

# 7

## MARKET EQUILIBRIUM

### OVERVIEW

1. Market demand is obtained by adding individual demands horizontally. Market supply is obtained by adding the supply of the individual firms horizontally.
2. Market demand shifts if there is a change in the number of buyers, tastes, the price of related goods, income, or the expectation of a change in price. Market supply shifts if there is a change in the number of sellers, nature, the cost of production, the price of other goods, or the expectation of a change in price.
3. If the quantity supplied is greater than the quantity demanded at a given price, there is a surplus. If there is no interference in the market, a surplus will disappear because the price will fall. A lower price increases the amount consumers buy and decreases the amount firms produce, both of which reduce the surplus.
4. If the quantity demanded is greater than the quantity supplied at a given price, there is a shortage. If there is no interference in the market, the shortage will disappear because the price will rise. A higher price decreases the amount consumers buy and increases the amount firms produce, both of which reduce the shortage.
5. Market equilibrium occurs at the intersection of supply and demand. There is no shortage pushing the price up, and there is no surplus pushing the price down. Thus the price is at equilibrium where the quantity supplied equals the quantity demanded. The corresponding quantity is the equilibrium quantity.
6. A change in demand or supply will cause the equilibrium price and quantity to change as follows:

<u>Change</u>	<u>Price</u>	<u>Quantity</u>
increase demand	rise	rise
decrease demand	fall	fall
increase supply	fall	rise
decrease supply	rise	fall

### MATCHING

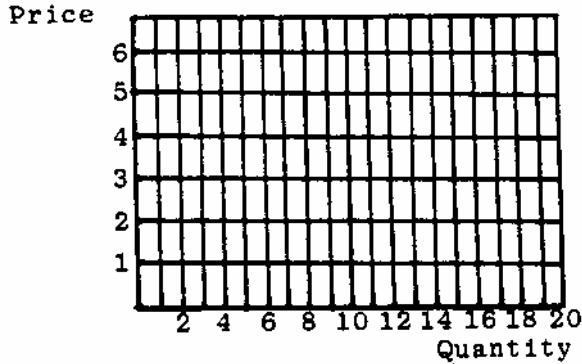
- |       |    |                                    |    |  |
|-------|----|------------------------------------|----|--|
| _____ | 1. | surplus                            | a. | is the point where the demand and supply cross   |
| _____ | 2. | shortage                           | b. | quantity demanded is less than the quantity supplied at a price                                      |
| _____ | 3. | equilibrium                        | c. | shows what happens to the equilibrium price if there is a movement of the supply and/or demand curve |
| _____ | 4. | equilibrium point                  | d. | quantity demanded is more than the quantity supplied at a price                                      |
| _____ | 5. | shifts in market demand and supply | e. | is a balance of forces   |

### TRUE-FALSE

- |       |    |  |
|-------|----|--|
| _____ | 1. | If there is an increase in demand, then the price will rise and the quantity will fall.                      |
| _____ | 2. | If there is a decrease in supply, the supply curve shifts right, and the price falls and the quantity rises. |
| _____ | 3. | If there is an increase in supply, then the price falls and the quantity rises.                              |
| _____ | 4. | If there is a decrease in demand than the demand shifts right, price rises, and quantity falls.              |
| _____ | 5. | When there is an increase in demand, then a shortage is created and price is driven up.                      |
| _____ | 6. | When there is an increase in demand, then the price rises causing demand to fall.                            |

## PROBLEMS

- 1.a. Use the vertical and horizontal axes which follow. For \_\_\_\_\_ supply and demand, what label do you put on the vertical axis? \_\_\_\_\_ The horizontal axis? \_\_\_\_\_



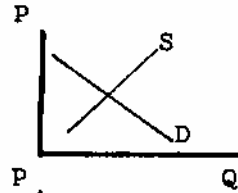
- b. Plot and connect the demand points to form the demand curve. Plot and connect the supply points to form the supply curve.

Demand		Supply	
Price	Quantity	Price	Quantity
\$ 6	6	\$ 6	14
5	8	5	12
4	10	4	10
3	12	3	8
2	14	2	6
1	16	1	4

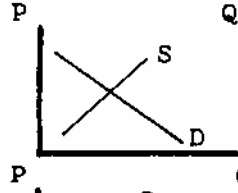
- c. At what price and quantity does equilibrium occur? \_\_\_\_\_

2. In the following exercises, graphically shift either supply or demand and indicate what happens to the equilibrium price and quantity of tomatoes.

