L2 – Demand

I. Demand Curve

❖ The demand curve shows the relationship between price and quantity demanded.

- **Quantity demanded** means the amount of a good that buyers are willing to purchase.

❖ Quantity demanded is negatively related to price.

➔ The demand curve is downward sloping.

➔ **Law of demand** is the claim that, other things equal, the quantity demanded of a good falls when the price of the good rises.

❖ When we discuss the relationship between quantity demanded and price, we hold all other variables constant. A change in price leads to a movement along the demand curve.

Example: Helen's demand for lattes.

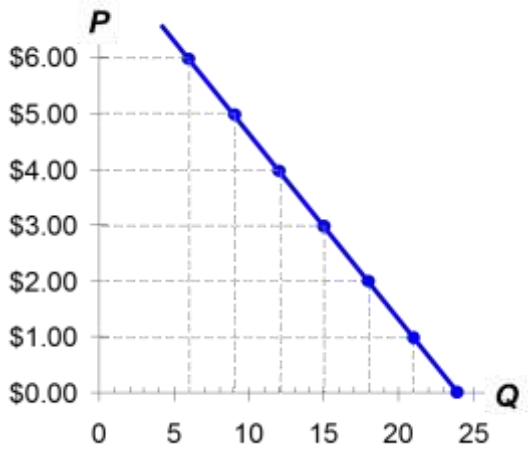
Price of lattes	Quantity of lattes demanded
$0.00	16
1.00	14
2.00	12
3.00	10
4.00	8
5.00	6
6.00	4

1. Individual Demand

2. Market Demand

❖ The quantity demanded in the market is the sum of the quantities demanded by all buyers at each price.
Suppose Helen and Ken are the only two buyers in the Latte market. (Q^d = quantity demanded)

Price	Helen's Q^d		Ken's Q^d		Market Q^d
$0.00	16	+	8	=	24
1.00	14	+	7	=	21
2.00	12	+	6	=	18
3.00	10	+	5	=	15
4.00	8	+	4	=	12
5.00	6	+	3	=	9
6.00	4	+	2	=	6



P	Q^d (Market)
$0.00	24
1.00	21
2.00	18
3.00	15
4.00	12
5.00	9
6.00	6

3. Alternative Ways of Thinking of Demand Curve

- **Maximum Willingness to Pay**
  In the above diagram the consumer's maximum willingness to pay for the 21st unit is $1.00, for the 18th unit is $2.00, for the 15th unit is $$3.00, so on. Maximum willingness to pay of a unit of good can be seen as the value the consumer receives from consuming that unit of good. For different unit of good, the consumer has different maximum willingness to pay. Because the demand curve is downward sloping, the more goods he consumes, the lower his maximum willingness to pay for the next unit of good.

- **Another way**
  If we assume each customer can buy only one unit of good, then the quantity on the horizontal axis can be seen as the quantity of consumers. So in the above diagram, when the price is $1.00, 21 consumers will buy; when the price is $2.00, 18 consumers will buy, so on. The 21st customer's maximum willingness to pay is $1.00, the 18th customer's maximum willingness to pay is $2.00, so on.

II. Shifts in the Demand Curve

❖ The demand curve shows how much consumers want to buy at any price, ***holding constant the many other factors*** that influence buying decisions. These factors can be viewed as market conditions.

❖ If any of these other factors change, the demand curve will shift.

a. An *increase* in demand can be represented by a shift of the demand curve to the *right*.

b. A *decrease* in demand can be represented by a shift of the demand curve to the *left*.

1. Income

The relationship between income and quantity demanded depends on what type of good the product is.

- An increase in income leads to an increase in demand for *normal* goods (i.e. demand curve shifts rightward).

- An increase in income leads to a decrease in demand for *inferior* goods (i.e. demand curve shifts leftward).

2. Prices of Related Goods

- Two goods **are substitutes** if an increase in the price of one causes an increase in demand for the other.

