The Market System

I. INTRODUCTION

The workhorses of economic analysis are the concepts of supply and demand. These tools are introduced in this chapter, although both tools will be developed much further in later chapters. Because the material in this chapter is a foundation for much of the course, be certain that you understand it and that you can use the tools developed here.

II. OUTLINE

1. Demand. Demand reflects the quantity of a good that people are both willing and able to buy at various prices, other things constant.

    1.1 The Law of Demand
    - a. The law of demand states that the quantity demanded of a good is inversely related to its price.
    - b. Demand differs from wants and needs.
    - c. The substitution effect of a price increase will be to encourage consumers to switch to other goods that are relatively cheaper.
    - d. A change in price also generates an income effect since the price change affects the buying power of consumer income, or real income.

    1.2 The Demand Schedule and Demand Curve
    - a. A demand schedule indicates the quantity of a commodity that consumers wish to buy at each possible price for a given period of time.
        - (1) Demand is a rate per period of time.
        - (2) Prices of other goods are held constant.
        - (3) A demand schedule looks at the effects of a relative price change.
    - b. A demand curve provides a graphical representation of the information in a demand schedule.
    - c. *Demand* refers to the entire demand schedule or demand curve.
    - d. *Quantity demanded* refers to an individual point on the demand curve.
    - e. A change in demand occurs when the entire demand schedule or demand curve shifts.
    - f. A change in quantity demanded occurs when the price of a good changes and one moves along the demand curve.
    - g. The market demand is the sum of the individual demands of all consumers in a market.

2. Changes in Demand

2.1 Changes in Consumer Income
   a. A change in income causes the entire demand curve to shift (i.e., causes a change in demand).
   b. If the demand for a good increases as income increases, then the good is a normal good.
   c. If the demand for a good decreases as income increases, then the good is an inferior good.

2.2 Changes in the Prices of Related Goods
   a. Two goods are substitutes if they are alternative ways of satisfying a particular want.
   b. Two goods are complements if they are used in combination to satisfy a particular want.
   c. If an increase in the price of one good causes the demand for a second good to increase, the two goods are substitutes.
   d. If an increase in the price of one good causes the demand for a second good to decrease, the two goods are complements.

2.3 Changes in Consumer Expectations
   a. If consumers expect the price of a good to increase in the future, demand for the good will increase today.
   b. If consumers expect an increase in future income, demand for goods will increase today.

2.4 Changes in the Number or Composition of Consumers. The more people there are in the market, the greater the market demand.

2.5 Changes in Consumer Tastes
   a. Tastes are assumed to be relatively stable over time.
   b. A change in demand cannot be attributed to a change in tastes before other possible reasons for the change are carefully considered.

3. Supply. The law of supply states that the quantity of product supplied in a given time period is usually directly related to its price, other things constant.

3.1 The Supply Schedule and Supply Curve
   a. A higher price makes producers more willing to offer more for sale because they are rewarded more for doing so.
   b. A higher price enables producers to produce more because it allows them to cover the higher marginal costs that result as quantity produced increases, according to the law of increasing opportunity costs.
   c. The market supply is the sum of the individual supplies of all suppliers in a market.

4. Changes in Supply

4.1 Changes in Technology. A technological advance is reflected by a shift to the right in the market supply curve.

4.2 Changes in the Prices of Relevant Resources. Lower resource costs lead to an increase in supply.

4.3 Changes in the Prices of Alternative Goods. An increase in the price of an alternative good raises the opportunity cost of producing other goods that use the same resources.

4.4 Changes in Producer Expectations. If producers expect the price of a good to rise in the future, current supply could increase or decrease, depending on the type of good.

4.5 Changes in the Number of Producers
   a. An increase in the number of producers increases the market supply.
   b. A change in supply is a shift of the entire supply curve; a change in the quantity supplied is a movement along a supply curve when the price of a good changes.

5. Demand and Supply Create a Market

5.1 Markets
   a. Markets coordinate the independent decisions of buyers and sellers.
   b. The transaction costs of an exchange are the costs of the time and the information required to complete the transaction.
   c. Markets reduce the transaction costs of exchange.
   d. Coordination takes place through markets by the operation of the "invisible hand" described by Adam Smith.

5.2 Market Equilibrium
   a. The equilibrium price is the price at which quantity demanded equals quantity supplied.
   b. An excess quantity supplied, or surplus, exists when the quantity supplied exceeds the quantity demanded at prices above equilibrium.
   c. An excess quantity demanded, or shortage, exists when the quantity demanded exceeds the quantity supplied at prices below equilibrium.
   d. An equilibrium is achieved through the independent actions of thousands of buyers and sellers in the economy.
   e. Markets allocate a resource to its highest valued use.

6. Changes in Equilibrium Price and Quantity

6.1 Impact of Changes in Demand. Any change in demand, holding supply constant, will change equilibrium price and quantity in the same direction as the changes in demand.

6.2 Impact of Changes in Supply. A shift in the supply curve, holding demand constant, changes equilibrium quantity in the same direction but changes equilibrium price in the opposite direction.

6.3 Simultaneous Changes in Demand and Supply
   a. When both curves shift simultaneously, the outcome depends on the nature of the shifts.
   b. If supply and demand both increase, the equilibrium quantity increases, but the effect on the equilibrium price depends on the size of the shift in demand relative to the size of the shift in supply. If both supply and demand decrease, the equilibrium quantity falls.
   c. If supply and demand shift in opposite directions, the equilibrium price rises with an increase in demand and falls with a decrease in demand. However, the effect on the equilibrium quantity depends on the size of the shift in demand relative to the size of the shift in supply.