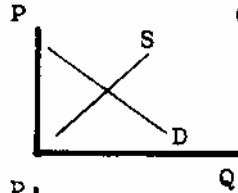
a. A new nutritive value of tomatoes is discovered.



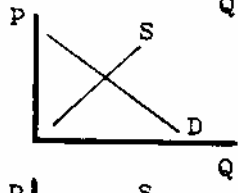
b. The cost of production falls.



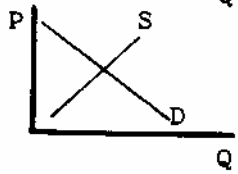
c. Nature causes a poor tomato crop.



d. Consumers expect the price to fall.

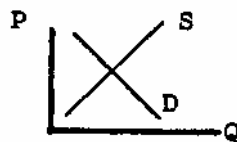


e. There is an increase in the price of lettuce, a complement to tomatoes.

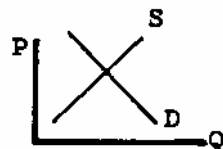


3. Illustrate using graphs, whether supply or demand changed to cause each of the following.

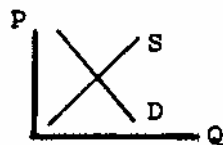
a. equilibrium price rises, equilibrium quantity rises.



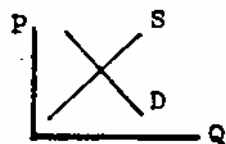
b. equilibrium price rises, equilibrium quantity falls.



c. equilibrium price falls, equilibrium quantity rises.



d. equilibrium price falls, equilibrium quantity falls.



4. Each question below concerns the market for bread. Put an I for increase or D for decrease in the appropriate blank. Qd is for quantity demanded; D, demand; Qs, quantity supplied; S, supply; P, the equilibrium price; and Q, the equilibrium quantity. Not all will change.

	Qd	D	Qs	S	P	Q
a. The wheat harvest is huge.	___	___	___	___	___	___
b. The wages of bakers go up.	___	___	___	___	___	___
c. Bread is found to prevent cancer.	___	___	___	___	___	___
d. The price of rolls rises.	___	___	___	___	___	___
e. The price of butter falls.	___	___	___	___	___	___
f. A faster yeast is found.	___	___	___	___	___	___
g. More consumers want bread.	___	___	___	___	___	___
h. Eating no bread becomes a fad.	___	___	___	___	___	___
i. A cheaper packaging is found.	___	___	___	___	___	___
j. The price of pita bread falls.	___	___	___	___	___	___

5. Identify the surplus or shortage.

a. Half the seats in the stadium were empty.

b. Tickets for the dance are sold out.

- c. The latest video is hard to get.  
\_\_\_\_\_
- d. Halloween candy is on sale the next day.  
\_\_\_\_\_
6. In each situation in question 5, is the price above or below the equilibrium price?
- \_\_\_\_\_
  - \_\_\_\_\_
  - \_\_\_\_\_
  - \_\_\_\_\_
7. Fill in the blanks to correctly complete the sentence.
- When there is a large corn crop, we know that there is a(n) \_\_\_\_\_ in supply and therefore price will \_\_\_\_\_ and quantity will \_\_\_\_\_. There is also an increase in \_\_\_\_\_.
  - When the tickets for a major rock concert go on sale, the line goes around the block. There are not enough tickets. There is a \_\_\_\_\_ of tickets at the \_\_\_\_\_ going price. They should let \_\_\_\_\_ increase. This will cause a decrease in \_\_\_\_\_.
  - Our church had a bingo game. The tickets were \$20 apiece. We only sold a third of the tickets we had. There is a \_\_\_\_\_ of tickets. We should have lowered \_\_\_\_\_. This would cause an increase in \_\_\_\_\_.
  - Advertising has recently been used by lawyers. They find that it increases their business. The advertising increases the \_\_\_\_\_ for lawyers and causes the \_\_\_\_\_ for a lawyer's services to rise and the number of law suits to \_\_\_\_\_.
  - The price of video recorders has decreased remarkably. People are now buying video recorders instead of movie cameras. They are easy to use and playback requires no setup. The decrease in price of video recorders has caused the \_\_\_\_\_ for movie cameras to decrease. Consequently, the \_\_\_\_\_ of movie cameras will fall and so will the \_\_\_\_\_.

