

Lesson-I.

THEORY OF DEMAND

→ Meaning of Demand.

Wish, want, desire & Demand are different demand. Wish/want/desire + willingness + Purchasing power (financial capacity) (particular product at a particular period of time)

- Demand is a Qualitative Concept & flow Concept

- DD Curve / Demand is called as Average revenue (AR)

→ Factors or Determinants of Demand.

1. Price $\rightarrow P \uparrow QD \downarrow, P \downarrow QD \uparrow$ Inverse or Negative relation
2. Income $\rightarrow Y \uparrow QD \uparrow, Y \downarrow QD \downarrow$ Direct or positive relation
3. Taste & preference $\rightarrow$ Person to Person, place to place, time to time, Situation to Situation.
4. Substitutes (or) $\rightarrow P(\text{coffee}) \downarrow QD(\text{tea}) \downarrow$ Positive relation
5. Demonstration effect / Band wagon effect $\rightarrow QD \uparrow$
6. Snob effect $\rightarrow$ Veblen $\rightarrow QD \uparrow, QD \downarrow$
7. Complementary goods (and) Price (car) $\uparrow QD(\text{petrol}) \downarrow$ -ve relation
8. Credit facilities $\rightarrow C \uparrow QD \uparrow$ +ve relation
9. weather Conditions $\rightarrow$ Summer (drinks $\uparrow$), Rainy (umbrella $\uparrow$)
10. Age of population $\rightarrow$ Infant, young, old age.
11. Technology $\rightarrow QD(\text{landphones}) \downarrow$ because of Smart phones
12. Government restrictions $\rightarrow QD \downarrow$
13. Size of population $\rightarrow$ Size $\uparrow QD \uparrow$ (or) Size $\downarrow QD \downarrow$
14. Disposable Income $\rightarrow$ Personal Income - Taxes.

$$DI = \text{Consumption} + \text{Savings.}$$

→ Law of Demand +

Other things remainings constant. Except price
[CETERIS PARIBUS] $P \uparrow QD \downarrow, P \downarrow QD \uparrow$

Law of Demand $\rightarrow$ Price of good & QD of good.

→ Demand Function:-

Mathematical relationship between QD & factors is called as demand function

$$QD_x = f\{P_x, Y, T \& P, P_y, D, S, CG, CF, W, A, T, G, AI, SP\}$$

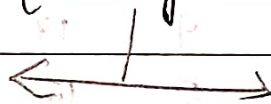
→ Demand Schedule and Curve:-

Tabular presentation which represents relation between price & QD.

→ Tabular presentation of data which explains the relationship between price & quantity demanded is called as "Demand Schedule". price increases, demand decreases. therefore price & quantity demanded are inversely proportional to each other.

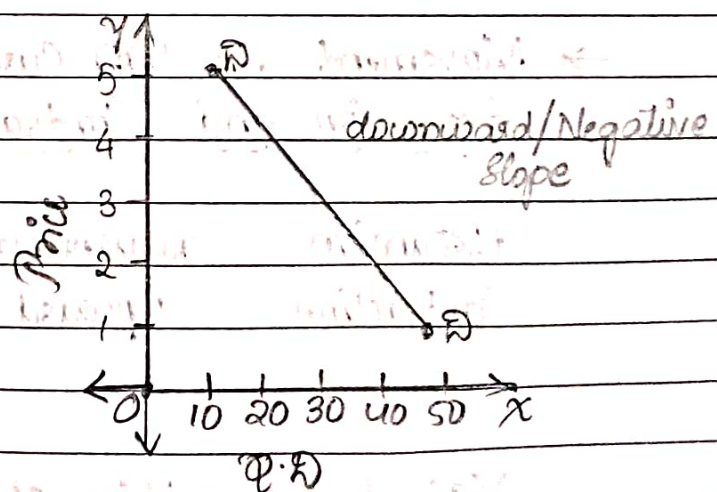
Types of Quantity demanded.

Individual demand



Market demand
(Total demand).