6.4 *CASE STUDY:* The Market for Professional Basketball

7. Disequilibrium Prices

7.1 Price Floors. Price floors, or minimum prices set by the government, tend to create surpluses.

7.2 Price Ceilings. Price ceilings, or maximum prices set by the government, tend to create shortages.

7.3 *CASE STUDY:* Toys Are Serious Business

III. DISCUSSION

Demand

Demand is a relation that indicates the quantity of a commodity that consumers wish to buy at all possible prices during a given time period, other things constant. The *law of demand* states that the relationship between price and quantity demanded is an inverse relationship (i.e., fewer units are demanded at higher prices than at lower prices). Demand reflects consumers' willingness and ability to buy the commodity.

The inverse relationship between price and quantity demanded refers to the real, or relative, price of the commodity. If the price of shoes increases 10 percent but all other prices also increase by 10 percent, then the relative price of shoes has not changed and quantity demanded will not change.

A change in the price of a commodity has two effects on quantity demanded. The first is the *substitution effect.* If the price of one good increases while all other prices remain constant, then the good becomes more costly relative to other goods. Many consumers will respond by substituting a cheaper good for the now more expensive good, so the quantity demanded of the original good decreases. An increase in the price of one good encourages consumers to switch to other goods. The second effect—the *income effect*—affects consumers' ability to buy a good. If you have been buying 10 hamburgers a week at $1.00 per hamburger and the price increases to $1.25, then the $10.00 that used to buy 10 hamburgers can now buy only 8 hamburgers. The higher price reduces your *real income,* or purchasing power, which has the tendency to induce you to purchase fewer units of the good.

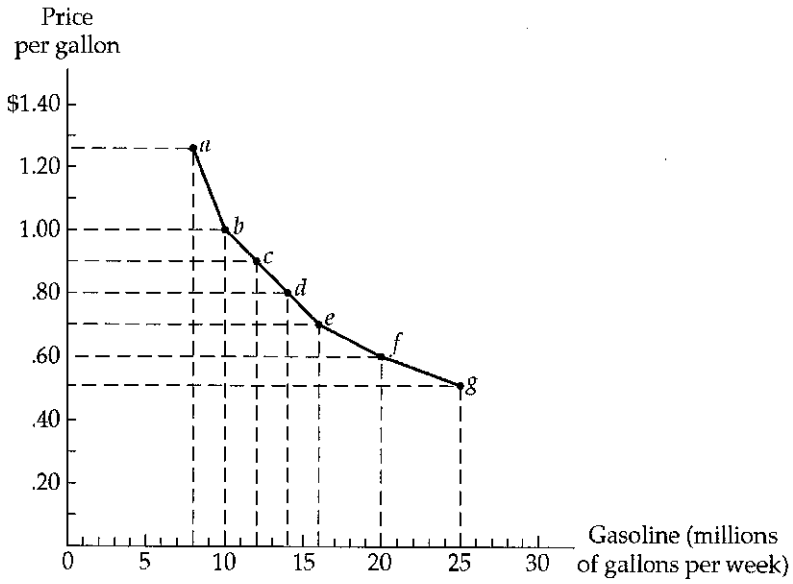
The inverse relationship between price and quantity demanded can be shown by a demand schedule for any specific commodity. Exhibit 1 illustrates the quantities of gasoline demanded at various prices. Exhibit 2 provides the same information in the form of a *demand curve.* More units are demanded at lower prices, reflecting the law of demand. Several things are held constant: the prices of other goods and the incomes, expectations, and tastes of the consumers. A movement along the demand curve represents a *change in quantity demanded.* The market demand is found by adding up the demands of all consumers in the market.

Exhibit 1

The Demand Schedule for Gasoline

	Price per Gallon	Quantity Demanded (millions of gallons per week)
a	$1.25	8
b	1.00	10
c	0.90	12
d	0.80	14
e	0.70	16
f	0.60	20
g	0.50	25

Exhibit 2



Changes in Demand

In the demand schedule and the demand curve in Exhibits 1 and 2, only the price of gasoline varied. However, demand can be affected by factors other than the price of the good being considered, such as consumer income, the prices of substitutes and complements, consumers' expectations, the number of consumers in the market, and consumer tastes. If any one of these factors changes, the entire demand schedule changes. That is, the demand curve shifts. When this occurs, there is a *change in demand.* (Be sure you understand how a change in demand differs from a change in quantity demanded.)