  Example: pizza and hamburgers. An increase in the price of pizza increases demand for hamburgers,
  shifting hamburger demand curve to the right.

  Other examples: Coke and Pepsi, laptops and desktop computers, CDs and music downloads

- Two goods are complements if an increase in the price of one causes a fall in demand for the other.

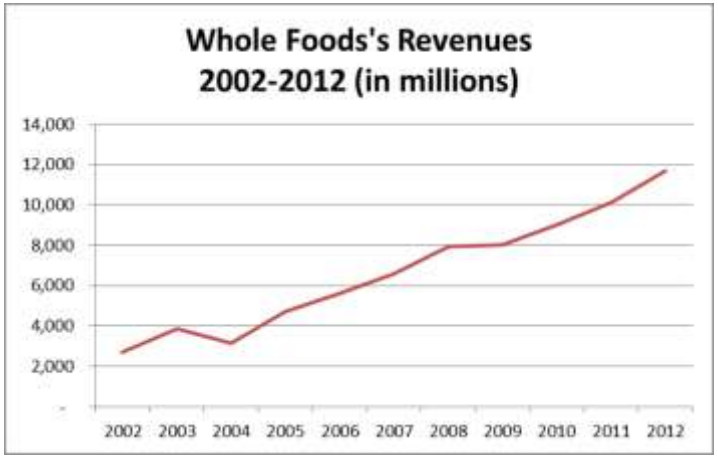
  Example: computers and software. If price of computers rises, people buy fewer computers, and therefore less software. Software demand curve shifts left.

3. Tastes

- Anything that causes a shift in tastes toward a good will increase demand for that good and shift its D curve to the right.

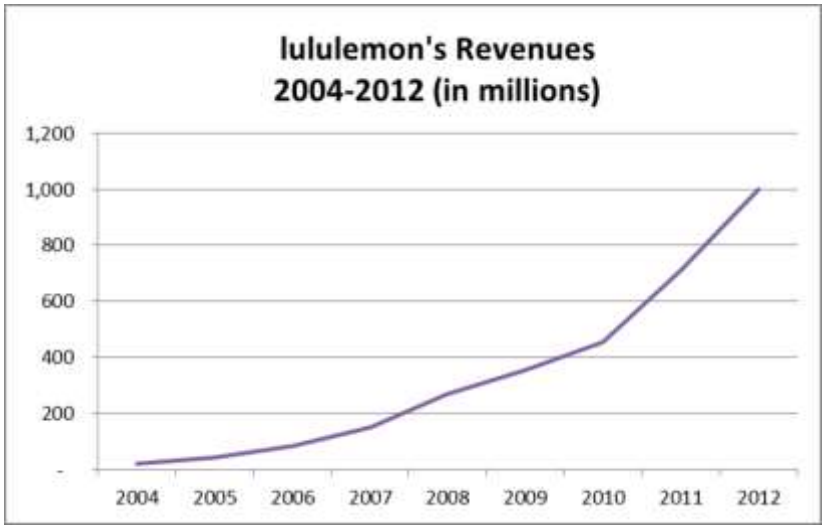
  Example:

  a. Whole Foods Market is the world's leading natural and organic foods supermarket. Sales growth in the past decade is average 16% annually.



  - The growth in sales of natural and organic foods is being driven by numerous factors, including: heightened awareness of the role that healthy eating plays in long-term wellness; a better-educated and wealthier populace whose median age is increasing each year; increasing consumer concern over the purity and safety of food; and environmental concerns.

b. lululemon athletica inc. is a Vancouver-based designer and retailer of yoga-inspired athletic apparel. Sales growth in the past 8 years has been average 65% annually!



4. Expectations

Expectations affect consumers' buying decisions.

a. Future Income

If people expect their incomes to rise, their demand for meals at expensive restaurants may increase now.

