Supply and demand are the two words that economists use most often.

Supply and demand are the forces that make market economies work.

Modern microeconomics is about supply, demand, and market equilibrium.
Wrong way of thinking

- **Demand**: number of barrels needed to heat homes and factories, to operate cars and trucks
- **Supply**: the physical amount of crude oil that can be extracted, produced
- The two lines in the graph almost never intersect; demand is never equal to supply. There is either a *surplus* or a *shortage*.

The role of prices

- If we don’t understand how price equates the quantity demanded with the quantity supplied we will think that management is needed to bring a balance to the market and control shortages and surpluses.
- Balance requires greater reliance on control policies such as rationing, conservation, and other demand reducing policies or on joint government and industry programs that increase supply by developing new technologies.

Water shortage in New York City (who needs water)

- How can we solve a *severe water shortage* problem in a big city?
- Economist: Use the price mechanism, increase the price of water.
- Non-economist: “Water is a necessity. People won’t go thirsty just because the price of water goes up a little, or even a lot.”
Substitutes for water in New York City

- dirty cars
- brown lawns
- bricks in the toilet tank
- low-flow shower heads
- plumbers
- migration

The trick is to ...

- persuade people to use these substitutes. Higher prices achieves that.

The non-economist thinks of the demand for water as "the amount of water we need" and assumes that the alternative to having that amount of water is people going thirsty.

But only a tiny fraction of the water we consume is drunk. While the demand for drinking water may be highly inelastic over a wide range of prices, demand for other uses is not.

If the price of water doubles, it pays farmers to use water more sparingly for irrigation, it pays the chemical firms to use less of it in their manufacturing processes, and it pays the homeowners to fix leaky faucets more promptly than before. Nobody dies of thirst, but total consumption of water falls a lot.
To most non-economists, a shortage is a fact of nature--there just isn’t enough. To an economist, it has almost nothing to do with nature. Diamonds are in very short supply--yet there is no diamond shortage. Water is very plentiful; the average American consumes, directly or indirectly, more than 1000 gallons (about 4 tons) per day. Yet we see water shortages.

Another familiar example: The consumption of gasoline (benzin).

• If you suggest to someone that if gasoline were more expensive he would use less of it, his first response is that using less gasoline would mean giving up the job he commutes to or walking two miles each way to do his shopping. Indeed, when oil prices shot up in the early 1970's, many people argued that Americans would continue to use as much gasoline as before at virtually any price, unless the government forced them to do otherwise.

There are many ways to save gasoline

• Car pooling and driving more slowly.
• Buying lighter/smaller more fuel efficient cars.
• Workers choosing to live closer to their jobs or employers choosing to locate factories nearer to their workers.
• Petroleum is used to produce both gasoline and heating oil; the refiners can, control how much of each is produced. One way of "saving" gasoline is to use less heating oil and make a larger fraction of the petroleum into gasoline instead.
• Insulation, smaller houses, and moving south.

Please state three of them.
Formal definitions for demand

If demand is not “need”, then what is it?

• DEFINITION 1: Demand is a relationship between two (2) specific variables: Price and quantity demanded. [emphasize: demand is not a fixed amount determined by nature]

• Then what is quantity demanded?

• DEFINITION 2: Quantity demanded of a good is the amount of that good that buyer(s) are willing and able to purchase.

What factors determine the “quantity demanded”?

1. Price of the good itself
2. Consumer Income (normal goods, inferior goods)
3. Prices of related goods [substitutes and complements]
4. Taste
5. Expectations

In mathematical terms: \( Q_D = f(P, I, P^*, T, E) \) [quantity demanded is a function of items 1 through 5]

DEMAND

• \( Quantity \ demanded \) is the amount of a good that buyers are willing and able to purchase.
The Demand Curve: The Relationship between Price and Quantity Demanded

• Demand (Schedule/Curve)
  – The demand schedule is a table that shows the relationship between the price of the good and the quantity demanded, with all other things kept constant.