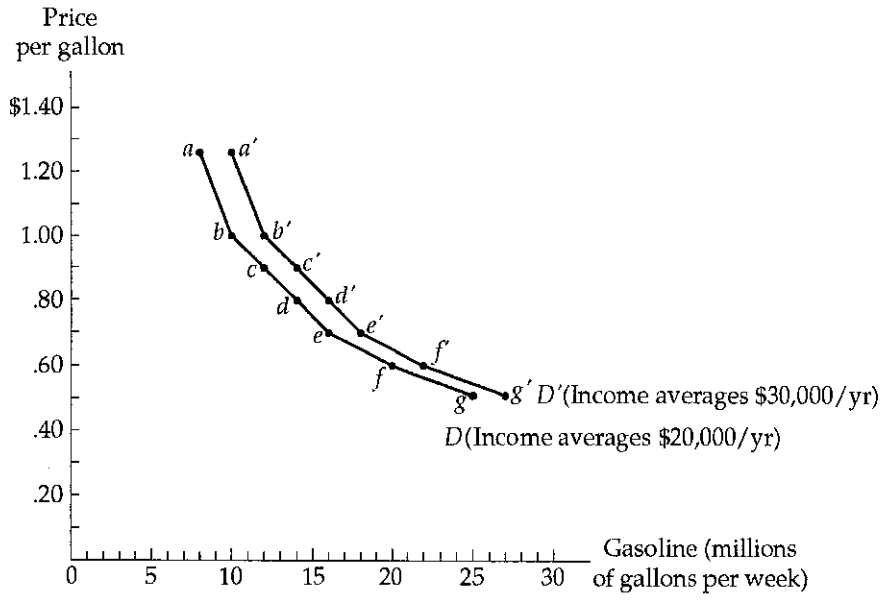
An increase in income increases demand for most products. Increasing demand means that the quantity demanded at every price increases. Exhibit 3 provides an example. When consumer income averages $20,000 a year, the demand schedule for gasoline is identical to that in Exhibit 1; this demand schedule is shown in the second column of Exhibit 3. When average income increases to $30,000 a year, the demand schedule changes. At each price, consumers demand a greater quantity of gasoline when income is greater. Exhibit 4 shows this change in demand by a shift in the demand curve from D to D'.

Exhibit 3

The Demand for Gasoline

		Quantity Demanded (millions of gallons per week)	
	Price per Gallon	*When Average Income Is $20,000*	*When Average Income Is $30,000*
a	$1.25	8	10
b	1.00	10	12
c	.90	12	14
d	.80	14	16
e	.70	16	18
f	.60	20	22
g	.50	25	27

Exhibit 4



An increase in income may lead to a decrease in demand for some goods. Such goods are called *inferior goods*. People want fewer units of inferior goods when they have more income. Examples of such goods (at least for some consumers) are margarine, hamburger, bus travel, and inexpensive brands of many goods. People substitute a better product for the inferior good when they have more income. A good whose demand increases as income increases is called a *normal good*.

Any change in one of the other factors that affect demand (other than the price of the good itself) will cause a shift in the entire demand curve similar to the one shown in Exhibit 4. A change in the price of a substitute or complement will cause a change in demand. If an increase in the price of one good leads to an increase in demand for another good, the two goods are *substitutes*. If an increase in the price of one good leads to a decrease in demand for another good, the two goods are *complements*. If the goods are unrelated, a change in the price of one will have no effect on demand for the other.

Changes in consumer expectations about the future price of a good or future income can cause a shift in the current demand for the good. If price or income is expected to be higher in the future, current demand will increase. An increase in the number of consumers in the market will also cause an increase in market demand. A change in the composition of the population changes market demand. For example, demands change as population ages. Finally, a change in consumer tastes can cause a shift in demand. Again, make sure you understand the difference between a change in the quantity demanded and a change in demand. A change in quantity demanded is caused by a change in the price of the good itself; a change in demand is caused by a change in one of the other factors of demand.

Supply

The analysis of *supply* is similar to the analysis of demand. The law of supply states that the quantity of product supplied in a given time period is usually directly related to its price. An increase in quantity supplied is a result of producers' greater willingness and ability to supply more units at higher prices. Keep in mind the difference between demand and supply. The law of demand says there is an inverse relationship between price and quantity demanded, and the law of supply says there is a direct relationship between price and quantity supplied. Determination of the market supply is analogous to determination of market demand: all the supply schedules of the individual producers in a market are added up.

Changes in Supply

A change in the price of a good causes a *change in the quantity supplied.* However, other factors affect supply. A change in one of these other factors leads to a *change in supply.* The factors that affect supply include the state of technology, the prices of resources used to produce the good, the prices of alternative goods, producer expectations, and the number of producers. The last two have effects very similar to those discussed for demand.

An improvement in technology tends to reduce the costs of production; cheaper production costs generate an increase in supply. Similarly, a decrease in the price of a resource used to produce the good reduces costs and increases supply. Most resources can be used to produce more than one good. For example, steel is used in autos, trucks, refrigerators, and many other goods as well as in construction. These goods are called *alternative goods.* If the price of an alternative good increases, additional resources will be shifted into production of the alternative good, increasing its supply.

Demand and Supply Create a Market

Suppliers and demanders are brought together by markets. The *transaction costs* of exchange (the cost of time and information) are reduced by markets. A market is in *equilibrium* when the quantity demanded by consumers equals the quantity supplied by producers at a given price. Exhibits 5 and 6

