Demand and Supply

**Demand** of a good or service is determined by how desirable it is. If a lot more people want to buy apples this year compared to last year, demand for apples is said to be higher this year compared to last year. The number of apples people want to buy in this example is called the **quantity demanded**. Demand changes with price. When a good or service is cheap, consumers demand more. A hundred apples may be demanded at $2 each but a thousand apples may be demanded at $1 each. Greater demand at a lower price and smaller demand at a higher price mean that demand and price have an inverse relationship. This relationship is called the **law of demand**. A table that shows the different quantities demanded at different prices is known as a **demand schedule**.

Supply of a good or service is determined by how profitable it is. If a lot more firms or producers want to supply apples this year compared to last year, supply for apples is said to be higher this year compared to last year. The number of apples firms or producers want to sell in this example is called the **quantity supplied**. When a good or service is expensive, producers produce more for higher profit. Supply changes with price. A thousand apples may be supplied at $2 each but a hundred apples may be supplied at $1 each. Greater supply at a higher price and smaller supply at a lower price mean that supply and price have a positive relationship. This relationship is called the **law of supply**. A table that shows the different quantities supplied at different prices is known as a **supply schedule**.

<table>
<thead>
<tr>
<th>Price</th>
<th>Quantity Demanded</th>
<th>Quantity Supplied</th>
</tr>
</thead>
<tbody>
<tr>
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<td>1.33</td>
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<td>6.66</td>
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</tr>
<tr>
<td>30</td>
<td>0.00</td>
<td>20.00</td>
</tr>
</tbody>
</table>

When all the points, representing quantity demanded and price, in a demand schedule are plotted on a graph, the line that forms is called a **demand curve**. This curve is negatively sloped, reflecting the inverse relationship between demand and price. Conversely, when all the points, representing quantity supplied and price, in a supply
schedule are plotted on a graph, the line that forms is called a **supply curve**. This curve is positively sloped, reflecting the positive relationship between supply and price.

By convention, price is on the y-axis and quantity is on the x-axis. The line with square markers is the demand curve obtained from the demand schedule. This is downward sloping. The line with triangle markers is the supply curve obtained from the supply schedule. This is upward sloping. The intersection point where the demand curve meets the supply curve is known as the **equilibrium point**. The quantity at the equilibrium point is known as the **equilibrium quantity** and the price at the equilibrium point is known as the **equilibrium price**. At this price and quantity, demand and supply are in equilibrium because there is no incentive for consumers or firms to change their behaviour.

In the example above, the equilibrium price is $15 and the equilibrium quantity is 10 units. At $20, the supply curve lies to the right of the demand curve, indicating **excess supply** or **surplus**. This means that the quantity supplied at $20 is higher than the quantity demanded. At $6, the demand curve lies to the right of the supply curve, indicating **excess demand** or **shortage**. This means that the quantity demanded at $5 is higher than the quantity supplied. When demand and supply are not in equilibrium, consumers or producers have the incentive to change their behaviour.

In the case of surplus at $20, producers are willing to supply 13.33 units and consumers are willing to buy 6.66 units. If producers indeed make 13.33 units and try to sell them at $20 each, producers would not be able to sell all that they make. Producers have an incentive to change their behaviour. If they want to sell all that they produce, they have to decrease the price they charge. In the case of shortage at $6, consumers are willing to buy 16 units and producers are willing to supply 4 units. If consumers indeed demand 16 units and try to buy them at $6 each, consumers would not be able to buy all that they demand. Consumers have an incentive to change their behaviour. If they want to buy all that they demand, they have to offer a higher price. In both cases, consumers and producers have an incentive to change their behaviour, indicating that demand and supply are not in equilibrium.
When producers are willing to sell for a lower price but are able to sell for a higher price, those producers earn **producer surplus (PS)**, not to be confused with surplus. When consumers are willing to pay a higher price but are able to buy for a lower price, those consumers earn **consumer surplus (CS)**, again not to be confused with surplus. Let’s say that in the example above, the equilibrium price prevails at $15.

In order to find both the producer surplus and the consumer surplus, first, draw a horizontal line at $15. The upper triangle formed by the horizontal line, vertical axis, and the supply curve represents the producer surplus. The lower triangle formed by the horizontal line, vertical axis, and the demand curve represents the consumer surplus.

Producer surplus and consumer surplus, together, represent **economic surplus (ES)** or **social surplus**. Remember that the supply curve reflects producers’ willingness to supply at different prices and the demand curve reflects consumers’ willingness to buy at different prices.