If the economy sours and people worry about their future job security, demand for new autos may fall now (e.g. 2008-2009).

b. Future Prices

If buyers expect future prices to rise, they will demand more today to take advantage of the current low prices.

5. Number of Buyers

- Suppose the number of buyers increases. Then, at each P, Q^d will increase. Demand curve shifts to the right.

Note:

❖ Change in demand:
A shift in the D curve occurs when a non-price determinant of demand changes (like income or # of buyers).

❖ Change in the quantity demanded:
A movement along a fixed D curve occurs when P changes.

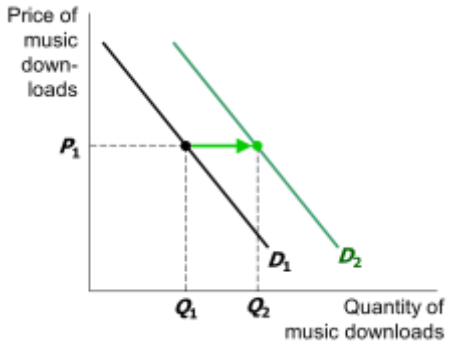
Example

Draw a demand curve for music downloads.
What happens to it in each of the following scenarios? Why?

A. The price of iPods falls

Music downloads and iPods are complements.

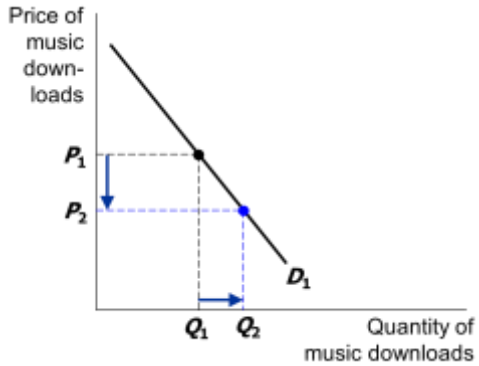
A fall in price of iPods shifts the demand curve for music downloads to the right.



B. The price of music downloads falls

The demand curve does not shift.

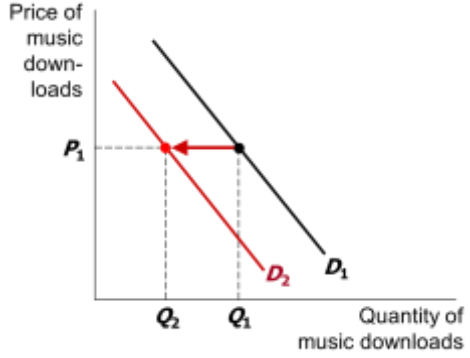
Move down along demand curve to a point with
lower P, higher Q.



C. The price of CDs falls

CDs and music downloads are substitutes.

A fall in price of CDs shifts demand for music downloads to the left.



III. The Demand Function

$$\boldsymbol{Q = f(p, p_s, p_c, Y, \dots)}$$

Q: Quantity of the good demanded
p: Price of the good
p_s: Price of a substitute
p_c: Price of a complement
Y: Income
Assume Q is decreasing in p, increasing in p_s, decreasing in p_c, increasing in Y.

Example: The demand function of beef is:
$Q = 100 - 10p + 20p_s - p_c + 2Y = (100 + 20p_s - p_c + 2Y) - 10p$
Question: Let $p_s = 3, p_c = 10, Y = 50$, draw the demand curve. Then change the value of $p_s, p_c,$ and Y, one variable a time, draw the demand curve.

Question: What if the government imposes a 12% consumption tax on beef? Write down the new demand function.

- The demand curve shows how the quantity of a good demanded depends on the price.

- According to the law of demand, as the price of a good falls, the quantity demanded rises. Therefore, the demand curve slopes downward.

- In addition to price, other determinants of how much consumers want to buy include:
  - Income
  - Prices of substitutes and complements
  - Tastes
  - Expectations, and
  - Number of buyers

  If one of these factors changes, the demand curve shifts.

IV. Summary