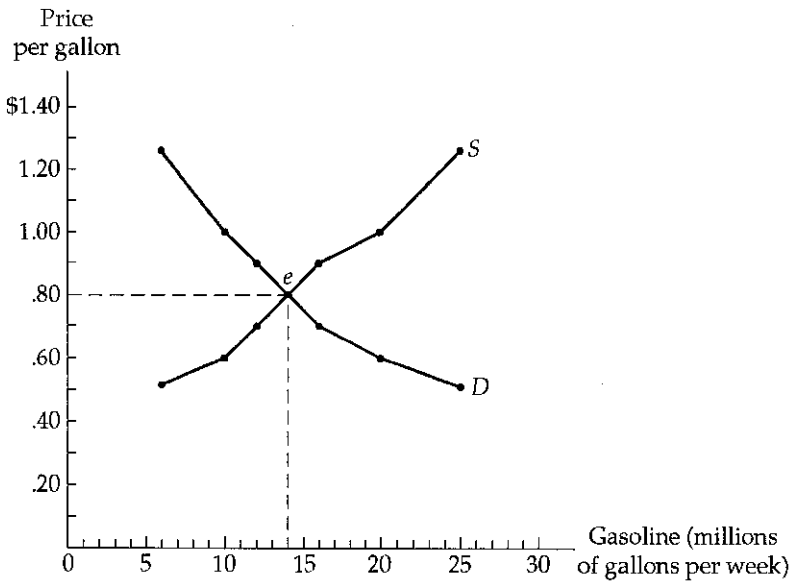
illustrate a supply and demand schedule and supply and demand curves, respectively. The market is in equilibrium at a price of $0.80 per gallon because the quantity demanded equals the quantity supplied at that price. Any other price will generate either a shortage or a surplus. For example, if the price of a gallon of gasoline is $1.00, quantity demanded is 10 million gallons but quantity supplied is 20 million gallons, yielding a surplus of 10 million gallons. Any time the price is greater than the equilibrium price there will be a *surplus*. If the price is $0.60 per gallon, quantity demanded is 20 million gallons and quantity supplied is 10 million gallons; there is a shortage of 10 million gallons. Any time the price is below the equilibrium price there will be a *shortage*.

Exhibit 5

Market Supply and Demand for Gasoline

Price per Gallon	*Quantity Demanded (millions of gallons per week)*	*Quantity Supplied (millions of gallons per week)*
$1.25	8	28
1.00	10	20
0.90	12	16
0.80	14	14
0.70	16	12
0.60	20	10
0.50	25	6

Exhibit 6



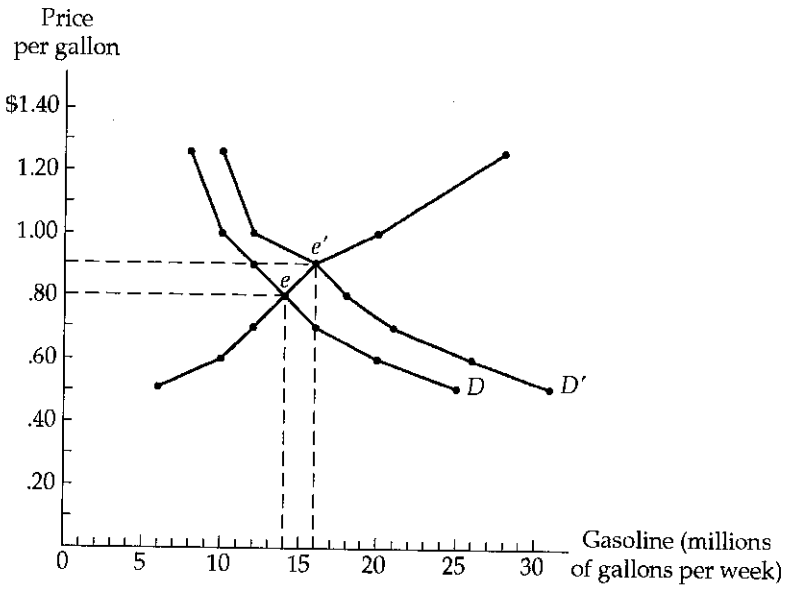
Changes in Equilibrium Price and Quantity

A market is in *equilibrium* when no economic agent in the market has any reason to alter his or her behavior. This is the case at the equilibrium price. That is, there is no reason for price to change unless

either the supply or the demand changes. An increase in demand causes the demand curve to shift out, which generates a higher price and induces suppliers to increase the quantity supplied. What can cause demand to shift? Demand shifts when income, the price of a substitute or complement, consumer expectations, population, or consumer tastes change.

Exhibit 7 shows the effects of an increase in demand for gasoline. The demand curve shifts out to D', which causes the price to increase to \$0.90 per gallon. The higher price encourages producers to increase the quantity supplied from 14 million gallons per week to 16 million gallons per week. That is, the new equilibrium price is \$0.90 per gallon, and the new equilibrium quantity is 16 million gallons per week.

Exhibit 7



A change in supply has similar effects. An increase in supply shifts the *supply curve* down and out. Because of the increased supply, the price falls, which encourages consumers to buy more gasoline (i.e., quantity demanded increases).

It is possible for several factors to change at the same time; this generates shifts in both the demand curve and the supply curve. Review Exhibits 8 and 9 in the text to make sure that you understand the impact of simultaneous shifts in supply and demand.

Disequilibrium Prices

Actual prices are not always equilibrium prices. A market is in *disequilibrium* when the price does not equate quantity demanded and quantity supplied. In free markets, such disequilibria usually do not prevail for long periods of time. However, when the disequilibrium is due to the government's imposing either price ceilings or price floors, the disequilibrium can persist. When the government mandates a price floor above the equilibrium price, the result is a surplus. When the government mandates a price ceiling below the equilibrium price, the result is a shortage.

IV. LAGNIAPPE

The Market for Calculators

In the 1960s, engineering students did calculations using slide rules. Today slide rules have been replaced by handheld calculators. When such calculators first appeared on the market, their prices were fairly high (a minimum of $400) and their capabilities were fairly limited. During the 1970s, technological change increased the capabilities of calculators and reduced their production costs. Demand increased as calculators were designed to perform more functions, and quantity demanded increased as prices fell. Both supply and demand have increased, but the increase in supply has been much larger than the increase in demand.