Movements along a demand curve or a supply curve refer to movements within the same curve. These occur when prices change, “other things” being equal. The expression, “other things being equal” is sometimes written as ceteris paribus. **Shifts of**
a demand curve or a supply curve refer to the shifting of the curves themselves. In this case, “other things” are changing. There are several “other things” to keep in mind.

Income, tastes, preferences, prices of substitutes and complements are some of the factors that shift a demand curve. Factors that increase quantity demanded at every price cause the demand curve to shift upward or to the right. Factors that decrease quantity demanded at every price cause the demand curve to shift downward or to the left. In most cases, an increase in income, popularity, price of substitutes or a decrease in price of complements can cause the demand curve to shift upward or to the right. In most cases, a decrease in income, popularity, price of substitutes or an increase in price of complements can cause the demand curve to shift downward or to the left.

Input prices and production technology are some of the factors that shift a supply curve. Factors that increase quantity supplied at every price cause the supply curve to shift upward or to the right. Factors that decrease quantity supplied at every price cause the supply curve to shift downward or to the left. In most cases, an increase in input prices or deterioration in production technology can cause the supply curve to shift downward or to the left. In most cases, a decrease in input prices or improvement in production technology can cause the supply curve to shift upward or to the right.

Sometimes, governments establish price control policies. When price control is designed to control prices from increasing “too high,” they establish price ceilings. When price control is designed to control prices from decreasing “too low,” they establish price floors. If a government establishes a price ceiling above the equilibrium price, the price ceiling is useless because the price would not have reached the ceiling even without the government’s price ceiling. Likewise, if a government establishes a price floor below the equilibrium price, the price floor is useless because the price would not have reached the floor even without the government’s price floor. Thus, a price ceiling below the market equilibrium price is a binding price ceiling while a price ceiling above the market equilibrium price is a non-binding price ceiling. Furthermore, a price floor above the market equilibrium price is a binding price floor while a price floor below the market equilibrium price is a non-binding price floor.

When governments establish binding price control policies that hinder market forces from achieving equilibrium prices, inefficiencies result. These inefficiencies are known as deadweight loss. As a result of a binding price ceiling or a binding price floor, quantity of goods or services exchanged at the binding price is lower than what it would have been without the price controls. Both consumers and producers are willing to exchange a higher quantity of goods or services but are unable to do so with the price controls, resulting in inefficiencies. In addition to the deadweight loss, binding price control policies have another consequence. Binding price control policies can shift consumer surplus to producer surplus or shift producer surplus to consumer surplus.
Practice Problems

1. Which of the following are included in a demand schedule?
   a) Price and quantity demanded
   b) Price and quantity supplied
   c) Quantity demanded and delivery schedules
   d) Quantity supplied and delivery schedules

2. Which of the following are included in a supply schedule?
   a) Price and quantity demanded
   b) Price and quantity supplied
   c) Quantity demanded and delivery schedules
   d) Quantity supplied and delivery schedules

3. Which of the following is referred to the law of demand?
   a) Positive relationship between quantity demanded and price
   b) Positive relationship between quantity supplied and price
   c) Inverse relationship between quantity demanded and price
   d) Inverse relationship between quantity supplied and price

4. Which of the following is referred to the law of supply?
   a) Positive relationship between quantity demanded and price
   b) Positive relationship between quantity supplied and price
   c) Inverse relationship between quantity demanded and price
   d) Inverse relationship between quantity supplied and price

5. Which of the following constitutes an equilibrium point?
   a) Intersection point of demand curve and supply curve
   b) Minimum point on demand curve
   c) Minimum point on supply curve
   d) Intersection point where price is equal to quantity

6. When demand exceeds supply at a given price, which of the following happens?
   a) Shortage
   b) Economic surplus
   c) Consumer surplus
   d) Surplus

7. When supply exceeds demand at a given price, which of the following happens?
   a) Shortage
   b) Price ceiling
   c) Price floor
   d) Excess supply
8. Which of the following results from a government establishing a minimum price above the equilibrium price?
   a) Binding price ceiling
   b) Non-binding price ceiling
   c) Binding price floor
   d) Non-binding price floor

9. Which of the following results from a government establishing a maximum price above the equilibrium price?
   a) Binding price ceiling
   b) Non-binding price ceiling
   c) Binding price floor
   d) Non-binding price floor

10. What is the expression for the inefficiency that results from binding price control policies from governments?
    a) Fried chicken
    b) Deadweight loss
    c) Social surplus
    d) Total surplus

Answers

1. A
2. B
3. C
4. B
5. A
6. A
7. D
8. C
9. B
10. B