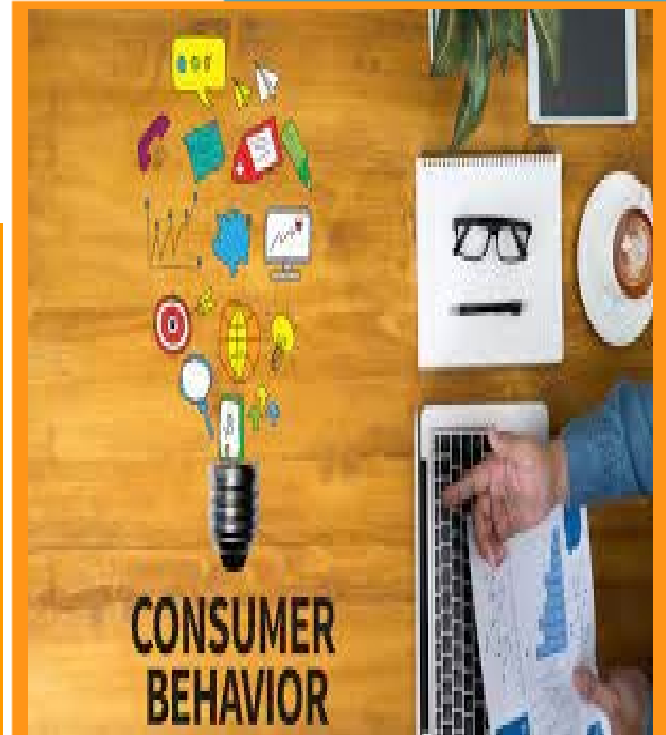


Chapter 3:

The consumer behaviour



Prepared by
Dr Myriam
ZORGUI

**I- Consumer Preferences,
Utility and Ranking**

**II- Price, Quantity and
Demand**

III- Elasticity

I-1- Consumer's Preferences and Ranking

I-1-1- Revealed Preference Theory

I-1-2- Basket of goods

I-1-3- Preference Assumptions

I-1-4- Ranking

I. 2 Utility Functions

I-3 Law of Diminishing Marginal Utility

I-3-1- Utility with one good

I-3-2- Utility With 2 or More Goods

I-4- Indifference Curves

I-5- The Indifference Maps

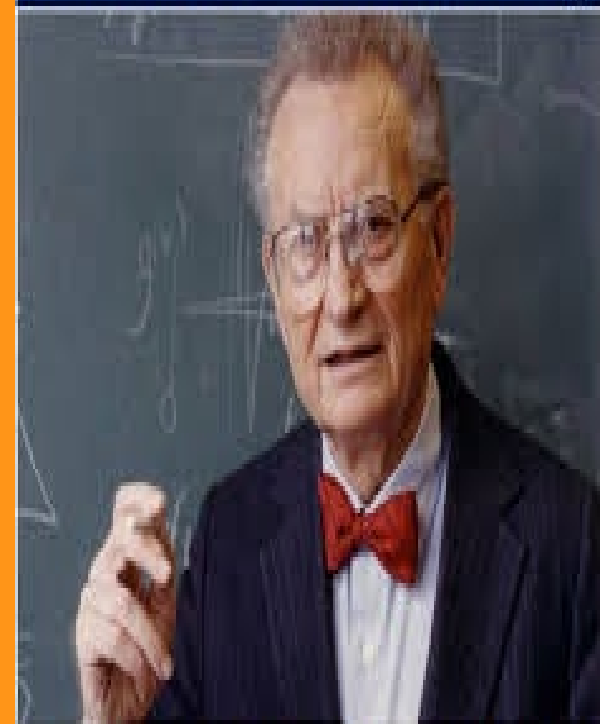
I-6- The Marginal Rates of Substitution

I-1-1- Revealed Preference Theory:

The Revealed Preference Theory in Economics, is a theory, introduced by the American Economist **Paul Samuelson** in 1938, and it holds that *consumers' preferences can be revealed by what they purchase under different circumstances, particularly under different income and price circumstances.*

- It's represented by a specific combination of goods and services.

Pioneer of Revealed Preference Theory



Paul Anthony Samuelson (1915- 2009)

I-1-2- Basket of goods:

- **The basket of goods** represents the value of a specific group of products and services.
- The basket includes a **variety of products from different categories** — food and beverages, clothing, housing, transportation, education, medical expenses, and other items.
- Each group of products has its own weight in the basket.



I-1-3- Preference Assumptions

❖ **Preferences are complete**

A consumer can always rank preferences:

a) A is preferred to B: $A > B$

b) B is preferred to A: $B > A$

c) A consumer is indifferent between A and B: $A \approx B$



❖ **Choices are transitive:** If

A is preferred to B: $A > B$

B is preferred to C: $B > C$

A is preferred to C:

$A > C$

❖ **More is better:**

A consumer always prefers having more of a good

I-1-4- Ranking

- **Ordinal Ranking**: baskets are ordered or compared to each other without any quantitative information or intensity of preference .

The **ordinal numbers** tell the order of how things are set, they **show the position or the rank of something**.

ie: I like dogs more than cats.

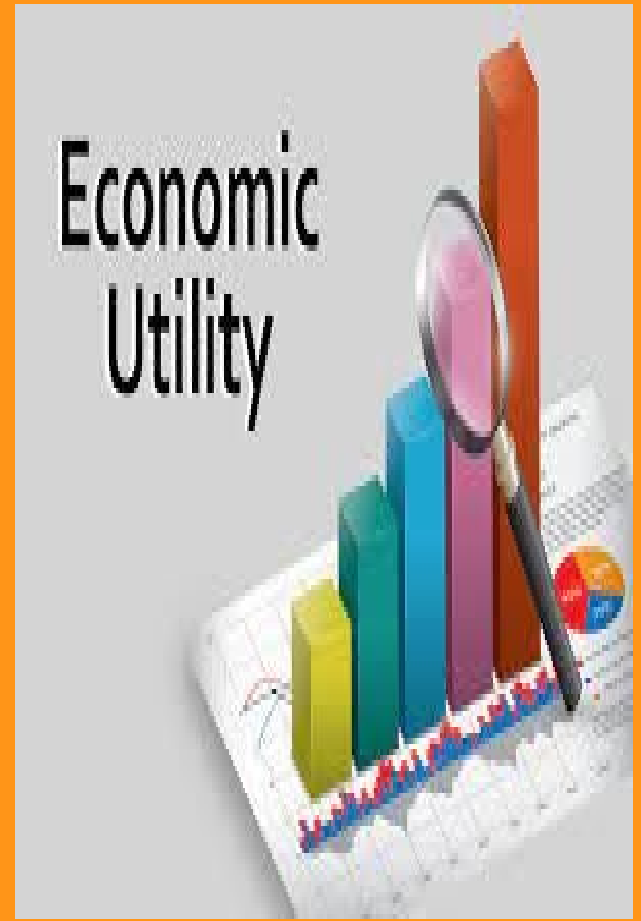
- **Cardinal Ranking**: baskets are quantitatively compared.

The **cardinal numbers** are **used for counting**.

ie: "I like dogs ten times more than cat

CARDINAL
to
ORDINAL

- **Utility** is the pleasure or satisfaction obtained from a good or service.
- **Utility**: a number that represents the level of satisfaction that the consumer derives from consuming a specific quantity of a good



I-2-1- The total utility:

Total Utility (TU) is the total amount of satisfaction that you get from consuming a product.

I-2-2- The marginal utility:

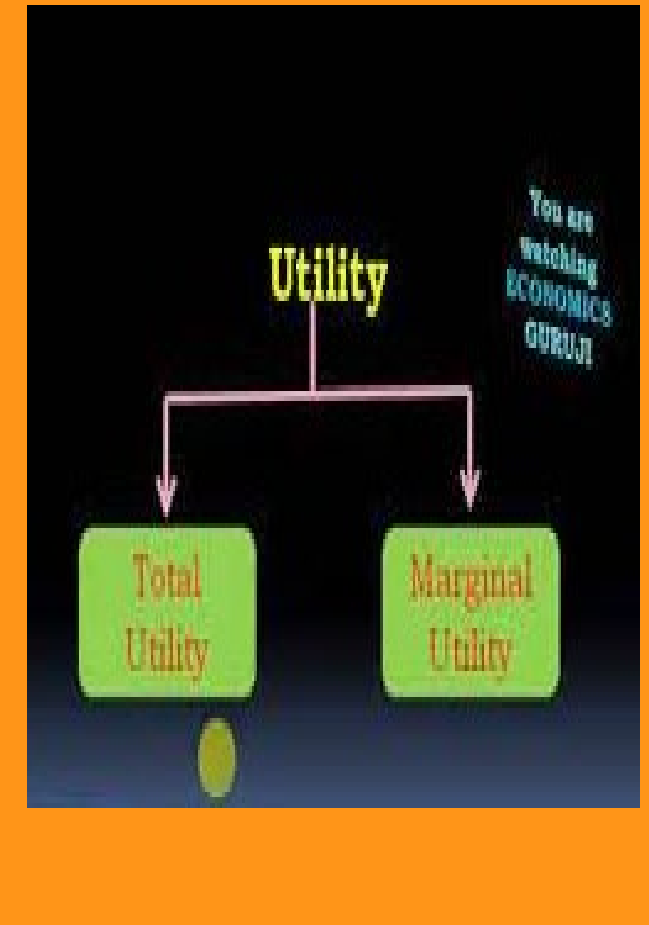
Marginal Utility (MU) is the change in total utility obtained by consuming one additional (marginal) unit of a good or service.

$$\text{Marginal utility} = \frac{\text{change in total utility}}{\text{change in quantity}}$$



- Example:

Tickets Bought	Total utility	Marginal utility
1	10	10
2	18	8
3	24	6
4	28	4
5	30	2
6	30	0
7	28	-2
8	18	-10



I-3 Law of Diminishing Marginal Utility -1-

I-3-1- Utility with one good

The marginal utility of a good declines as more of it is consumed in a given time period.