Question to Think About: How do we know that the change in the supply of calculators has been much greater than the change in demand?

Stock Market Activity

The stock market has changed considerably in the last 15 years. A typical sales volume for the New York Stock Exchange 15 years ago ranged from 60 million to 85 million shares per day. Today it is not uncommon for 150 million shares to be traded in one day. What happened? The Securities and Exchange Commission changed its rules: high commission rates were no longer permitted. Consequently, rates fell and volume increased. Also, technological changes have enabled the New York Stock Exchange to handle larger volumes.

Question to Think About: Are there any other factors that may have caused the demand for stocks to increase in the last fifteen years?

V. KEY TERMS

demand
law of demand
relative price
substitution effect
real income
income effect
demand curve
market demand
normal good
inferior good
substitutes
complements
tastes
change in demand
change in quantity demanded
supply
law of supply
supply curve
relevant resources
market supply
alternative goods
change in quantity supplied
change in supply
transaction costs
surplus
shortage
equilibrium
disequilibrium
price floor
price ceiling

VI. QUESTIONS

A. Completion

1. Demand is a relation indicating the quantity of a commodity that consumers are _____ and _____ to purchase at various prices during a given time period, other things constant.

2. A price increase has two effects. The _____ effect means that a consumer switches to a relatively less expensive good; the _____ effect means that the consumer's purchasing power changes.

3. Bread is a _____ good if demand for it increases when income increases.

4. Two goods are _____ if an increase in the price of one causes the demand for the other to increase.

5. Consider a demand schedule. A change in the price of the good leads to a change in _____; a change in a relevant factor other than the price of the good leads to a change in _____.

6. Supply is a relationship between price and _____ during a given time period, other things constant.

7. An increase in price causes a(n) _____ in quantity supplied.

8. _____ are goods that are produced using the same resources.

9. A change in technology causes a change in _____.

10. The costs of time and information required for exchange are called _____.

11. If quantity demanded equals quantity supplied at a specific price, the market is in _____.

12. Government-imposed price floors tend to produce a _____.

13. A shortage exists when, for a given price, quantity demanded exceeds _____.

14. Price ceilings tend to produce _____.

B. True/False

_____ 1. Demand is the rate of desired and attainable purchase at each possible price, other things constant.

_____ 2. A demand schedule indicates what an individual desires.

_____ 3. Prices of all other goods are held constant for a given demand schedule.

_____ 4. An increase in the price of one good, other things constant, encourages consumers to switch to other goods.

_____ 5. A price increase results in a decrease in a consumer's real income.

_____ 6. The demand curve for a normal good slopes down, but the demand curve for an inferior good slopes up.

_____ 7. Movements along a demand curve represent changes in quantity demanded.

_____ 8. A change in income causes a change in quantity demanded.

_____ 9. Generally, economists assume that tastes change frequently and are the causes of changes in demand.

_____ 10. An increase in the price of a good provides an incentive to suppliers to switch resources from other goods and use them in producing more of the good with the higher price.

_____ 11. The market supply curve represents the sum of individual supply curves.

_____ 12. An increase in the price of a required resource shifts the supply curve of the good produced with it to the right.

_____ 13. Technological change causes an increase in quantity supplied.

_____ 14. Markets reduce the transaction costs of exchange.

_____ 15. If price is above the equilibrium price, there is an excess quantity supplied.

_____ 16. An increase in demand lowers the equilibrium price.

_____ 17. An increase in the price of a required resource will cause a change in quantity demanded of the good produced with it.

_____ 18. Disequilibrium can never exist if markets are allowed to operate without government intervention.

_____ 19. A price ceiling often leads to an excess quantity demanded.

C. *Multiple Choice*

1. Demand reflects the quantity that consumers
   a. want at alternative prices.
   b. need at alternative prices.
   c. are willing and able to buy at alternative prices.
   d. can buy at alternative prices.
   e. None of the above.

2. Which of the following is not held constant in defining the demand schedule?
   a. income
   b. prices of related goods
   c. tastes
   d. price of the good in question
   e. number of consumers

3. The substitution effect of a change in the price of good X is to
   a. increase the demand for good X if its price falls.
   b. decrease the demand for good X if its price rises.
   c. increase the quantity demanded of good X if its price rises.
   d. encourage consumers to substitute more of good X for other goods if X's price falls.
   e. encourage consumers to substitute other goods for good X if X's price falls.

4. A price change
   a. affects the consumer's ability to buy the good.
   b. affects the consumer's willingness to buy the good.
   c. changes the tastes of consumers.
   d. All of the above.
   e. a and b

5. The income effect of a price change will be greatest for which of the following goods?
   a. house
   b. automobile
   c. dinner at a restaurant
   d. gasoline
   e. The question cannot be answered without more information.

6. A movement along a demand curve can be caused by a change in
   a. income.
   b. the price of a substitute or complement.
   c. expectations about future prices.
   d. the price of the good in question.
   e. quantity supplied.

7. A change in quantity demanded is caused by a change in
   a. technology.
   b. income.
   c. the price of a related good.
   d. consumer tastes.
   e. quantity supplied.

8. Which of the following will cause an increase in the demand for an inferior good?
   a. an increase in income
   b. an increase in the price of a complement
   c. a drop in preferences for the good
   d. an increase in the number of consumers
   e. All of the above.