Price of good	QD of good
1	50
2	35
3	27
4	25
5	17

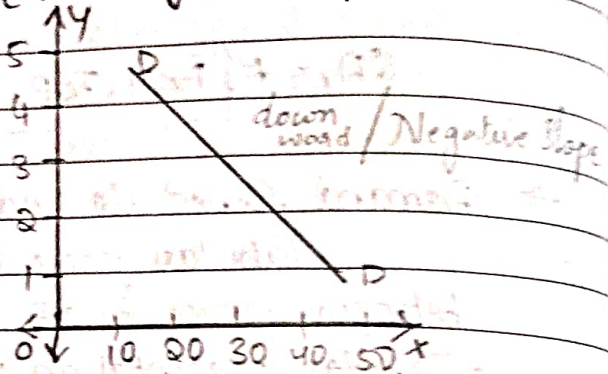


P ↑ Q ↓

→ Individual Demand:-

Demand by One Single person/Consumer is called as Individual demand (QD in kgs)

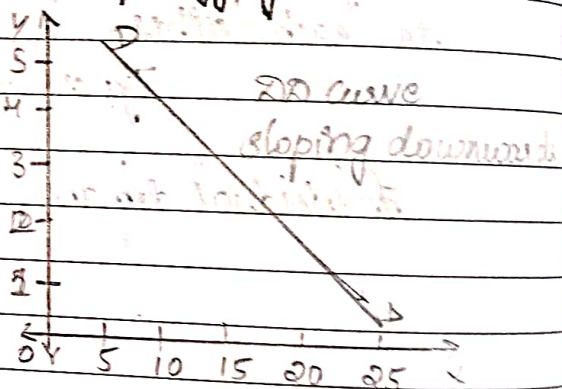
Price in ₹s	QD in kgs
1	50
2	25
3	27
4	25
5	17



→ Market Demand / Total Demand:-

Summation of demand by all Individuals/Consumers is called as Market/Total/Aggregate demand

Price	Quantity demanded			
	Mr. X	Mr. Y	Mr. Z	Mr. XYZ
1	6	8	10	24
2	4	6	9	19
3	3	4	5	12
4	2	3	4	9
5	1	2	1	4

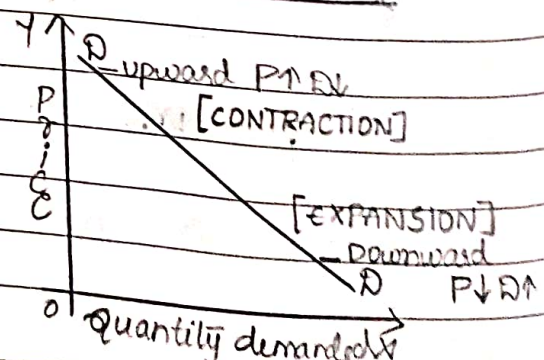


→ Movement in DD Curve
Expansion and Contraction of Demand

Expansion	Downward	more QD	Price ↓
Contraction	upward	less QD	Price ↑

Main factor → Price of Same good

Constant factor → All other factors

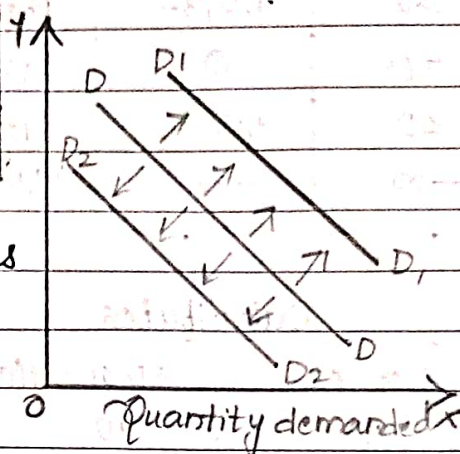


→ Shift in DD Curve

Increase in Demand, Decrease in Demand.

Increase	Rightward	$D_1 D_1$
decrease	leftward	$D_2 D_2$

Main factor → all other 13 factors
Constant factor → Price.



CROSS ELASTICITY OF DEMAND.

→ change in Quantity Demanded.