Burger 1

Eating the first burger gives the consumer a lot of *satisfaction*

(*utility*)



Satisfaction thermometer

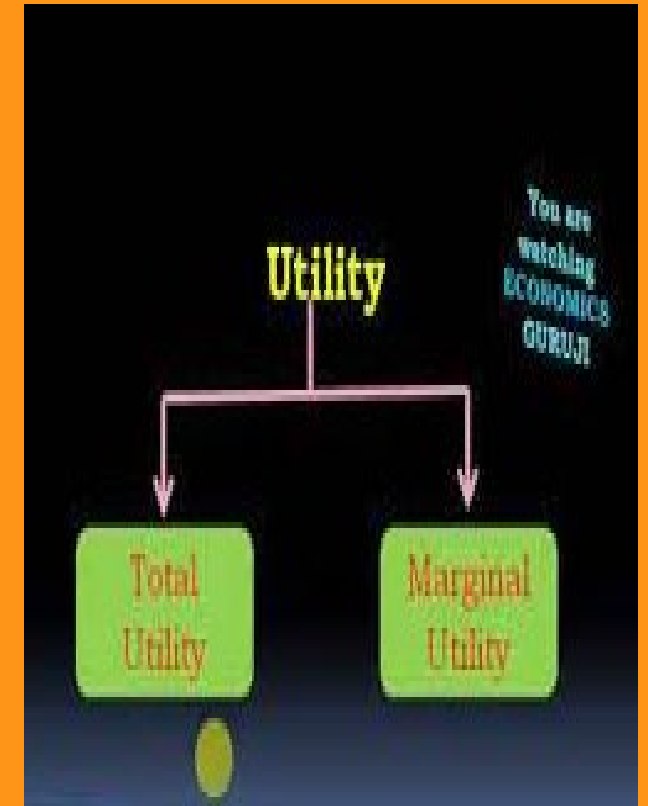
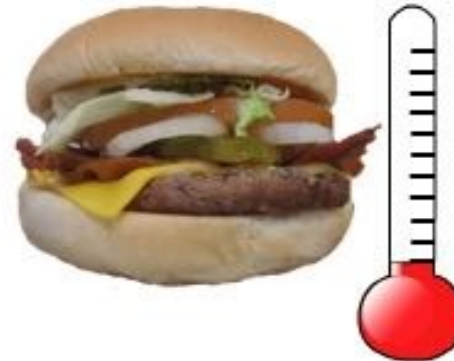
Burger 2

Eating a second burger will not give as much *extra satisfaction* as the first did (*marginal utility*)



Burger 3

Eating a third burger will give even *less extra satisfaction* than eating the second one (*diminishing marginal utility*)



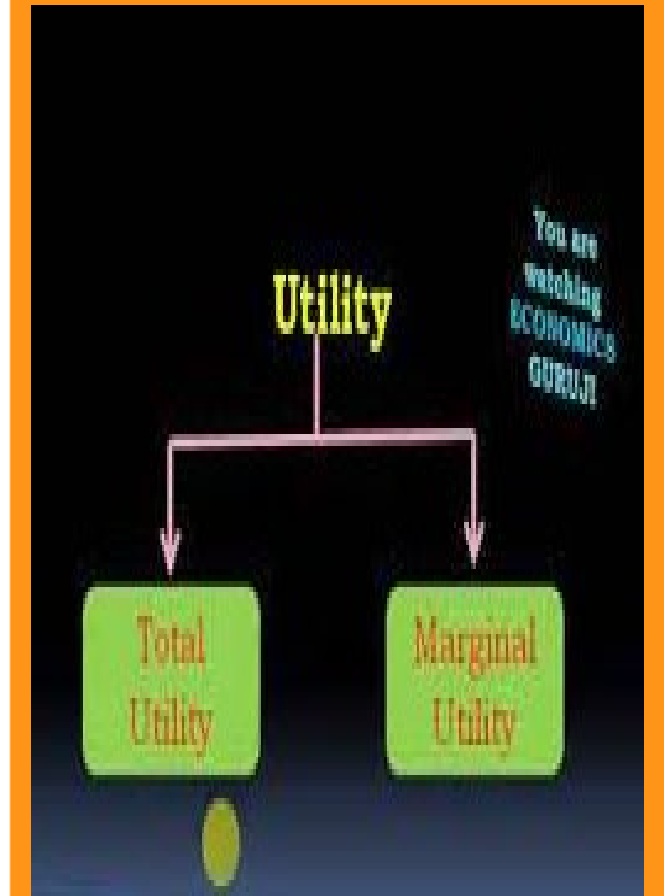
I-3-2- Utility With 2 or More Goods

- Utility and 1 good can be measured on a 2 dimensional graph,
- Utility and 2 goods must be measured on a 3 dimensional graph
- Here **Marginal Utility** uses the ceteris paribus assumption: how does utility change when 1 good changes, everything else held constant?



I-3 Law of Diminishing Marginal Utility -3-

- As long as the marginal utility is positive, the consumer receives additional satisfaction and total utility increases.
- Additional quantities of a good yield increasingly smaller increments of satisfaction.

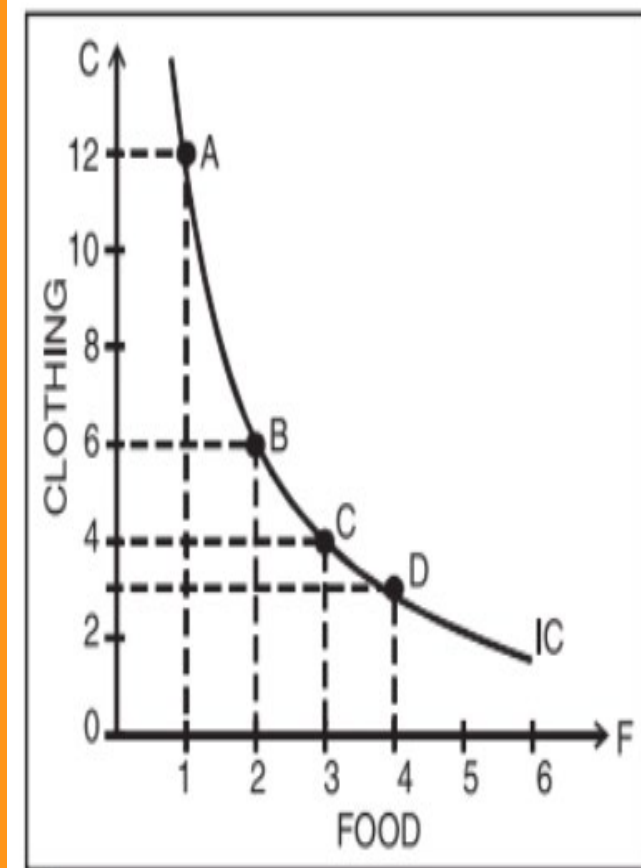


I-3 Law of Diminishing Marginal Utility -4-

- An absolute measure of utility is not possible because the perception of satisfaction differs among individuals.
- Diminishing marginal utility is a common experience.
- It is a sufficient basis for economic predictions of consumer behavior.

- 1 Positive Marginal Utility
- 2 Negative Marginal Utility
- 3 Zero Marginal Utility

- An **Indifference Curve** is a curve that represents **all the combinations of goods** that give **the same satisfaction to the consumer**.
- Since all the combinations give **the same amount of satisfaction**, the **consumer prefers them equally**. Hence the name indifference curve.
- **Indifference Curve**: points connected on a graph representing different quantities of two goods, points between which a consumer is indifferent
- **Indifference Curve** is the locus of various points showing different combinations of two goods providing equal utility to the consumer.

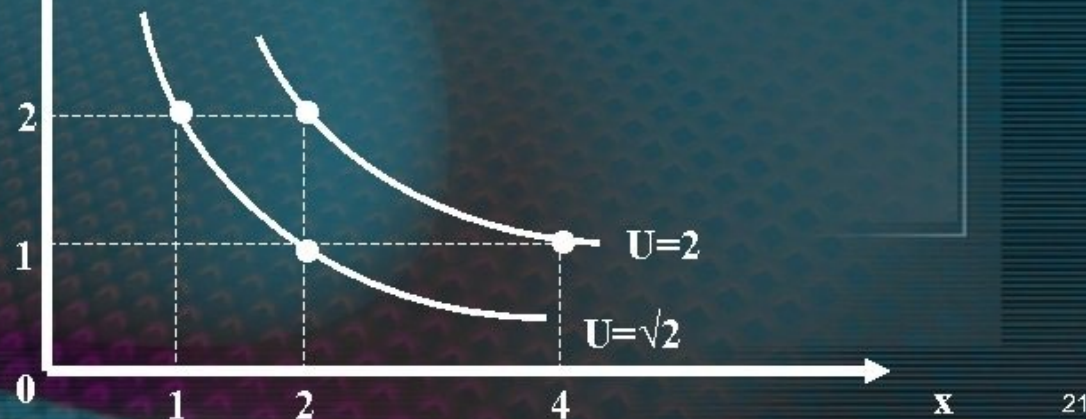


A Consumer's Indifference Curve

Example:

Indifference Curves

Consider the utility function $U=(xy)^{1/2}$.
 Each indifference curve below shows all the baskets of a given utility level.
 Consumers are indifferent between baskets along the same curve.