9. Supply indicates the quantity that producers
   a. are willing and able to offer for sale at a given price.
   b. can supply for a profit at a given price.
   c. will offer for sale if technical change takes place.
   d. All of the above.
   e. a and b only

10. Price and quantity supplied are usually directly related because
   a. higher prices mean that producers are rewarded more for production.
   b. the law of increasing opportunity cost applies.
   c. there is more prestige associated with producing a high-priced good.
   d. changes in technology lead to higher prices.
   e. a and b

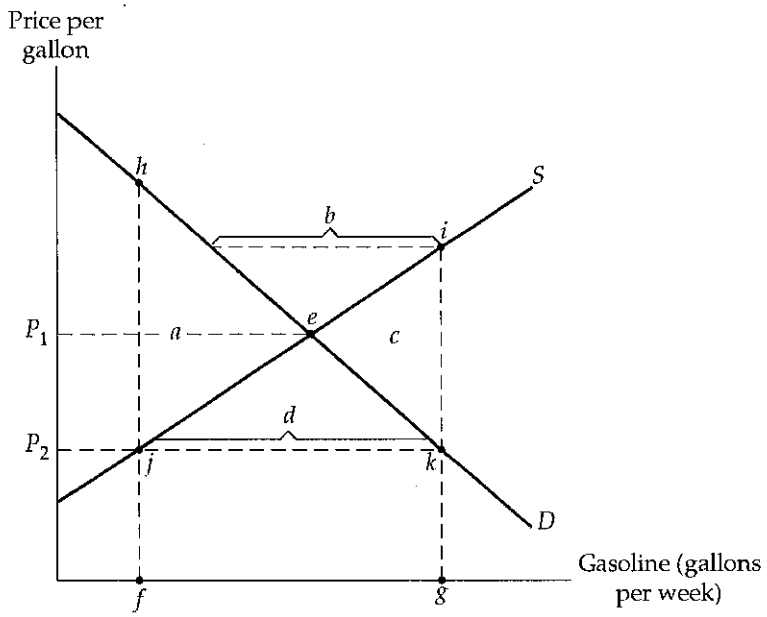
11. Which of the following does not change supply?
   a. a change in price of the good in question
   b. a change in technology
   c. a change in producer expectations
   d. a change in the number of producers
   e. All of the above.

12. A movement along a supply curve is caused by
   a. a change in the number of consumers.
   b. a change in the number of producers.
   c. technological change.
   d. a change in supply.
   e. a change in quantity demanded.

13. If the price of an alternative good falls, but the price of good X remains the same,
   a. quantity supplied of good X will increase.
   b. quantity supplied of good X will decrease.
   c. quantity demanded of good X will decrease.
   d. supply of good X will decrease.
   e. supply of good X will increase.

14. The larger the market, the
   a. greater the transaction costs.
   b. greater the degree of specialization.
   c. less specialization there is.
   d. lower the price.
   e. more likely it is that producers will be large.

Exhibit 8



15. In Exhibit 8, equilibrium, shortage, and surplus are indicated by
    a. *e*, *d*, and *b*, respectively.
    b. *e*, *b*, and *d*, respectively.
    c. *e*, *a*, and *c*, respectively.
    d. *a*, *b*, and *d*, respectively.
    e. *c*, *d*, and *e*, respectively.

16. In Exhibit 8, if price is set by the government at P_2, the result is a
    a. surplus represented by *gf*.
    b. surplus represented by *gi*.
    c. shortage represented by *gf*.
    d. shortage represented by *jh*.
    e. shortage represented by *ke*.

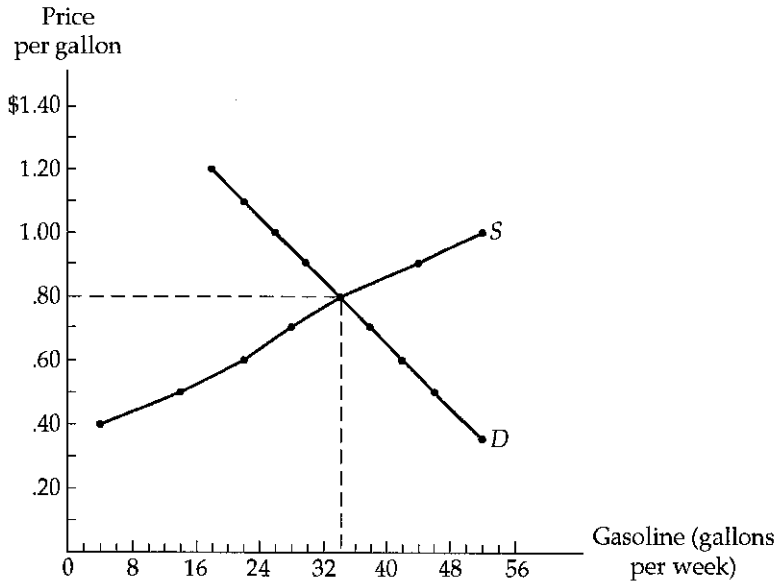
17. An excess quantity demanded tends to
    a. put downward pressure on price.
    b. put upward pressure on price.
    c. cause demand to increase.
    d. cause supply to increase.
    e. b and d

18. A shift in the supply curve with demand held constant will cause
    a. equilibrium quantity to change in the same direction and equilibrium price to change in the opposite direction.
    b. equilibrium quantity to change in the opposite direction and equilibrium price to change in the same direction.
    c. both equilibrium quantity and equilibrium price to change in the same direction.
    d. both equilibrium quantity and equilibrium price to change in the opposite direction.
    e. changes that cannot be predicted without more information.