#### IN THE NEWS

- When Cabbage Patch Kids were new on the market, they sold for \$25 each. The doll caught on and everyone, boy and girl alike, had to have at least one. The shelves were picked clean. Crowds would form long before a store opened if a shipment of dolls was expected or even rumored. It took two years of production at full capacity to meet the demand. Now the craze is dying down and the dolls are available almost everywhere.
  - Was the market in equilibrium when the dolls were all sold out? Explain.  
\_\_\_\_\_

b. Would you expect the price to rise or fall? As demand increased, what happened to price? As supply increased, what happened to price? \_\_\_\_\_

c. In terms of supply and demand, what does it mean to say "the craze is dying down"? What does this mean on a graph? \_\_\_\_\_

2. There is a severe shortage of high school math and science teachers. The salaries for these teachers have increased. In addition, some school systems are offering special incentives such as teacher aides and guaranteed summer employment. Some states offer special bonuses to new teachers to help them pay off school loans. Rarely has there been a better time to go into teaching. Despite these incentives, it is projected that the current shortage will grow.

a. Is the market in equilibrium? Explain.

b. Do you expect price to rise or fall? Explain.

c. Do you expect the shortage to grow or get smaller? Why? \_\_\_\_\_

3. Every year the cost of going to college goes up. It is not that prices are low to begin with. Some prestigious schools charge over \$20,000 for one year while others charge about \$4,000. Applications for the more prestigious colleges continue to flow in despite the high price.

a. Why would students choose to go to prestigious schools when there are less expensive substitutes available? \_\_\_\_\_

b. What makes the demand for prestigious education shift? Is there anything that the other schools can do to affect the demand for more expensive education?

4. Many see farming as a declining occupation. Over 100,000 farmers have been forced out of business within a year. Despite the financial difficulties faced by farmers, they keep producing and are harvesting a bumper crop of corn. Government supports the price of corn above the market price. The surplus will cause a storage problem.

a. Is the market for corn in equilibrium? Explain.

b. Do you expect the price of corn to rise or fall? Explain.

## PRACTICE TEST

Circle the correct answer.

1. If \_\_\_\_\_ increases, then \_\_\_\_\_ will increase.
  - a. price, supply
  - b. supply, price
  - c. demand, price
  - d. quantity, demand
  
2. When price is below equilibrium:
  - a. a shortage results.
  - b. a surplus results.
  - c. the quantity demanded is greater than the quantity supplied.
  - d. both a and c.
  
3. If \$17 were the equilibrium price in a market, then:
  - a. at \$10 the price would tend to fall.
  - b. at \$21 the price would tend to rise.
  - c. at \$5 there would be no tendency for price to change.
  - d. at \$17 there would be no tendency for price to change.
  
4. Before hurricane Ismail struck the Florida coast, the price of plywood, which is used to cover windows, rose. Native Floridians made the following statements. Which one is correct?
  - a. "It's the quantity supplied that went up and caused the price to rise."
  - b. "The supply of plywood went up because we have a hurricane every year, and the increase in supply caused the price to rise."
  - c. "The demand for plywood increased."
  - d. "The quantity demanded went up and so the price rose."
  
5. If supply increases:
  - a. the equilibrium price will rise and the equilibrium quantity will fall.
  - b. the equilibrium price will rise and the equilibrium quantity will rise.
  - c. the equilibrium price will fall and the equilibrium quantity will fall.
  - d. the equilibrium price will fall and the equilibrium quantity will rise.