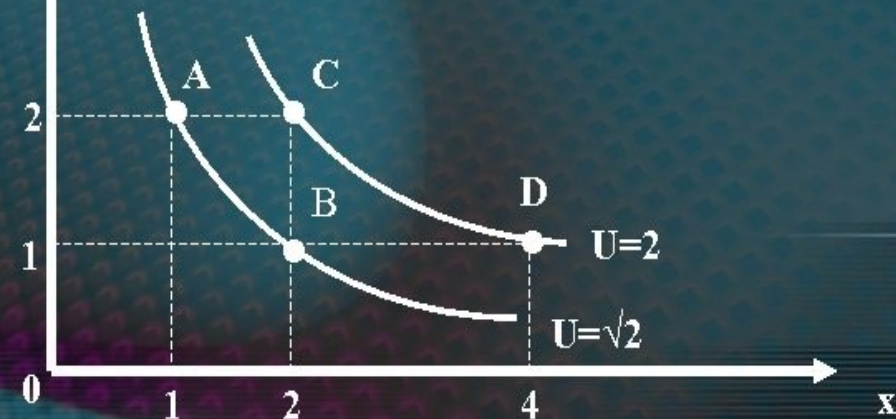


21

Indifference Curves

From the indifference curves, we know that: $A \approx B, C \approx D$

$C \succ A$ & $C \succ B$,
 $D \succ A$ & $D \succ B$



22

I-4-1- Properties of Indifference curves:

Completeness:

each basket lies on only one indifference curve

Transitivity:

Indifference Curves **do not cross**

Thin curves:

Indifference Curves are not “thick”

Negative Slope:

when a consumer likes both goods (MU_a and MU_b are positive), the indifference curve is downward sloping.

→ The consumer's **preferences** are **convex**.

What are the properties of indifference curve?

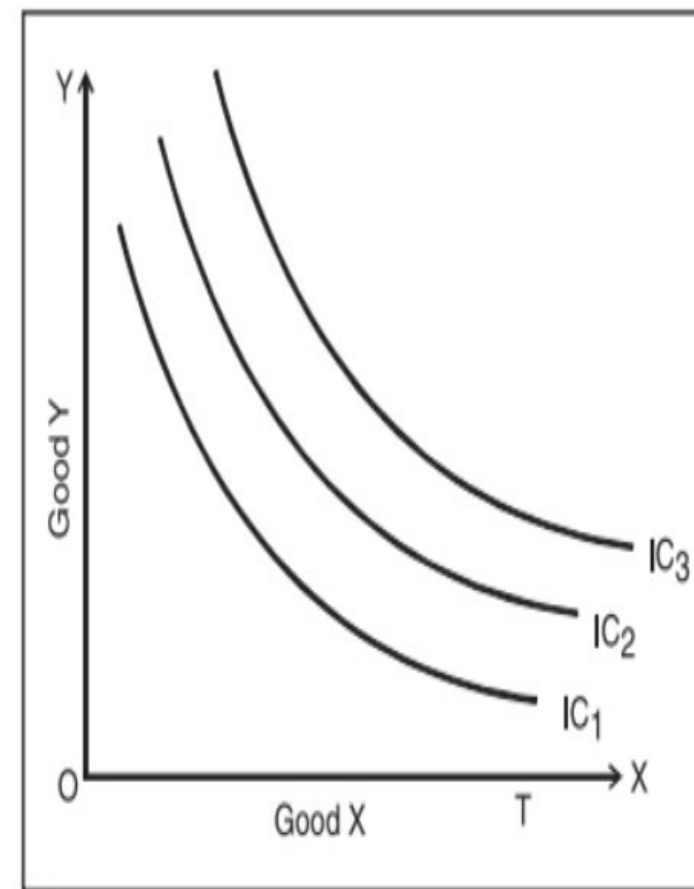


I-5- Indifference Maps

-1-

- An **Indifference Map** is a **set of Indifference Curves**.
- It depicts the complete picture of a consumer's preferences.
- We know that a **consumer is indifferent among the combinations lying on the same indifference curve**. However, it is important to note that **he prefers the combinations on the higher indifference curves to those on the lower ones**.
- This is because **a higher indifference curve implies a higher level of satisfaction**.

➔ **All combinations on IC1 offer the same satisfaction, but all combinations on IC2 give greater satisfaction than those on IC1.**

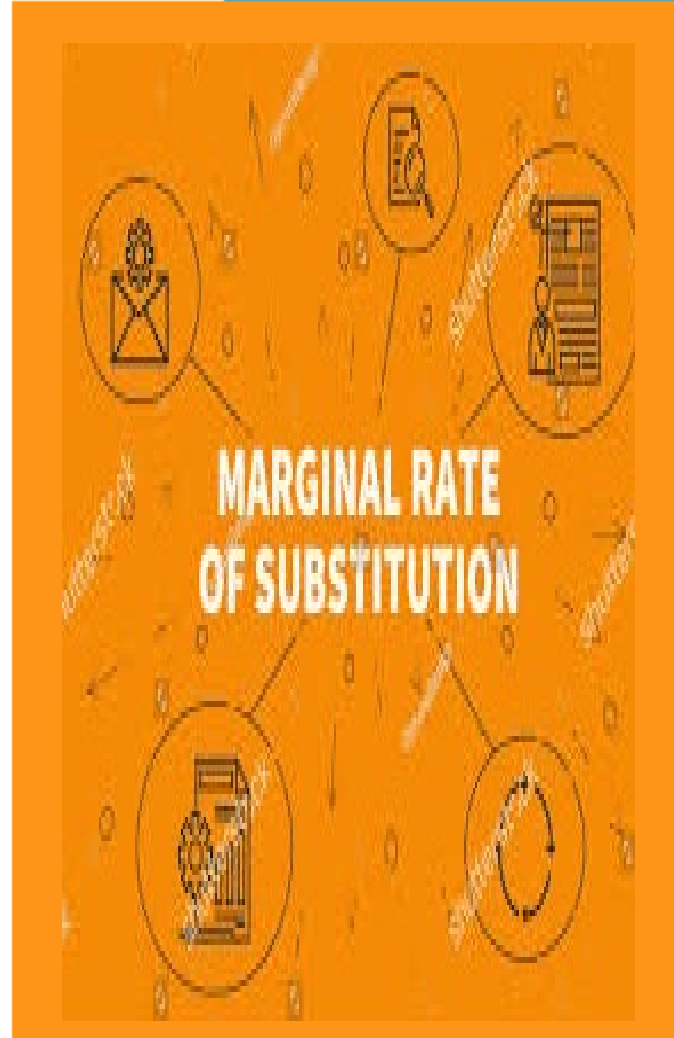


Indifference Map

I-6- The Marginal Rate of Substitution -1-

- **The Marginal Rate of Substitution (MRS)** is the change (loss) in one good needed to offset the change (gain) in another good,
- In this case, MRS is the trade-off (loss) of **y** for a small increase in **x**

$$|MRS_{xy}| = dy/dx = MU_x / MU_y$$

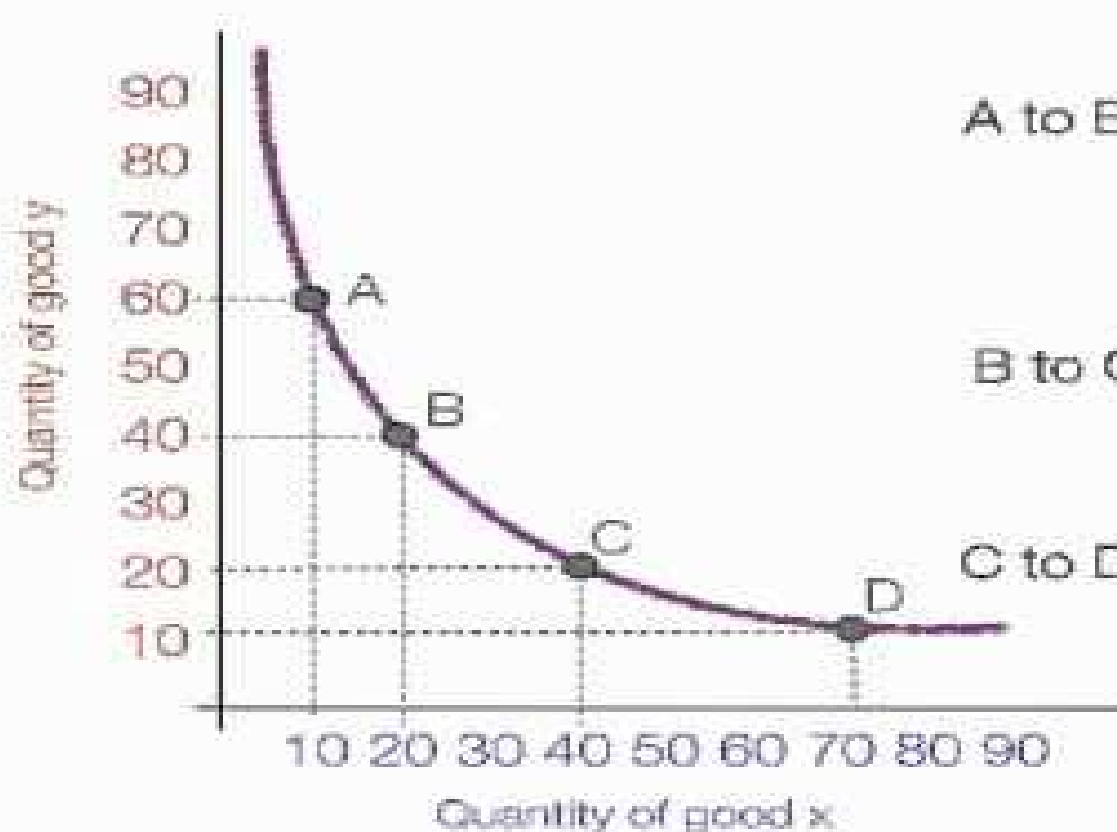


I-6- The Marginal Rate of Substitution -2-

Example:

Indifference Curves

Marginal Rate of Substitution



A to B

$$\frac{\Delta y}{\Delta x} = \frac{60 - 40}{10 - 20} = \frac{20}{-10} = -\frac{2}{1}$$

B to C

$$\frac{\Delta y}{\Delta x} = \frac{40 - 20}{20 - 40} = \frac{20}{-20} = -\frac{1}{1}$$

C to D

$$\frac{\Delta y}{\Delta x} = \frac{20 - 10}{40 - 70} = \frac{10}{-30} = -\frac{1}{3}$$

I-6- The Marginal Rate of Substitution -2-

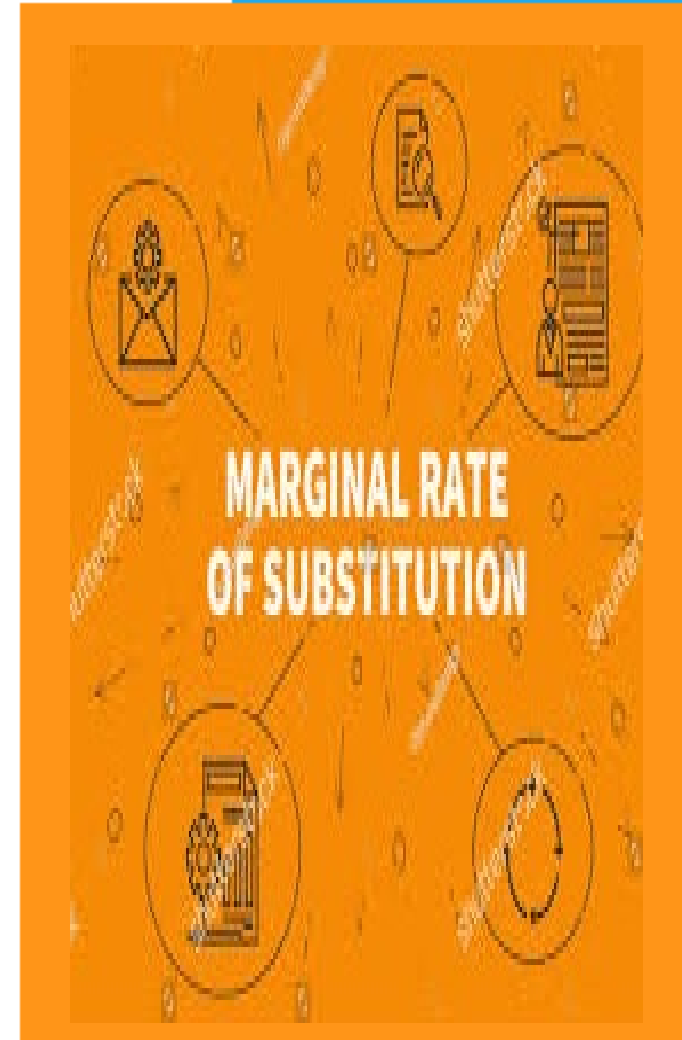
The Marginal Rate of Substitution of x for y

$$MRS_{xy} = \Delta Y / \Delta X$$

x is gained, so how much y must be given up
alternately,

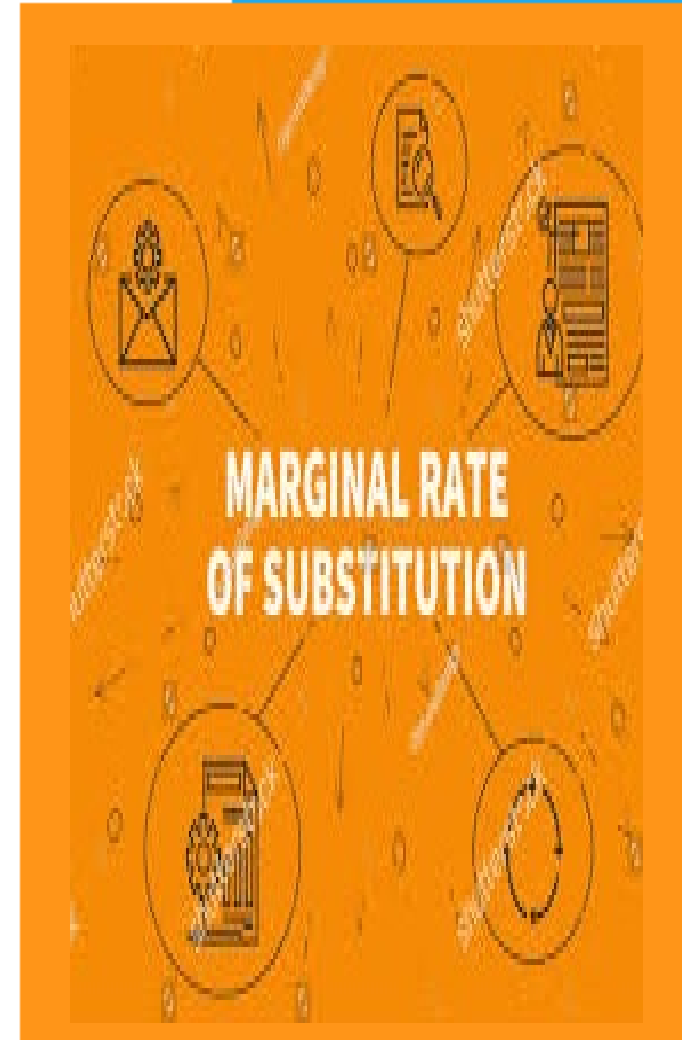
if x is given up, how much y can we get?

- The MRS is equal to **the SLOPE** of the indifference curve (slope of the tangent to the indifference curve).



I-6- The Marginal Rate of Substitution -3-

- All along an individual's indifference curve, an individual consumes different baskets of goods while remaining at the same utility
- The individual is willing **to SUBSTITUTE** (to use something or someone instead of another thing) one good for another.
- An individual must be compensated by an increase in one good if the other good decreases



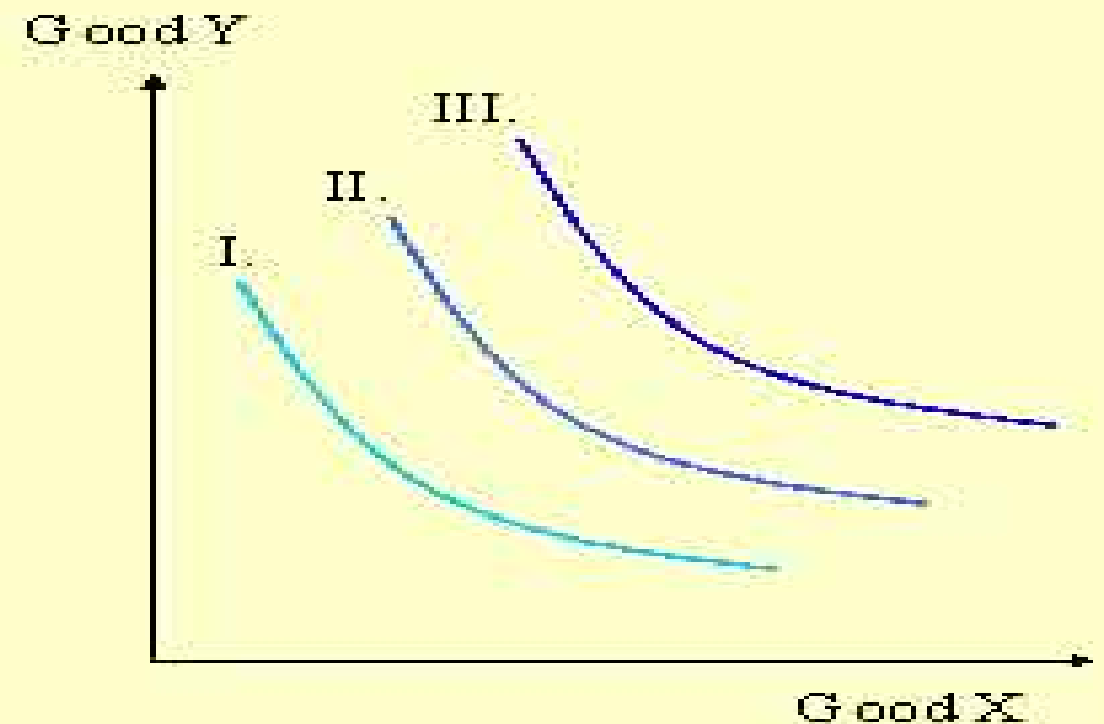
Indifference Curve Analysis

Indifference Curve

- A curve that defines the combinations of 2 or more goods that give a consumer the same level of satisfaction.