Zeynep’s Demand Schedule

<table>
<thead>
<tr>
<th>Price of Ice-cream cone</th>
<th>Quantity of Ice-cream cones demanded</th>
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The Demand Curve: The Relationship between Price and Quantity Demanded

• Demand Curve
  – The demand curve is a graph of the relationship between the price of a good and the quantity demanded, with all other things kept constant.

Zeynep’s Demand Schedule and Demand Curve
Law of Demand

– The law of demand is the claim that, other things equal, the quantity demanded of a good falls when the price of the good rises.

The original version of the Law of Demand

"There is then one general law of demand: The greater the amount to be sold, the smaller must be the price at which it is offered in order that it may find purchasers; or, in other words, the amount demanded increases with a fall in price, and diminishes with a rise in price."


Changes in Quantity Demanded

A small digression:
Market Demand versus Individual Demand

• Market demand is the sum of all individual demands for a particular good or service.

• Graphically, individual demand curves are summed horizontally to obtain the market demand curve.
Before we talk about the shifts in the demand curve

• Recall that

Change in Quantity Demanded is a
  — Movement along the demand curve, and is
  — Caused by a change in the price of the product.

Shifts in the Demand Curve

• Consumer income
• Prices of related goods
• Tastes
• Expectations
• Number of buyers

Shifts in the Demand Curve

• Change in Demand
  — A shift in the demand curve, either to the left or right.
  — Caused by any change that alters the quantity demanded at every price.
For each event below determine if the change causes a shift in demand, if so in which direction, or a movement along the demand curve, if so in which direction, for taxi journeys. Briefly explain why.

1. A rise in the price of bus journeys
2. An increase in average real incomes by 8 per cent
3. The introduction of zero tolerance of alcohol in drinking and driving
4. An increase in the meter rate for taxi journeys

Shifts in the Demand Curve

- Consumer Income
  - As income increases the demand for a *normal good* will increase.
  - As income increases the demand for an *inferior good* will decrease.

Consumer Income Normal Good

An increase in income...

Increase in demand

Shifts in the Demand Curve

- Price of Ice-Cream Cones
  - Increase in demand
  - Decrease in demand
  - Demand curve, D₁
  - Demand curve, D₂
  - Demand curve, D₃

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An increase in income...

**Consumer Income**

**Inferior Good**

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<th>Price of Ice-Cream Cones</th>
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<tbody>
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<td>An increase in income...</td>
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**Shifts in the Demand Curve**

- **Prices of Related Goods**
  - When a fall in the price of one good reduces the demand for another good, the two goods are called *substitutes*.
  - When a fall in the price of one good increases the demand for another good, the two goods are called *complements*.

**Complements (complementary goods): Peanut butter and jelly**

When the price of peanut butter rises, demand for jelly falls, that means: the demand curve for jelly shifts to the left.

**Substitute goods: Tea and Coffee**

When the price of coffee rises, demand for tea increases, that means: the demand curve for tea shifts to the right.
Choose 3 out of the list and for each one state whether the change will cause a shift, if so in which direction, or a movement along the demand curve for taxi journeys. Briefly explain why.

1. A rise in the price of bus journeys
2. A desire by consumers for more convenient journeys
3. An increase in average real incomes by 8 per cent
4. A decision by local government to cut night bus services
5. An increase in the number of people attending a town’s night clubs
6. The introduction of zero tolerance of alcohol in drinking and driving
7. An increase in the meter rate for taxi journeys
8. Government announces plans for a pay freeze for all public sector workers
9. The introduction of public cycles for hire in town and city centers

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<th>Variable</th>
<th>A Change in This Variable . . .</th>
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<tr>
<td>Income</td>
<td>Shifts the demand curve</td>
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<tr>
<td>Prices of related goods</td>
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<td>Tastes</td>
<td>Shifts the demand curve</td>
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<tr>
<td>Expectations</td>
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<tr>
<td>Number of buyers</td>
<td>Shifts the demand curve</td>
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