to adjust until it reached $1.50, the only price at which there is neither a surplus nor a shortage.

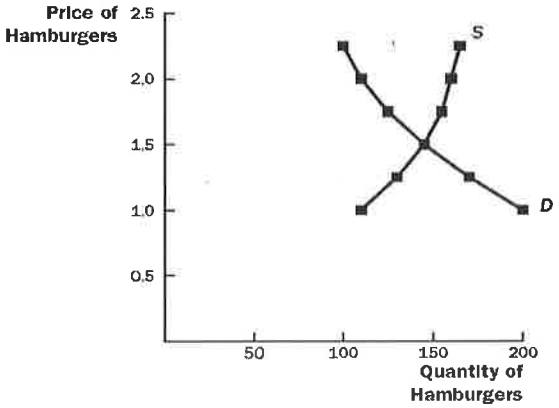

Figure 27

11. a. Because flour is an ingredient in bagels, a decline in the price of flour would shift the supply curve for bagels to the right. The result, shown in Figure 28, would be a fall in the price of bagels and a rise in the equilibrium quantity of bagels.

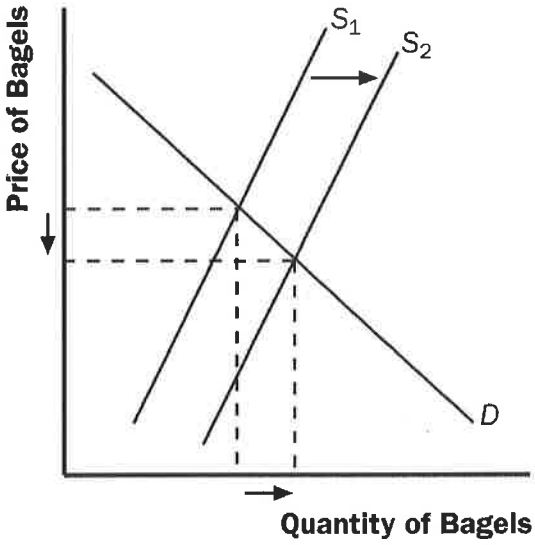

Figure 28

Because cream cheese is a complement to bagels, the fall in the equilibrium price of bagels increases the demand for cream cheese, as shown in Figure 29. The result is a rise in both the equilibrium price and quantity of cream cheese. So, a fall in the price of flour indeed raises both the equilibrium price of cream cheese and the equilibrium quantity of bagels.

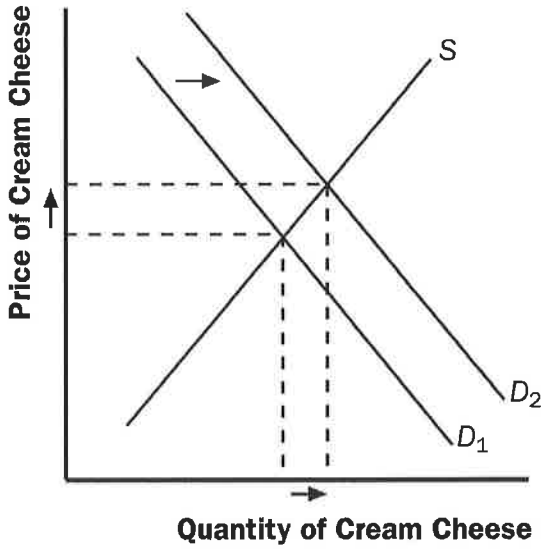

Figure 29

What happens if the price of milk falls? Because milk is an ingredient in cream cheese, the fall in the price of milk leads to an increase in the supply of cream cheese. This leads to a decrease in the price of cream cheese (Figure 30), rather than a rise in the price of cream cheese. So a fall in the price of milk could not have been responsible for the pattern observed.