Marginal Rate of Substitution

- The rate at which a consumer is willing to substitute one good for another and stay at the same satisfaction level.



I-6- The Marginal Rate of Substitution -5-

Combination	Oranges' quantities	Apples' quantities	Substitution
1	20	1	-----
2	15	2	$\frac{20-15}{2-1} = \frac{5}{1} = 5$
3	11	3	$\frac{15-11}{3-2} = \frac{4}{1} = 4$
4	8	4	$\frac{11-8}{4-3} = \frac{3}{1} = 3$
5	6	5	$\frac{8-6}{5-4} = \frac{2}{1} = 2$

EXAMPLE

II- Price, Quantity and Demand

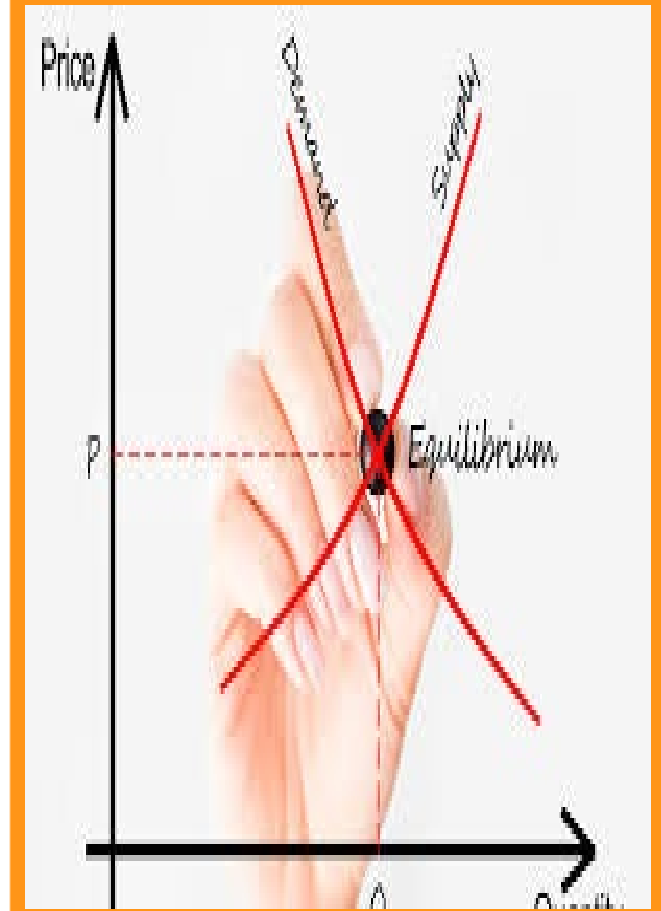
II-1- Price and Quantity

II-2- Law of Law of Demand

II-3- Assumptions of Law of Demand

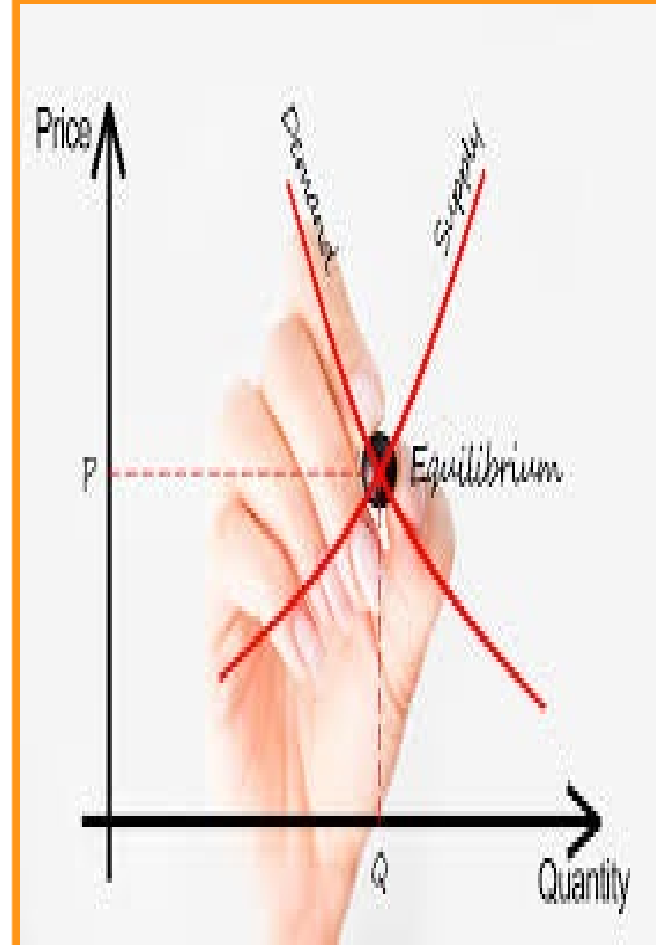
II-4- Demand Curve

II-5- Changes in Income



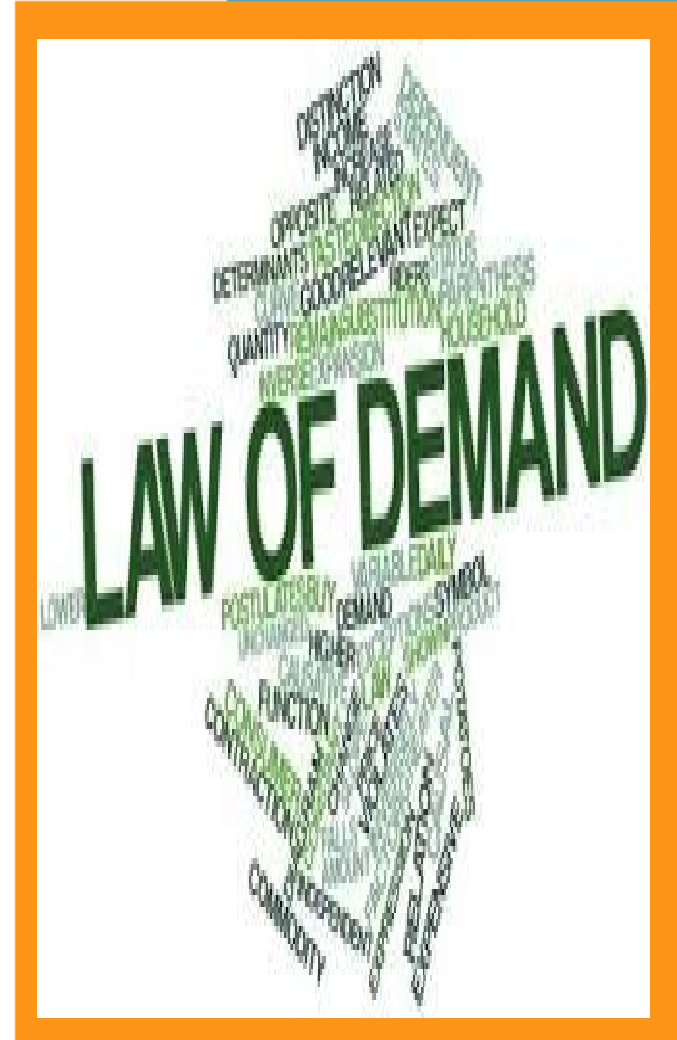
II- 1- Price and Quantity

- Many forces determine how much we are willing to buy.
- Economists focus on the relationship between **price** and **quantity** rather than trying to explain all the forces at once.
- This is the *ceteris paribus* (all other things equal) assumption.



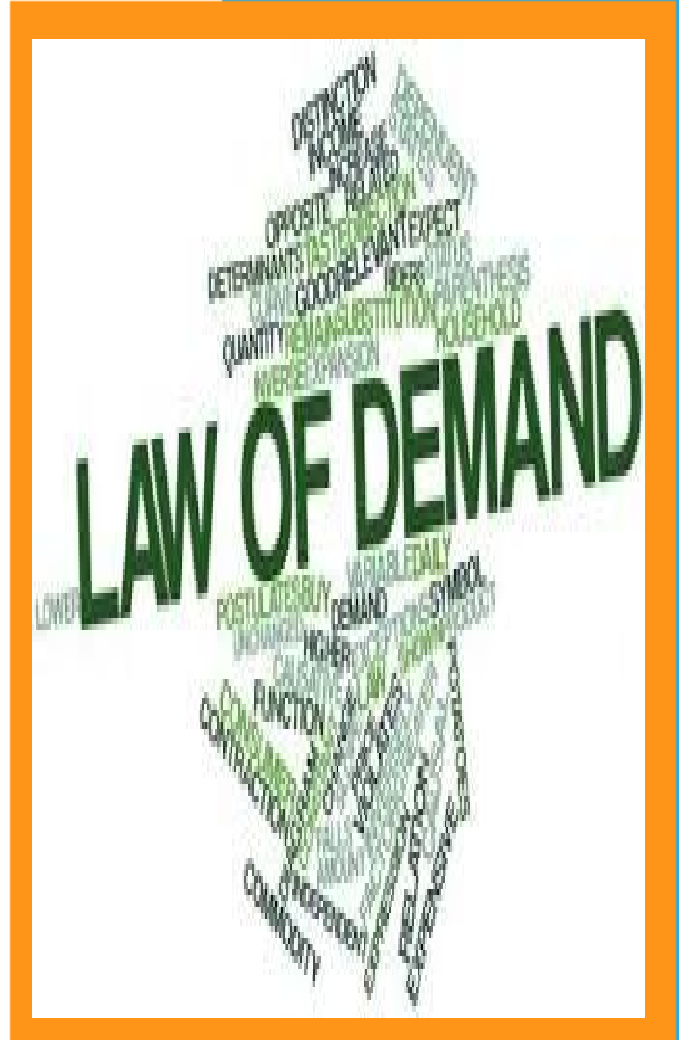
II-2- Law of Demand

- The concepts of **marginal utility** and *ceteris paribus* explain **the downward slope of the demand curve**.
- With **given income**, **tastes**, **expectations**, and **prices of other goods and services**, people are willing to buy additional quantities of a good only if its price falls.