D. *Discussion Questions*

1. Explain why there is an inverse relationship between quantity demanded and price.
2. Explain the difference between a change in demand and a change in quantity demanded.
3. The correct answer to multiple choice question 7 is *a*. Why?
4. Explain the substitution effect and the income effect of a price change.
5. What would be the effect on the current price of coffee in this country if a period of unseasonably cold weather in Brazil destroyed a large portion of the coffee trees there?
6. Why are economists reluctant to attribute a change in demand to a change in taste?
7. Explain why there is usually a direct relationship between quantity supplied and price.
8. What is the effect on the supply of corn of an increase in the price of wheat?
9. A change in quantity demanded is caused by a change in price, and a change in quantity supplied is caused by a change in price. What causes the price to change?
10. In Exhibit 9, what are the results if the government sets the price of gasoline at $1.00 per gallon? What are the results if the price is set at $0.50 a gallon? How can these results be handled by the government?

Exhibit 9



11. What are the effects on a market if demand increases and supply decreases?

12. Tickets for popular sporting events are often scalped at prices considerably above the prices printed on them. Using the concepts of supply and demand, explain why this happens. Why do those who produce the sporting events set such "low" prices for tickets when they know scalpers get much more?

13. In the mid-1970s no one had a personal computer at home. Today many people do. Using demand and supply curves, show the market for personal computers in the mid-1970s and today. Explain the difference between then and now.

14. Explain why disequilibrium can occur even in markets that are allowed to operate freely.

15. Offer a brief explanation for each of the following empirical observations:
    a. Americans began importing large quantities of Japanese autos in the 1970s.
    b. The price of medical care has increased substantially in recent years.
    c. A smaller proportion of the population smokes today than did so 20 years ago.
    d. Cable TV channels that show movies for a monthly fee have been losing viewers for the last couple of years.
    e. The number of people using the services of airlines has increased substantially over the last 15 years.

VII. ANSWERS

A. Completion

1. willing; able
2. substitution; income
3. normal
4. substitutes
5. quantity demanded; demand
6. quantity supplied
7. increase
8. Alternative goods
9. supply
10. transaction costs
11. equilibrium
12. surplus
13. quantity supplied
14. shortages

B. True/False

1. True
2. False. A demand schedule indicates willingness and ability to buy.
3. True
4. True
5. True
6. False
7. True
8. False
9. False
10. True
11. True
12. False
13. False
14. True
15. True
16. False
17. True. Supply of the good falls, raising the price and thus reducing the quantity demanded.
18. False
19. True

C. *Multiple Choice*

1. c	6. d	11. a	16. c
2. d	7. a	12. a	17. b
3. d	8. d	13. e	18. a
4. e	9. a	14. b	
5. a	10. e	15. a	

D. *Discussion Questions*

1. There is an inverse relationship between quantity demanded and price because people are willing and able to buy more at a lower price, other things constant. People are willing to buy more because of the substitution effect—they can substitute more of the lower-priced good for the higher-priced good. People also are able to buy more at a lower price because of the income effect—their real incomes have increased.

2. A change in quantity demanded occurs when there is a change in the price of the good. A change in demand occurs when there is a change in any factor that affects demand other than price. Changes in income, tastes, the prices of substitutes or complements, expectations about price and income in the future, and the number or composition of consumers in the market can all cause a change in demand. In these cases, the quantity demanded at each price changes, causing a change in the entire demand schedule, which shows up as a shift of the demand curve. A change in quantity demanded is a movement along the demand curve.

3. A change in quantity demanded is caused by a change in price. The change in price must be caused by a change in supply. Technology (answer *a*) is the only choice that causes supply to change.

4. When the price of one good goes up while the prices of all other goods remain constant, the good becomes relatively more costly. Consequently, some people consume less of the more costly good and more of other goods. This is the substitution effect. A price change also affects one's real income—that is, it causes an income effect. If real income increases, the consumer will want to buy more normal goods and fewer inferior goods; if real income decreases, the opposite will occur.

5. Unseasonably cold weather in Brazil would cause the current price of coffee in this country to rise because consumers would expect a shortage of coffee and thus a higher price in the future; this expectation would increase demand today. Further, suppliers would expect a higher price in the future; this expectation would induce them to remove some coffee from the market today and keep it to sell in the future. Hence, demand would increase and supply would decrease, so price would have to increase.

6. Tastes cannot be directly observed or measured. Hence, one can always attribute a change in demand to a change in taste and never be proven wrong. Because it is not observable, taste is not a good explanation of behavior. Since price and income changes can be observed, they are more useful as explanations of consumer behavior.

7. Producers are more willing and able to supply units at higher prices. They are more willing because the reward they earn by producing the product increases as price increases. They are also more able because higher prices allow them to pay the opportunity costs of resources used to produce the good. The law of increasing opportunity costs tells us that as production expands, opportunity costs increase. A higher price is required to cover these increased costs.