Responsive Change in Quantity demanded for a responsive change in price of other goods is called as Cross elasticity

$\frac{\text{Responsive change in QD of good X}}{\text{responsive change in price of good Y}} = \text{Cross Elasticity}$

$$\frac{\Delta QD_x}{\Delta P_y} = CE$$

$$CE = \frac{\frac{\text{Original } QD_x}{\text{New } QD_x}}{\frac{\text{Original } P_y}{\text{New } P_y}} \Rightarrow \frac{\text{Original } QD_x}{\text{New } QD_x} \times \frac{\text{New Price } y}{\text{Original Price } y}$$

Example:

Price of Tea ₹3 increased to ₹10, QD for coffee is 5 units increased to 8 units.

	₹ of Tea	QD of coffee	
Y	3	5	X
	10	8	

$$\frac{5}{8} \times \frac{10}{3} = \frac{50}{24} = 2.08 > 0$$

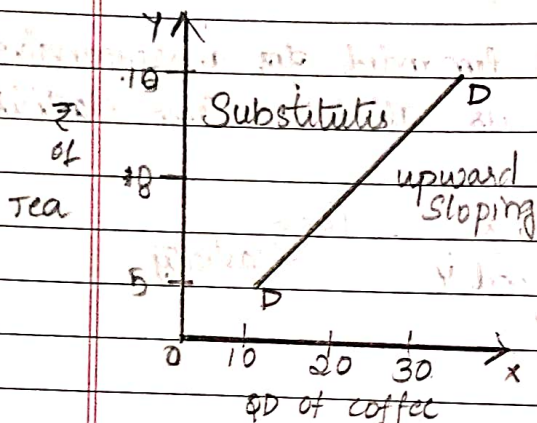
Substitutes

TYPES OF CROSS ELASTICITY

	E_{xy}	Number	Relation	Goods	Example
Per Sub	∞	∞	Infinite	Perfect Substitutes	Two shirts & very hand bags (similar)
Subs	>0	1, 2, 3--	Positive	Substitutes	Tea or Coffee
None	$=0$	0	Zero	Unrelated	ladies watch men shoes
comple	<0	-1, -2, -3--	Negative	Complementary	Car & petrol
perf comple	$-\infty$	$-\infty$	Negative infinite	Perfect Complementary	Shoe & lace

Substitutes

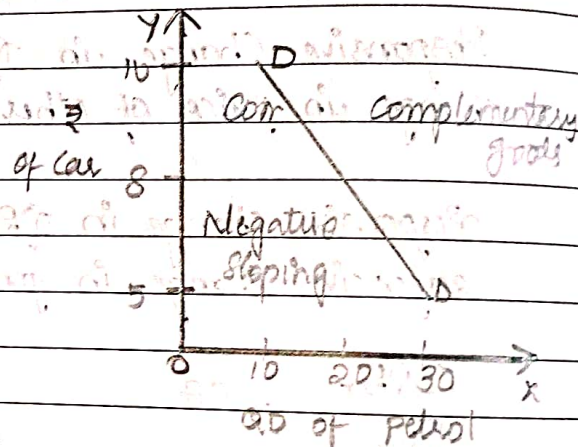
₹ of Tea	QD of coffee
5	10
10	30



- Alternative
- [OR]
- Ex: Tea & Coffee
- Price ↑ QD of coffee ↑
- Positive relationship
- Direct relationship
- Upward sloping

Complementary goods

₹ of Car	QD of Petrol
5	30
10	10



- Joint
- [AND]
- Ex: Car & petrol
- Price ↑ QD ↓
- Negative relationship
- Inverse relationship
- Downward sloping

PRICE ELASTICITY OF DEMAND (Negative relation)

Responsive change in Q.D for a responsive change in price is called PED.

$$\frac{\text{Responsive change in QD}}{\text{Responsive change in ₹}} = PED = \frac{\Delta QD}{\Delta P}$$

$$\frac{\text{original Demand}}{\text{New Demand}} \times \frac{\text{New Price}}{\text{original price}}$$