II-2- Law of Demand

- The higher the marginal utility, the more you are willing to pay.
- Diminishing marginal utility explains why price must decrease in order for you to continue to buy a good or service.
- According to the **law of demand**, the quantity of a good demanded in a given time period increases as its price falls, *ceteris paribus*.



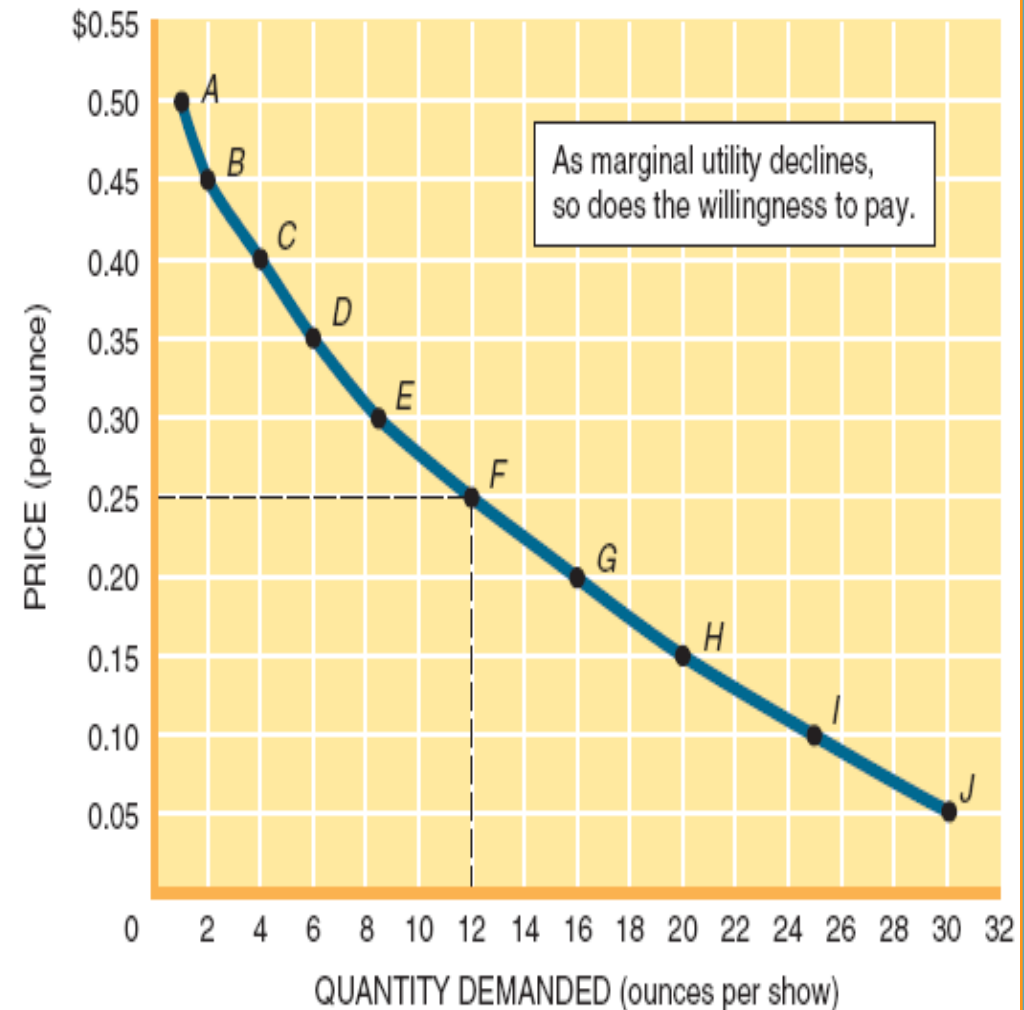
II-3- Assumptions of Law of Demand

Basic Assumptions of Law of Demand

1. No Change in the Income.
2. No Change in Size and Composition of Population.
3. No Change in Prices of Related Goods.
4. No Change in Consumer's Taste, Preference, etc.
5. No Expectation of a Price Change in Future.
6. No Change in the Climatic Conditions.

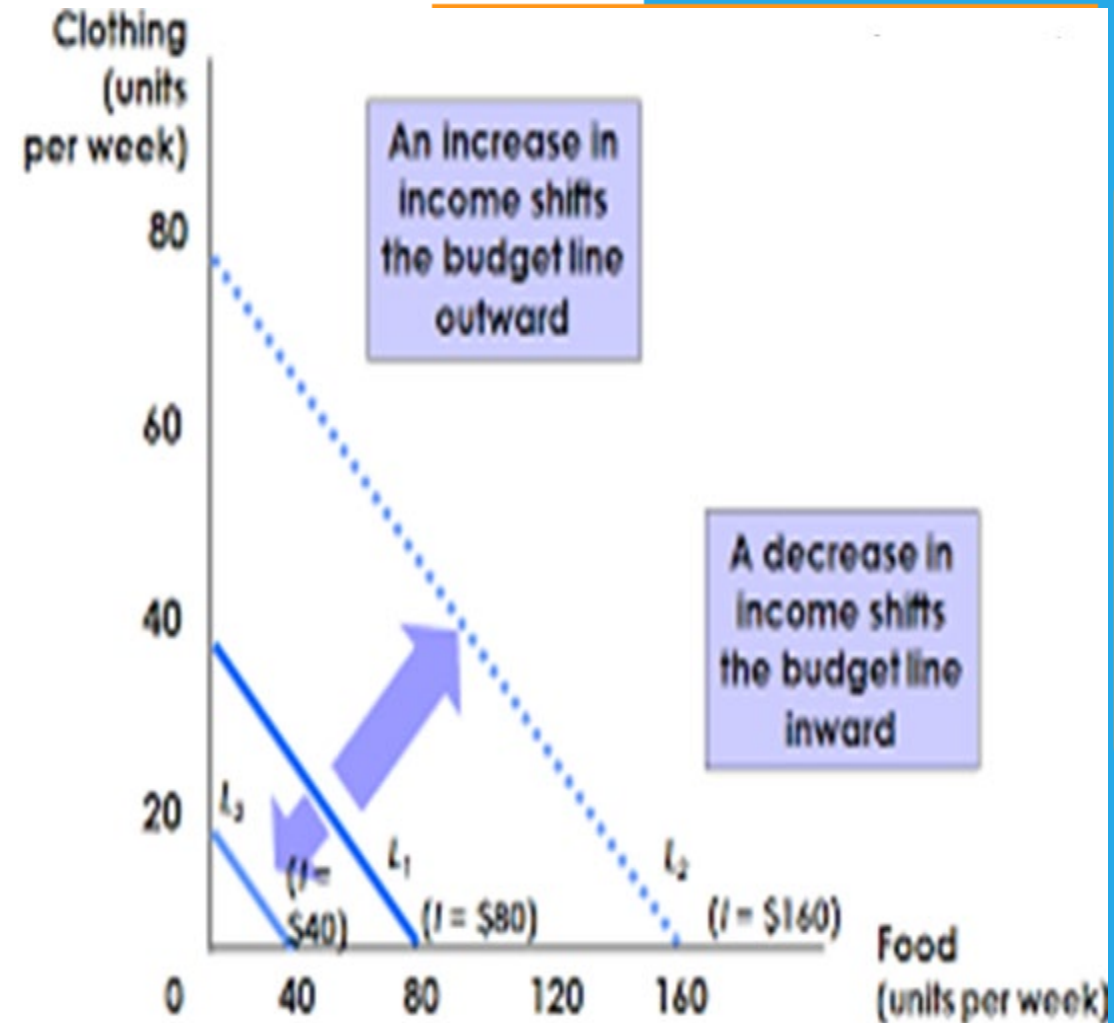
II-4- Demand Curve

- The **Demand curve** represents the quantities of a good a consumer is willing and able to buy at alternative prices in a given time period, ceteris paribus.



II-5- Changes in Income

- **Income** is a determinant of demand.
- We illustrate **income changes** with **shifts of the demand curve**.