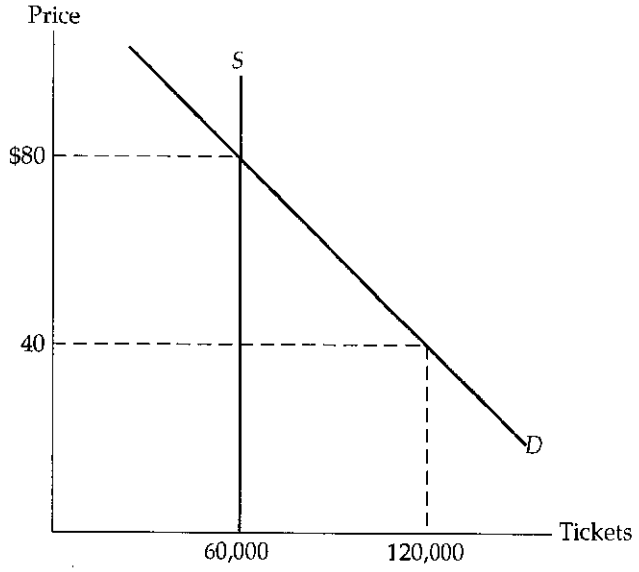
8. An increase in the price of wheat encourages producers to increase production of wheat, which takes resources. Some of these resources are likely to come from corn production, so the supply of corn will decrease.

9. A change in demand causes a change in price, which then causes a change in quantity supplied. A change in supply causes a change in price, which then causes a change in quantity demanded. So price changes whenever a factor other than price causes either demand or supply to change.

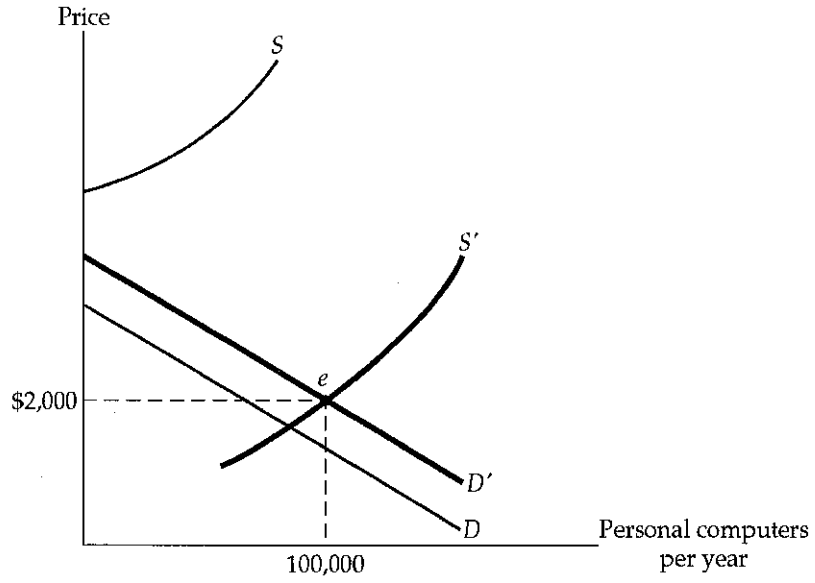
10. If the price is set at $1.00 per gallon, there is an excess quantity supplied; 52 gallons are supplied but only 26 gallons are demanded. Someone must purchase the extra 26 gallons (presumably the government). When the price is $0.50 per gallon, there is an excess quantity demanded, because 46 gallons are demanded but only 14 gallons are supplied. Some way must be found to ration these 14 gallons of gasoline among those who want it.

11. The price increases. The quantity purchased either increases or decreases, depending on whether the demand change or the supply change is greater.

12. Refer to the following exhibit. There are 60,000 tickets available, a number corresponding to the capacity of the stadium. $80 is the price that would clear the market, but the producers of the sporting event charge only $40. Hence, there is an excess demand for the tickets. Some who get the tickets would rather make a profit by selling them for the market-clearing price, $80, than go to the game, so they scalp their tickets. The people who set the price may set it low because they do not know what price is best or because it tends to be the best price on average.



13. The following exhibit illustrates the answer to this question. Demand in the 1970s is indicated by D; supply is indicated by S. The supply curve intersects the vertical axis above the point where the demand curve intersects the vertical axis. This indicates that in the 1970s the cost of producing personal computers was too high given the demand. Because of technological changes, the supply curve has shifted out to S'. The demand curve has also shifted out, to D', indicating increased demand. Demand has increased in part because of the increase in the availability of complementary goods such as computer games and software to make the personal computer useful in homes. The equilibrium price, $2,000, and quantity, 100,000, are indicated by point e.



14. Disequilibrium exists whenever quantity demanded does not equal quantity supplied at the market price. If demand increases, there is an excess quantity demanded, which puts upward pressure on price. When price moves to the new equilibrium price, equilibrium is restored.

15. a. The price of gasoline rose significantly in the 1970s, decreasing the demand for cars that use a lot of gasoline. Because Japanese cars were more fuel efficient than American cars, imports of Japanese autos increased.
    b. Increased insurance coverage through Medicare and Medicaid programs has increased demand for medical care, thus raising the price. Second, technical changes have made medical treatment better, which also has caused greater expenditures on medical care.
    c. To explain the change in smoking habits, we can only argue that tastes are changing, since the relative price of cigarettes has not changed very much and increases in income do not change smoking habits very much. The increased awareness of the link between smoking and cancer has contributed to a change in tastes.
    d. The price of a substitute good has decreased—that is, the availability of video recorders and inexpensive movie rental outlets have decreased the demand for movie channels.
    e. With the deregulation of the airline industry, the price of air travel fell; this encouraged people to travel more by air. That is, there has been an increase in quantity demanded.