Ex: Price ↓ ₹10 to ₹5 . Demand ↑ from 12 units to 20 units

	₹	QD
ori	10	12
New	5	20

$$\frac{12}{20} \times \frac{5}{10} = \frac{60}{200} = 0.33 < 0 \text{ RIED.}$$

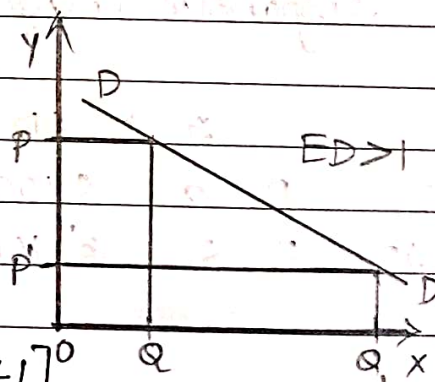
TYPES OF PRICE ELASTICITY OF DEMAND

1. Relatively Elastic Demand. [$ED > 1$]

responsive change in QD is greater for a responsive change in price is called RED.

900 > 5

Price	QD
P 10	Q 100
P' 5	Q. 1000

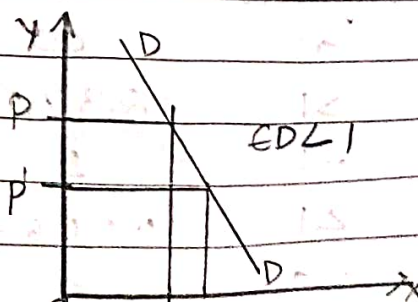


2. Relatively Inelastic Demand [$ED < 1$]

responsive change in QD is lesser for a responsive change in price is called RIED.

0.5 < 0

Price	QD
P 10	Q 100
P' 5	Q. 100.5

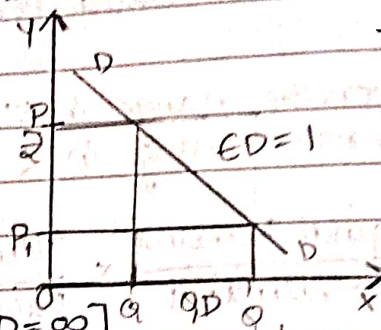


3. Unitary Elasticity demand [$E_D = 1$]

Responsive change in Q_D is equal to responsive change in price

5 = 5

₹	Q_D
P 10	Q 100
P' 5	Q' 105



4. Perfectly Elastic demand [$E_D = \infty$]

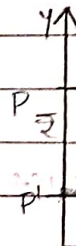
Responsive change in Q_D is infinite for a responsive change in price



Elastic

∞ for a change of ₹ 5

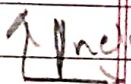
₹	Q_D
P 10	Q 100
P' 5	Q' ∞



Horizontal straight line // to x axis

5. Perfectly Inelastic demand [$E_D = 0$]

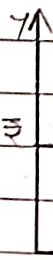
Responsive change in Q_D is zero for a responsive change in price



Inelastic

0 for a change of ₹ 5

₹	Q_D
P 10	Q 100
P' 5	Q' 100



Vertical straight line // to y axis

→ Tabular Presentation :-

Equation	Numbers	Examples	Relation
∞	∞	Gold	Infinite
> 1	2, 3, 4, 5 - -	Multiple uses	RED
$= 1$	1	Household Appliances	unitary
< 1	0.5, 0.6 - -	Necessities	RIED
$= 0$	0	Salt	Zero elastic

→ Exceptions to Law of Demand :-

According to law of demand price increases demand decreases and vice-versa as price & demand have negative relation (or) inverse relation demand curve is ~~not~~ downward sloping. in some of cases law of demand is not applicable which means price increases demand also increases & vice-versa. both price & demand have positive relationship hence demand curve is upward sloping.

* Incomplete Information :-

Assumption in Economics is Consumers are knowledgeable about Market Conditions. at times Consumers have incomplete information & take inconsistent decision.

* Necessaries :-

Irrespective of price changes minimum quantities have to be consumed.

* Snob effect / Veblen goods / prestigious goods / conspicuous goods :-

This is explained by Veblen in his principle called Conspicuous Consumption. displaying wealth, Social status by rich people.

Ex: Television set, refrigerator, air conditioners.

The demand for certain goods is effected by demonstration effect of a social group to which an individual belongs.

* Impulsive Purchase :-

Sudden decisions

Impulsive purchases without rational calculations about the price & usefulness of the product.