III- Elasticity

III-1- Price Elasticity

III-2- Elastic versus Inelastic Demand

III-2-1- Elastic Demand

III-2-2- Inelastic Demand

III-2-3- Unitary Elastic Demand

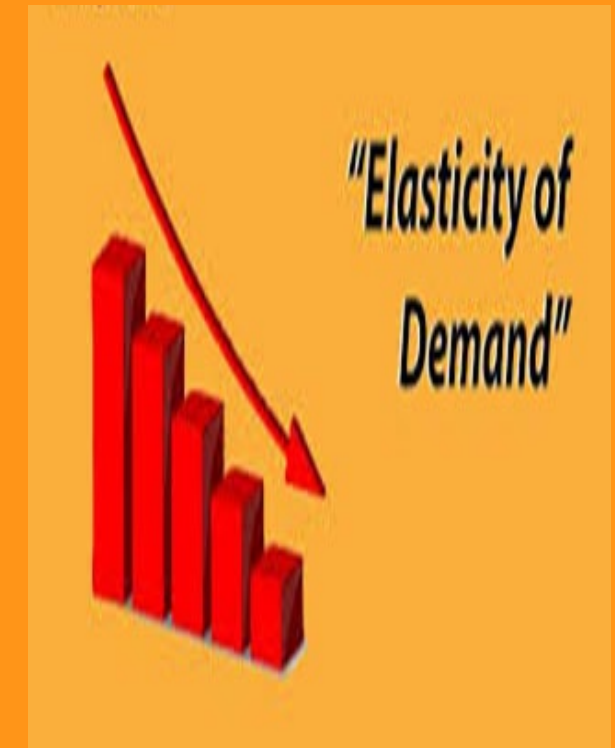
elasticity

III- Elasticity

III-1- Price Elasticity of Demand

- The response of consumers to a change in price is measured by **the price elasticity of demand**.
- **The price elasticity of demand** is the percentage change in quantity demanded divided by the percentage change in price.

$$\text{Price elasticity (E)} = \frac{\text{percentage change in quantity demanded}}{\text{percentage change in price}}$$



III- Elasticity

- The price of popcorn goes up 20% and the quantity demanded goes down 10%.
- The price elasticity of demand is:

$$(E) = \frac{\text{percentage change in quantity demanded}}{\text{percentage change in price}} = \frac{-10\%}{20\%} = -0.5$$

EXAMPLE

III- Elasticity

III-2- Elastic versus Inelastic Demand

- Demand can be elastic, inelastic, or unitary elastic

III-2-1- Elastic Demand: Consumer response is large relative to the change in price.

III-2-2- Inelastic Demand: Demand is inelastic if the absolute value of E is less than 1.

In this case, consumers are not very responsive to price changes.



III- Elasticity

III-2-3- Unitary Elastic Demand:

Demand is **unitary elastic** if the absolute value of **E equals 1**.

- The percentage change in quantity demanded is *equal* to the percentage change in price.

To know more about Elasticity, you can watch this video:



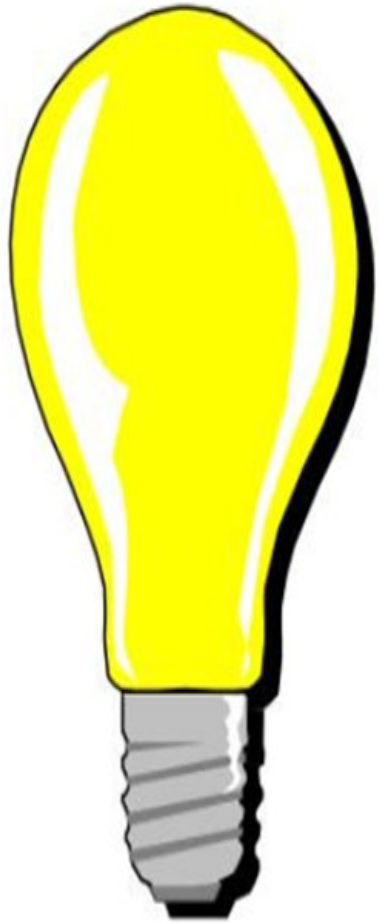
To know more about Elasticity, you can watch this video:

<https://study.com/learn/lesson/price-elasticity-demand-overview-formula.html>



SUMMARY

In Summary



- ✓ Consumers rank preferences based upon utility or the *satisfaction* derived from consumption
- ✓ A *budget constraint* limits the amount we can buy in a particular period
- ✓ Price is therefore important

RATIONALITY

ORDINAL UTILITY

TRANSITIVITY AND
UNIFORMITY OF CHOICE

NON-SATIETY

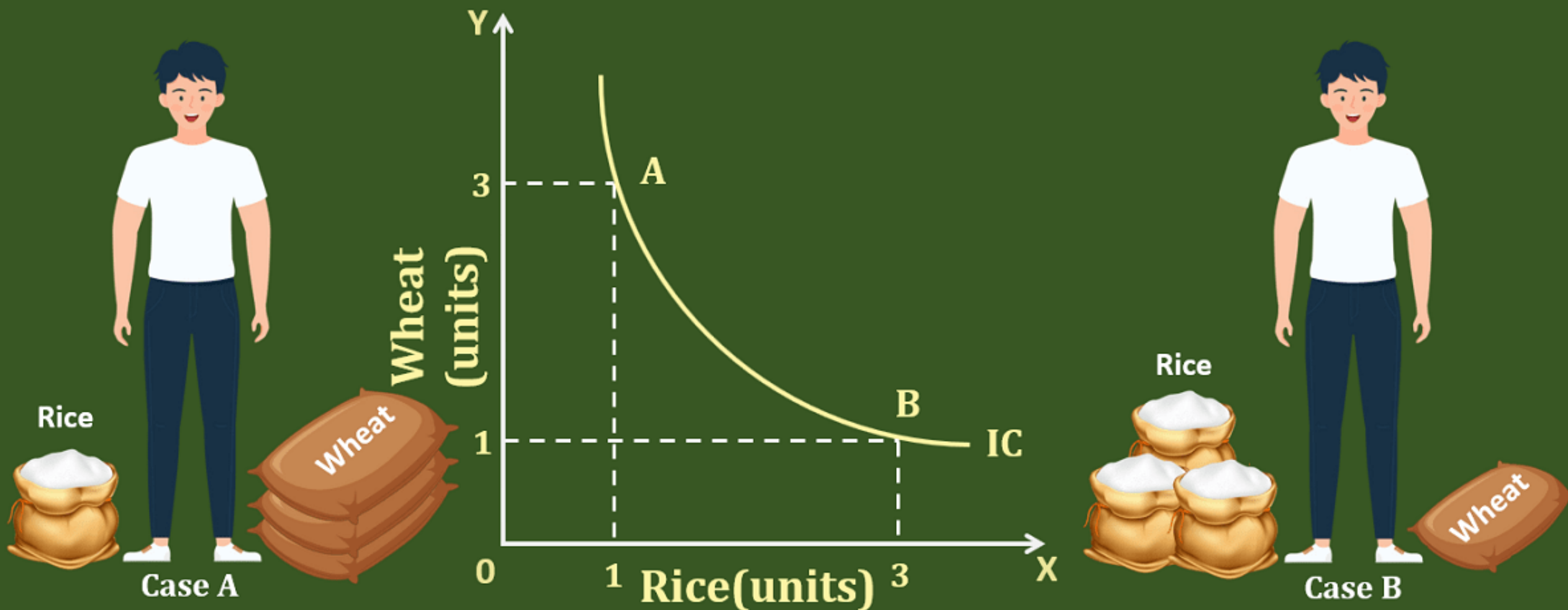
DIMINISHING MARGINAL
RATE OF SUBSTITUTION

ASSUMPTIONS
OF ORDINAL
UTILITY

Indifference Curve - Meaning and Properties

It is a graph showing the combinations of two goods that give the consumer the same level of satisfaction and utility, making him indifferent.