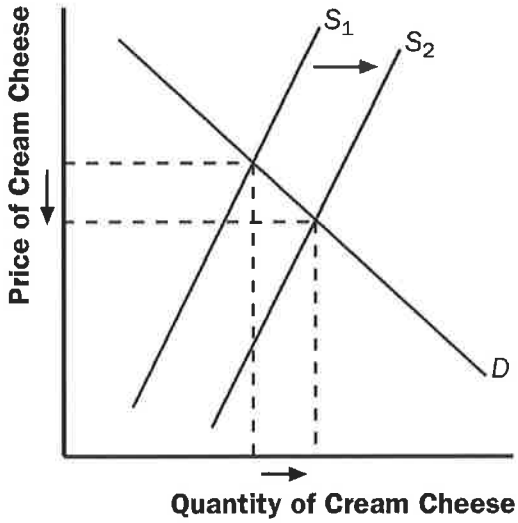

Figure 30

b. In part (a), we found that a fall in the price of flour led to a rise in the price of cream

cheese and a rise in the equilibrium quantity of bagels. If the price of flour rose, the opposite would be true; it would lead to a fall in the price of cream cheese and a fall in the equilibrium quantity of bagels. Because the question says the equilibrium price of cream cheese has risen, it could not have been caused by a rise in the price of flour.

What happens if the price of milk rises? From part (a), we found that a fall in the price of milk caused a decline in the price of cream cheese, so a rise in the price of milk would cause a rise in the price of cream cheese. Because bagels and cream cheese are complements, the rise in the price of cream cheese would reduce the demand for bagels, as Figure 31 shows. The result is a decline in the equilibrium quantity of bagels. So a rise in the price of milk does cause both a rise in the price of cream cheese and a decline in the equilibrium quantity of bagels.

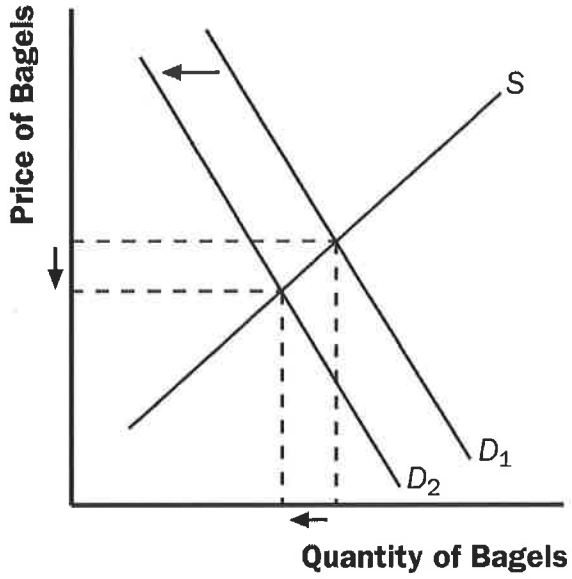

Figure 31

12. a. As Figure 32 shows, the supply curve is vertical. The constant quantity supplied makes sense because the basketball arena has a fixed number of seats at any price.

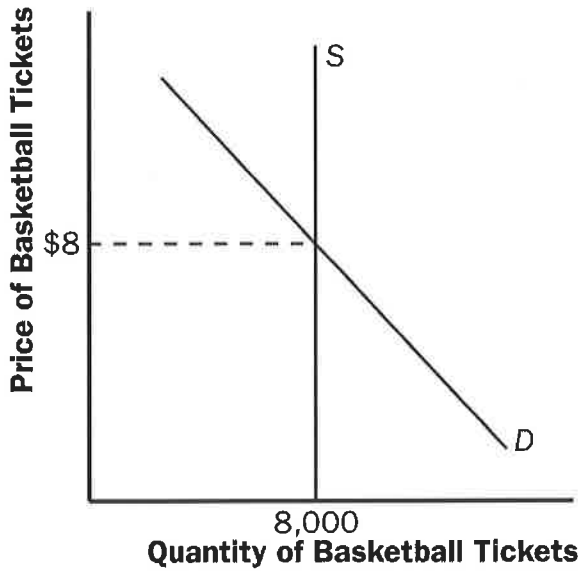

Figure 32

b. Quantity supplied equals quantity demanded at a price of $8. The equilibrium quantity is 8,000 tickets.

c.

Price	Quantity Demanded	Quantity Supplied
$4	14,000	8,000
$8	11,000	8,000
$12	8,000	8,000
$16	5,000	8,000
$20	2,000	8,000

The new equilibrium price will be $12, which equates quantity demanded to quantity supplied. The equilibrium quantity remains 8,000 tickets.

13. Equilibrium occurs where quantity demanded is equal to quantity supplied. Thus:

$Q^D = Q^S$
$380 - 20P = -120 + 30P$
$500 = 50P$
$P = \$10$

$Q^D = 380 - 20(10) = 380 - 200 = 180$
$Q^S = -120 + 30(10) = -120 + 300 = 180.$

The equilibrium price of a pizza is $10 and the equilibrium quantity is 180 pizzas.