* Illusion :-

A false imagination that quality increases or quality is high when price increases.

* Giffen Paradox:-

Scotish economist Sir. Robert giffen explains the relationship of giffen goods. All giffen goods are inferior goods but all inferior goods are not giffen goods.

Ex:- Bread

* Speculation:-

Future expectations about the prices leads to Increase in demand even though the price is High

Ex:- Gold, Land

Concept of Total Revenue :-

$$\text{Revenue} = \text{Income}$$

Goods.

elastic	Inelastic
→ >1	→ <1
→ Luxury goods	→ Necessaries
→ Substitutes	→ No Substitutes
→ Can Postpone	→ Cannot Postpone
→ costly	→ less costly
→ High Consumers Income	→ Less Consumers Income
→ Ex:- BMW Cars	→ Ex:- Medicines, food --- etc.

Directly proportional

	Elastic	Inelastic
P ↑	TR ↓	TR ↑
P ↓	TR ↑	TR ↓

Inversely Proportional

Income Elasticity Of Demand. (+ve relation)

Responsive Change in Q.D for a responsive change in Income is called as Income elasticity.

$$\frac{\text{responsive change in Q.D}}{\text{responsive change in } Y} = \frac{\Delta Q.D}{\Delta Y}$$

$$\frac{\text{or } Q.D}{\text{New } Q.D} \times \frac{\text{New } Y}{\text{or } Y}$$

Ex: Increase of Income from ₹3000 to ₹6000 Q.D ↑ from 30 to 60.

	I	Q
Or	3000	30
Nc	6000	60

$$\Rightarrow \frac{30}{60} \times \frac{6000}{3000}$$

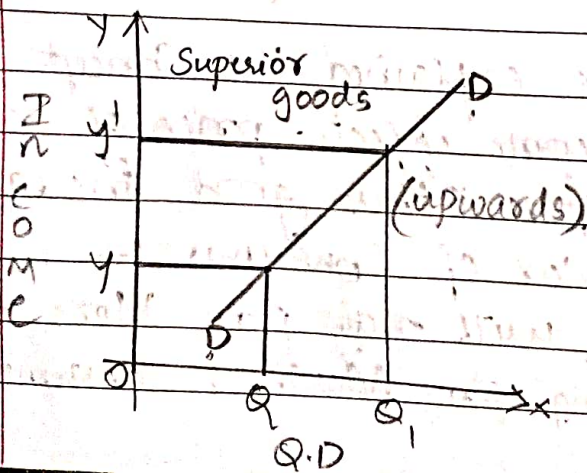
$$\Rightarrow \frac{3}{6} \times \frac{6}{3} = \frac{18}{18} = 1$$

Types Of Income Elasticity of Demand

Superior goods

- High Quality
- Ex: Branded products
- $Y \uparrow$ SG (Demand) $\uparrow$
- Positive relation
- Upward Sloping

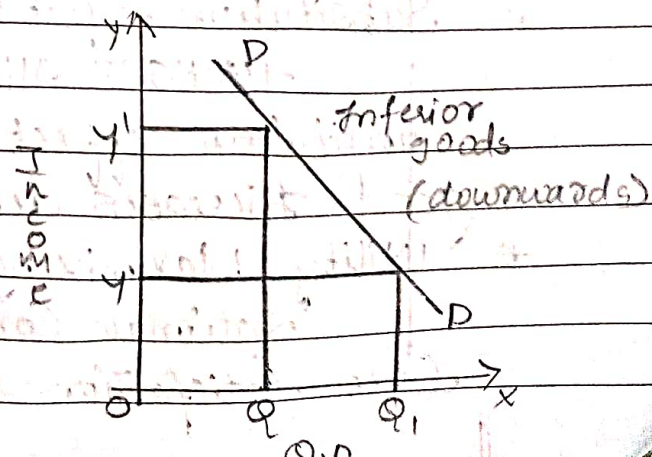
	₹Y	QD	
Y	10,000	30	Q
Y ₁	15,000	40	Q ₁



Inferior goods

- Low Quality
- Ex: Broken rice.
- $Y \uparrow$ IG (Demand) $\downarrow$
- Negative relation
- Negative Sloping