## ANSWERS

### Matching

1. b
2. d
3. e
4. a
5. c

### True-False

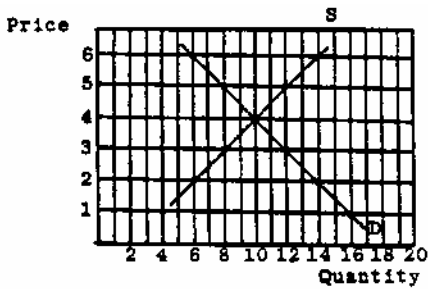
1. F
2. F
3. T

- 4. F
- 5. T
- 6. F

Problems

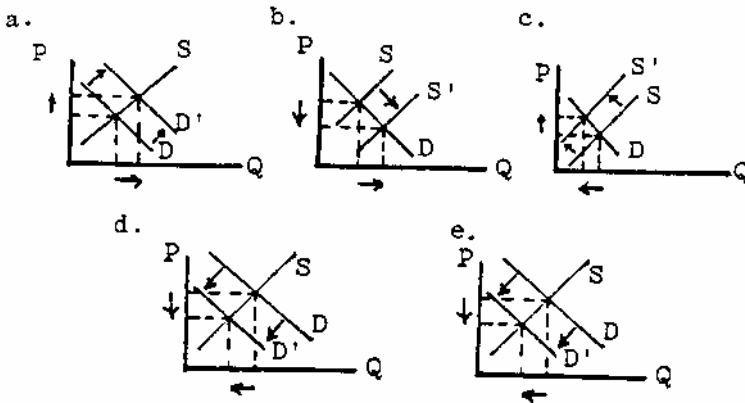
1.a. price of the good, quantity of the good

b.

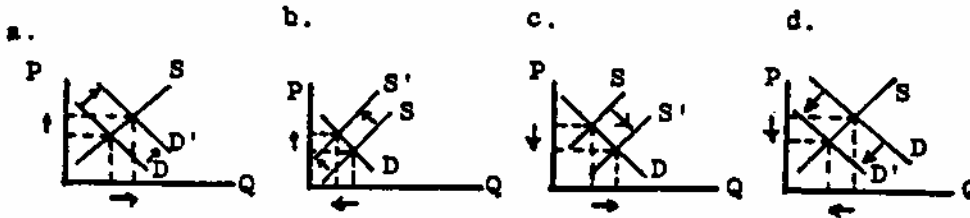


c. The equilibrium price is \$4, and the quantity is 10 units.

2.



3.



4.

	Qd	D	Qs	S	P	Q
a.	$\frac{I}{D}$	_____	$\frac{D}{I}$	$\frac{I}{D}$	$\frac{D}{I}$	$\frac{I}{D}$
b.	$\frac{D}{D}$	_____	$\frac{I}{I}$	$\frac{D}{D}$	$\frac{I}{I}$	$\frac{D}{D}$

c.	D	I	I		I	I
d.	D	I	I		I	I
e.	D	I	I		I	I
f.	I		D	I	D	I
g.	D	I	I		I	I
h.	I	D	D		D	D
i.	I		D	I	D	I
j.	I	D	D		D	D

5.
  - a. surplus
  - b. shortage
  - c. shortage
  - d. surplus
  
6.
  - a. above
  - b. below
  - c. below
  - d. above
  
7.
  - a. increase, fall, rise, quantity demanded
  - b. shortage, price, quantity demanded
  - c. surplus, price, quantity demanded
  - d. demand, price, increase
  - e. demand, price, quantity supplied

#### In the News

1.
  - a. The market was not in equilibrium because there were people willing and able to buy the dolls at the going I price, but there were not any dolls available to buy. So there was a shortage.
  - b. As long as there is a shortage, the price of the dolls would rise. Price increased with an increase in demand. Price fell with an increase in supply.
  - c. The "craze is dying down" means that the demand curve is shifting to the left by a change in taste. Demand is decreasing.
  
2.
  - a. There is a shortage of math and science teachers so the market is not in equilibrium.
  - b. Since there is a shortage, we would expect the price to rise.
  - c. If the price rises, then we would expect people to be attracted to this work and the shortage would be reduced.
  
3.
  - a. They must believe that there is some difference that is worth the extra expense. It may be that coming from a more prestigious school will make it easier to get a job. They may think that a more prestigious school provides a better education.
  - b. one thing that will make the demand for the prestigious school shift is the price of the less expensive school. The greater the difference in price, the more likely the lower-priced school is to affect the enrollment at the prestigious school. Since they are substitutes, a

reduction in price of one lowers the demand for the other. Also schools could improve the quality of education so that one reason to go to the more prestigious school is removed.

4. a. Normally if there is a surplus, we would think that the market is not in equilibrium. But in this case, the government is buying the surplus corn at a price above the market price, and the surplus is being stored.
- b. If the market were free to fluctuate, we would expect the price of corn to fall. But the market is not free in this case so the price will not fall as long as the government is willing to support the price of corn by purchasing the surplus.

#### Practice Test

1.c., 2.d., 3.d., 4.c., 5.d.