Tutor's Tips



INDIFFERENCE CURVES

INDIFFERENCE SCHEDULE

Combination	Apples	Oranges
A	1	22
B	2	14
C	3	10
D	4	8
E	5	7



Properties of Indifference Curve

Convex to the Origin

Negative Slope

Directly Proportional Level of Satisfaction

Never Intersects Each Other

Asymptotic to the Axes

Law of Demand

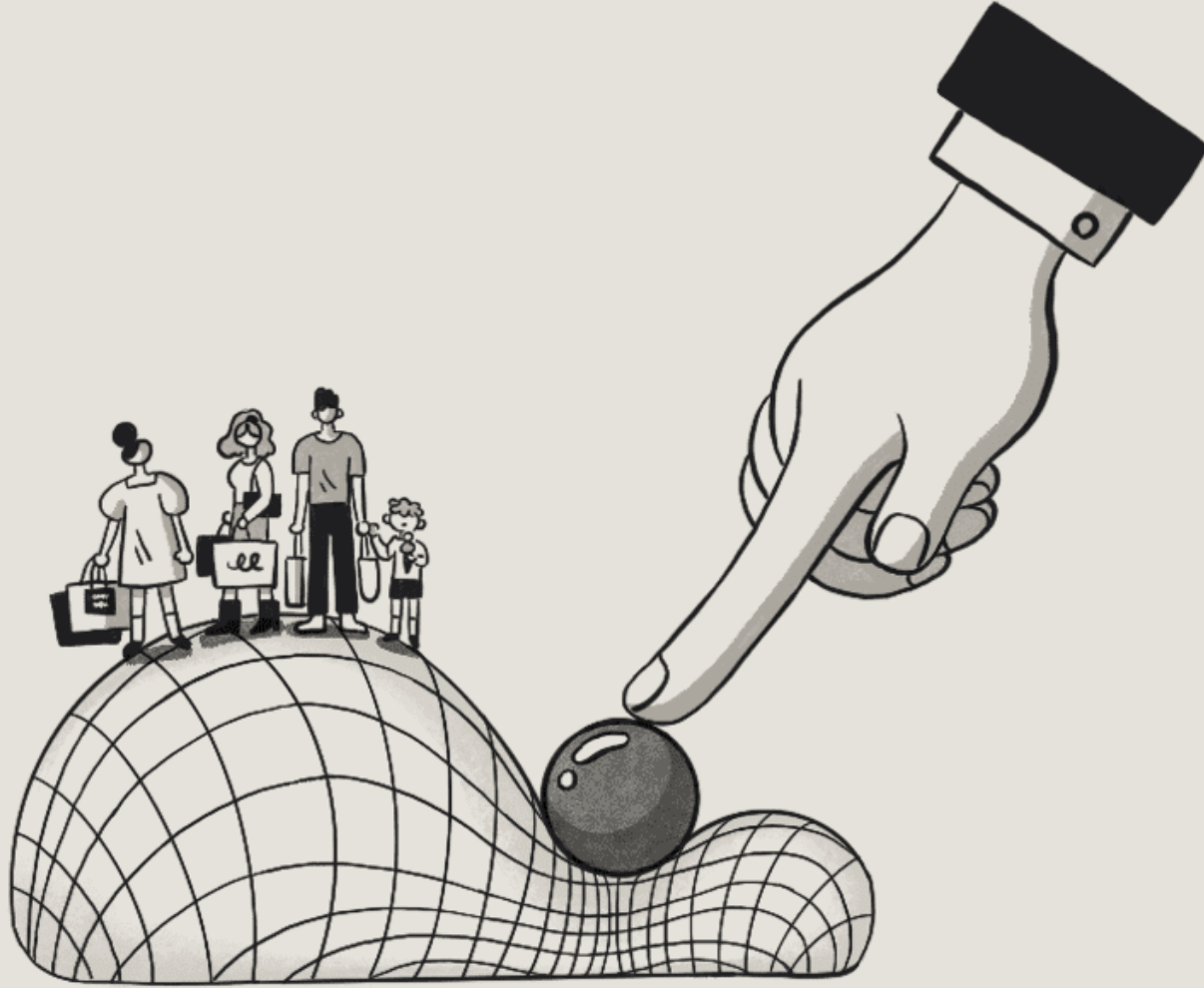
When the
price goes
up...

...the
quantity
demanded
goes down.

NOTE: *The
relationship
between
price and
quantity is
inverse.*

When the
price goes
down...

...the
quantity
demanded
goes up.



Elasticity

[i-,lə-'sti-sə-tē]

A measure of a variable's sensitivity to a change in another variable, most commonly referring to demand as affected by other factors.

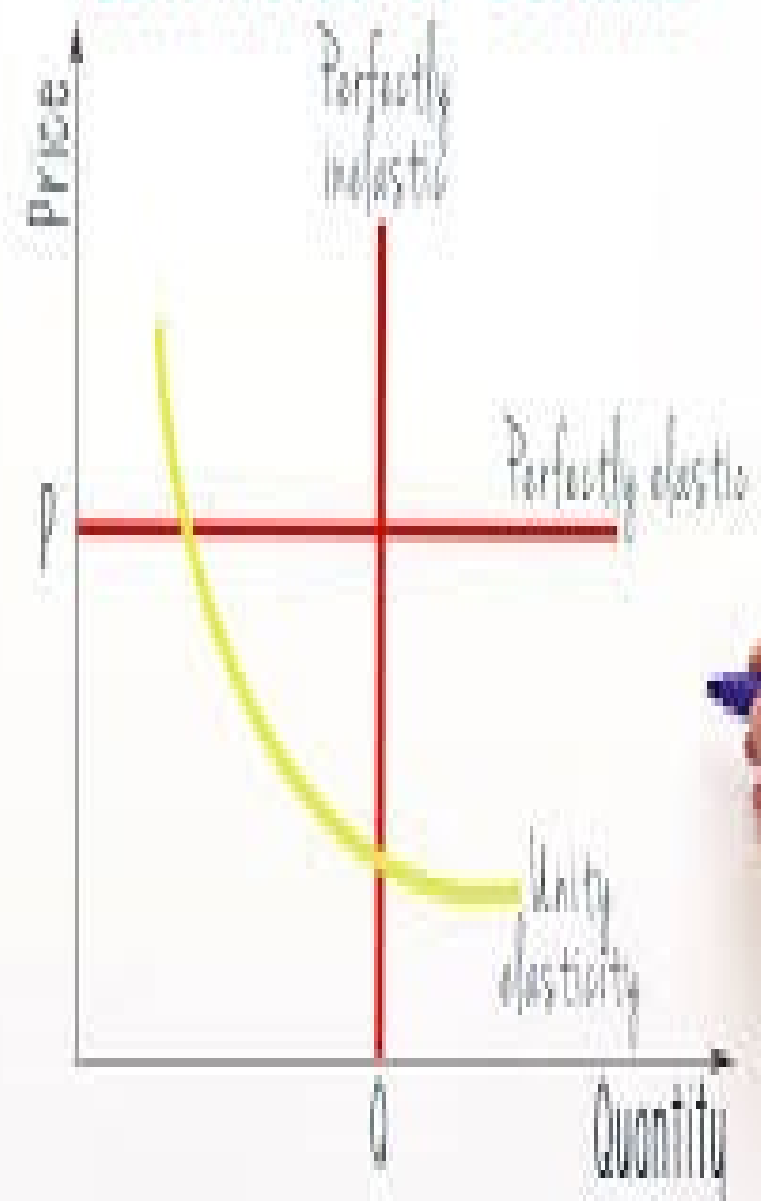
TYPES OF ELASTICITY OF DEMAND

PRICE ELASTICITY OF DEMAND

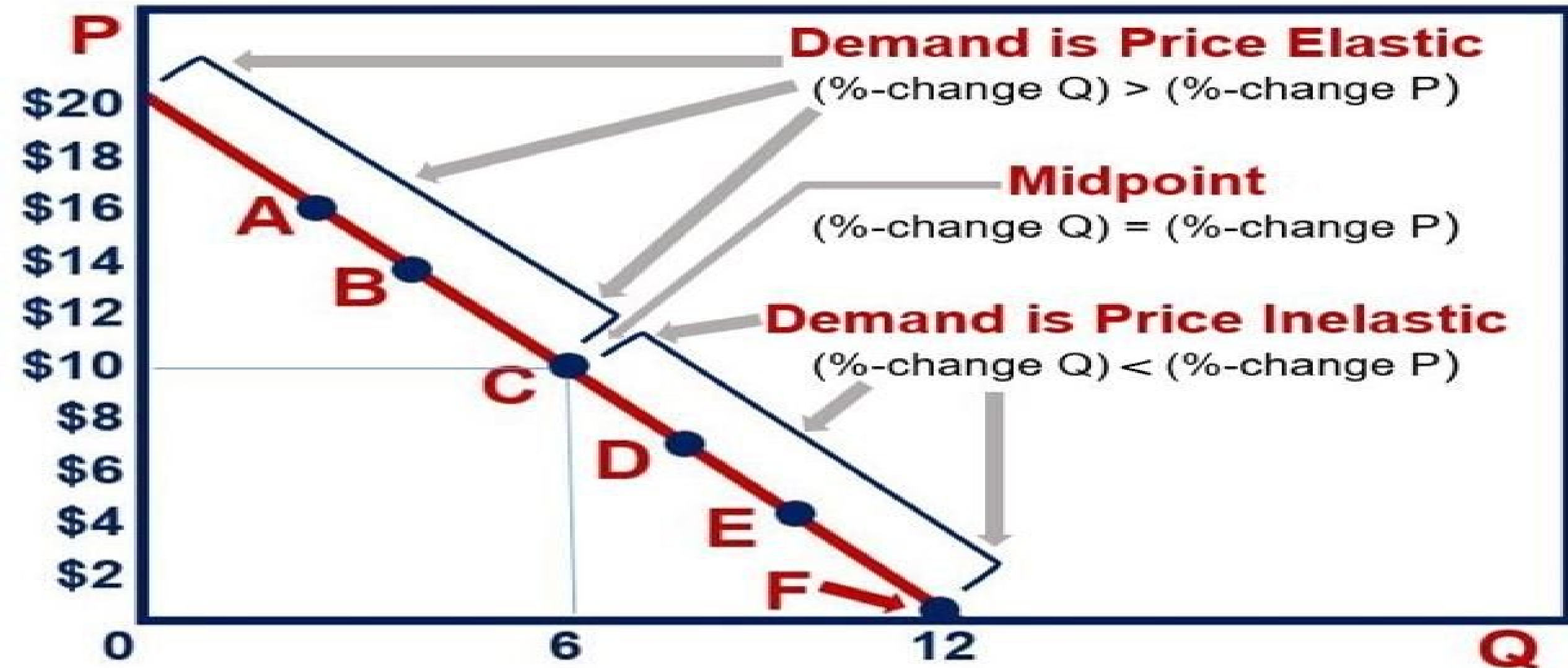
INCOME ELASTICITY OF DEMAND

CROSS-ELASTICITY OF DEMAND

ELASTICITY OF DEMAND



Price Elasticity



A wooden sign with three horizontal sections. The top section is orange and contains the text 'SEE YOU' in large, white, sans-serif capital letters. The middle section is a lighter orange and contains the text 'next week' in smaller, white, lowercase sans-serif letters. The bottom section is a dark brown and contains the text 'Have a Great Week!' in white, lowercase sans-serif letters. The sign is set against a background of soft-focus autumn leaves in shades of orange, red, and yellow.

SEE YOU

next week

Have a Great Week!