	₹Y	QD	
Y	10,000	40	Q
Y ₁	15,000	30	Q ₁



Equation	Goods	No	Ex	Relation
>1	Superior	1, 2, 3--	Branded clothes	Positive / greater More than 1
<1	Necessaries	0.5, 0.6--	Perishable goods	Small relation
$=1$	Household goods	$=1$	washing machine	—
$=0$	—	$=0$	Salt matchbox	Zero relation
<0	Inferior	-1, -2, -3	Bread, Broken etc.	Negative relation

→ Rationale for law of demand or Reasons for downward sloping, Negative sloping DD Curve

* Different Uses:-

When price increases these are put for limited use. If price decreases they are put for more number of uses & demand will increase.

Ex - Milk, Mobiles etc.

* Real Income Effect :-

Increase in demand because of increase in real income as price reduced is called Income effect. If price falls consumer can buy more with same amount of money.

* Arrival of New Consumers :-

When price of commodity falls more consumers start buying because some of those who cannot afford before may now be able to buy it.

* Substitution Effect :-

Hicks & Allen have explained the concept of substitution effect & income effect. Price of one good increases demand for other good increases.

* Utility Maximizing behavior of Consumer :-

Rational consumer will not pay more for lesser satisfaction. According to Marshall consumer

has diminishing utility - for each additional unit of a commodity & his willingness to pay less if additional unit gives less amount of satisfaction

→ ^(Factors) DETERMINANTS OF PRICE ELASTICITY :-

- * Substitutes :- Fall in the price of one good will reduce the quantity demanded of other good.
- * Consumer Habits :- If he is a habitual consumer demand for a commodity will increase. If buyers have rigid preferences demand will be less elastic.
- * Price Range :- Very high price range are called more elastic, & low price range have inelastic demand.
- * Price of Complementary goods :- Fall in the price of one good increases the quantity demanded for other good.
- * No. of uses :- If price decreases for a product which has variety & multiple uses. Quantity demanded increases.
- * Consumers Budget :- Greater proportion of income spent the greater will be elasticity for elastic goods & vice-versa.
- * Tied demand :- The demand for these goods is inelastic as against to whose demand is Autonomous. ex: printer and ink cartorage.
- * Nature of the Need :- luxury goods price is elastic & one can leave without a luxury. Necessaries price is inelastic & no possibility to postponed.

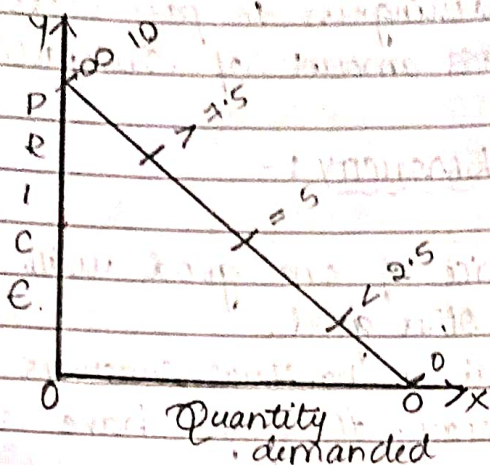
→ METHOD TO CALCULATE PRICE ELASTICITY :-

(Alfred Marshall)

One of the Method to calculate is point Method also called as Geometric method.

This method is used to Analyse small change in

Quantity demanded to find out demand at a particular point.



Elasticity	Calculation	Type
∞	$10/0 = \infty$	PED
>1	$7.5/2.5 = 3$	RED
$=1$	$5/5 = 1$	Unitary
<1	$2.5/7.5 = 0.33$	RIED
0	$0/10 = 0$	PIED

→ ARC ELASTICITY :-

This Method is used when there is a large change of Quantity demanded generally considered as 100. This Method is also called as Midpoint Method. It is mentioned to calculate elasticity by using this method as else minimum change in Quantity demanded is expected to be 100 otherwise a Xloemal Method is to be followed. This is developed by Allen. This is change over an arc rather than a point.

$$\frac{Q_2 - Q_1}{Q_2 + Q_1} \times \frac{P_2 + P_1}{P_2 - P_1}$$

Ex:- Price increases from ₹10 to ₹20. QD decreased from 600 to 300 units.

	P	QD	
P_1	10	600	Q_1
P_2	20	300	Q_2

$$\frac{300}{900} \times \frac{30}{10} = \frac{900}{900} = 1$$

unitary elastic

→ PERCENTAGE METHOD:-

Percentage change in Q.D for percentage change in price is percentage Method.

$$\frac{\% \text{ change in QD}}{\% \text{ change in } \text{₹}}$$

Ex:- A 5% fall in ₹ of a good leads to 15% raise in demand. determine elasticity & comment on its value.

$$\text{E} = \frac{15\%}{5\%} = 3 > 1 \text{ relatively elastic goods.}$$

Total Expenditure Method:-

This Method is also called as total outlay Method. Total expenditure is incurred by consumer.

Types of Good	Price	Q.D	T.E [P × Q]	
A	₹ 10	12	₹ 120	unity [E = 1]
	₹ 8	15	₹ 120	
	₹ 5	24	₹ 120	
B	₹ 10	14	₹ 140	greater than 1 E > 1 elastic.
	₹ 8	20	₹ 160	
	₹ 5	36	₹ 180	
C	₹ 10	12	₹ 120	less than unity E < 1 inelastic
	₹ 8	13	₹ 104	
	₹ 5	16	₹ 80	

$$\frac{\Delta Q}{\Delta P} \times \frac{P}{Q} = \frac{Q_2 - Q_1}{Q_2 + Q_1} \times \frac{P_2 + P_1}{P_2 - P_1}$$

$$= \frac{Q_2 - Q_1}{Q_2 + Q_1} \times \frac{P_2 + P_1}{P_2 - P_1}$$

$$\frac{Q_2 - Q_1}{Q_2 + Q_1} \times \frac{P_2 + P_1}{P_2 - P_1}$$

Problem Solving AND Interpretation.

S.NO	TYPE OF ELASTICITY	Question	Formula	Solution
1.	Price [Percentage]	% increase in price is 30%, % decrease in QD is 60%. Calculate coefficient of price elasticity.	$\frac{\% \text{ change in QD}}{\% \text{ change in } P}$	$\frac{60\%}{30\%} = 2 > 1$ [Elastic]
2.	Income [Percentage]	% decrease in income is 20%, % decrease in QD is 25%.	$\frac{\% \text{ change in QD}}{\% \text{ change in income}}$	$\frac{25\%}{20\%} = 1.25 > 1$ [Elastic]
3.	Gross [Percentage]	% change in price of orange juice increased to 85%, increase in QD for apple juice 205%.	$\frac{\% \text{ change in QD of Apple juice}}{\% \text{ change in } P \text{ of Orange juice}}$	$\frac{205\%}{85\%} = 0.24 < 1$ [Inelastic]
4.	Price [ARC]	Price increased from ₹ 20 to ₹ 80. QD decreased from 1000 units to 500 units.	$\frac{Q_2 - Q_1}{Q_2 + Q_1} \times \frac{P_2 + P_1}{P_2 - P_1}$ $\frac{1000 - 500}{1000 + 500} \times \frac{20 + 80}{80 - 20}$ $\frac{500}{1500} \times \frac{100}{60} = \frac{50}{90} = \frac{5}{9}$ $= 0.54 < 1$ [Inelastic]	
5.	Income [ARC]	Income decreased from ₹17,000 to ₹11,000, QD decreased from 875 units to 123 units.	$\frac{Q_2 - Q_1}{Q_2 + Q_1} \times \frac{Y_2 + Y_1}{Y_2 - Y_1}$ $\frac{123 - 875}{123 + 875} \times \frac{17000 + 11000}{17000 - 11000}$ $\frac{-752}{-752} \times \frac{28000}{6000} = \frac{252}{498}$ $4.6 \times 0.506 = 2.36 > 1$ [Elastic]	
6.	Price [ARC]	Price of pens decreased from ₹18 to ₹9. QD for ink increased from 100 to 200 units.	$\frac{Q_2 - Q_1}{Q_2 + Q_1} \times \frac{P_2 + P_1}{P_2 - P_1}$ $\frac{200 - 100}{200 + 100} \times \frac{18 + 9}{18 - 9}$ $\frac{100}{300} \times \frac{27}{9} = \frac{11}{6} = 1.83 > 1$ [Elastic]	
7.	Price [Small change]	Price of a commodity decreases from 6 to 4. QD of a good increases from 10 to 15 units.	$\frac{\Delta Q}{\Delta P} \times \frac{P}{Q}$ $\frac{15 - 10}{4 - 6} \times \frac{6}{10}$ $\frac{5}{-2} \times \frac{6}{10} = \frac{30}{20} = 1.5 > 1$ [Elastic]	

In case of inferior & complementary goods answer would be 've
 In point elasticity Mid point = 1.
 Total expenditure = $P \times QD$.

even though there is large change in price & fall in prices
 or raise in QD & vice versa, requires Normal formula to be applied i.e. change

8. Income

Income decreased from 10,000 to 15,000 ~~income~~ increased from 15,000 to 20,000 ^{SD} calculate income elasticity

$\frac{\Delta Q}{\Delta Y} \times \frac{Y}{Q}$

10k	22	Q
15k	26	Q

$\frac{4}{5000} \times \frac{10,000}{22} = \frac{40}{110}$

Neutrality ≈ 0.3636 [inelastic]

9. Cross [small change]

Price of one kg of sugar is 50 at this price 100kg is demanded. If of tea falls from 30 to 25 per kg. then consumption of sugar raises from 10 to 12 kgs. find out cross elasticity

$\frac{\Delta Q_{sug}}{\Delta P_{tea}} \times \frac{P_{tea}}{Q_{sug}}$

P	Q
30	10
25	12

$\frac{2}{5} \times \frac{30}{10} = \frac{6}{5} = 1.2$

Complementary have -ve relation so -1.2

10. Price [Missing Quantity]

Price of a good decreases from ₹100 to ₹60. price elasticity is 1.5. original QD is 300 calculate New QD .

$\frac{\Delta Q}{\Delta P} \times \frac{P}{Q}$

P	Q
100	300
60	Q

$\frac{\Delta Q}{100} \times \frac{100}{300} = 1.5 \Rightarrow \Delta Q = 18$

$Q_2 = Q_1 - 18$

$18 = 300 - Q_2 \Rightarrow Q_2 = 282$

11. Equation Method

$Q_2 = 12 - 2P_2$ what will be QD at a ₹ of 3/-

Substitute P_2 to get Q_2

$Q_2 = 12 - 2(3)$

$Q_2 = 6$

12. Equation Method

$Q_2 = 12 - 2P_2$ what would be the Q when QD is 200.

Substitute Q_2 to get P_2

$200 = 12 - 2P_2 \Rightarrow P_2 = 6$

13.

Quantity demanded by a consumer at a price of ₹1 per unit is 800 units. If price falls by 25% QD raises by 1600

$\frac{\Delta Q}{\Delta P} \times \frac{P}{Q}$

P	Q
1	800
0.75	960

$\frac{160}{1760} \times \frac{15.75}{2.25} = \frac{8520}{3760} = 0.63$

→ ADVERTISEMENT ELASTICITY :-

Responsive change in Q.D for a responsive change in Advertisement is called as advertisement elasticity

$$\frac{\text{responsive change in Q.D}}{\text{responsive change in Adv}}$$

* in 99% cases it is positive relationship $Ad \uparrow D \uparrow$

$E = 1$	responsive change in QD is equal for a responsive change in Adv.
$E > 1$	responsive change in QD is greater for a responsive change in Adv.
$E < 1$	responsive change in QD is lesser for a responsive change in Adv.
$E = 0$	responsive change in Q.D is zero for a responsive change in Adv.

Ind - Auto
Mul - composite
Der - derived good
Jid - joint goods

classmate

Date _____
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Rational Consumer

- Independent demand = Autonomous demand.
- Demand for one good depends on demand for other goods is called as derived demand.
- Goods which are used jointly are called as Joint goods or complementary goods
- Goods which is used for multiple purposes is called Composite demand.