

ELASTICITY OF DEMAND

What do you mean by elasticity of demand? (Ed)

It measures the degree of responsiveness of demand on change in any factor affecting demand. In other words, it is the quantitative concept which explains the change in demand in quantitative term upon change in any factor affecting demand.

What are the different kinds of elasticity of demand?

There are following three kinds:

* Price Elasticity Demand: It measures the degree of responsiveness of demand on change in price of the product.

* Income Elasticity demand: It measures the responsiveness of demand on change in income of consumer. i.e. it explains that if income changes by certain percentage, what will be percentage change in demand.

* Cross Elasticity of demand: It measures the responsiveness of demand of a product on change in price of related product. In other words, it explains the behaviour of demand of a product on change in price of related products.

What are the different methods of calculating elasticity of demand?

Following are the different methods:

- * Proportionate Method,
- * Expenditure or total outlay method,
- * Geometric or graphical method.

PROPORTIONATE METHOD:

As per this method elasticity of demand explains the percentage change in demand due to percentage change in factors affecting demand.

Formula to calculate elasticity:

$$\text{Price Ed} = \frac{\text{Percentage change in demand}}{\text{Percentage change in price}}$$

$$\Rightarrow \frac{\frac{\Delta q}{q} \times 100}{\frac{\Delta p}{p} \times 100}$$

$$\Rightarrow \frac{\Delta q}{\Delta p} \times \frac{p}{q}$$

Initial price = P New Price = P_1

change in price = $P_1 - P = \Delta P$

Initial demand = q New demand = q_1

change in demand = $q_1 - q = \Delta q$

Ques

Example :

When price of mango was Rs 20 per kg the demand was 100 kg. When price increased to 25 per kg, demand decrease to 80 kg.

$$P = 20$$

$$Q = 100$$

$$P_1 = 25$$

$$Q_1 = 80$$

$$\Delta P = 5$$

$$\Delta Q = -20$$

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

$$= \frac{-20}{5} \times \frac{20}{100}$$

$$= \frac{-4}{5}$$

$$\boxed{\epsilon_d = -0.8}$$

Question

When price of Apple was Rs 20 per kg, demand was 50 kg. When price decrease to Rs 15 per kg, demand increase to 75 kgs.

$$P = 20$$

$$Q = 50$$

$$P_1 = 15$$

$$Q_1 = 75$$

$$\Delta P = -5$$

$$\Delta Q = 25$$

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

$$= \frac{25}{-5} \times \frac{20}{50}$$

$$\boxed{\epsilon_d = -2}$$

Question

When price of watermelon was Rs 10 per kg, the demand was 200 kg, when price increased to Rs 12 per kg, demand decreased to 150 kgs.

$$P = 10$$

$$Q = 200$$

$$P_1 = 12$$

$$Q_1 = 150$$

$$\Delta P = P_1 - P$$

$$\Delta Q = -50$$

$$= 2$$

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

$$\epsilon_d = \frac{-50}{2} \times \frac{10}{200}$$

$$\boxed{\epsilon_d = -1.25}$$

Question

When price of potato was Rs 5 per kg, the demand was 500 kg. When price increased to 7 per kg, demand decreased to 300 kg.

$$P = 5$$

$$Q = 500$$

$$P_1 = 7$$

$$Q_1 = 300$$

$$\Delta P = 2$$

$$\Delta Q = -200$$

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

$$\epsilon_d = \frac{-200}{2} \times \frac{5}{500}$$

$$\boxed{\epsilon_d = -1}$$

Cases Where Elasticity of demand is already given :

Question

When price of product X was 20 per unit, demand was 100 units, When price decreased demand increased to 120 units, if E_d is 2 find out new price.

$$P = 20$$

$$Q = 100$$

$$P_1 = ?$$

$$Q_1 = 120$$

$$\Delta P = ?$$

$$\Delta Q = 20$$

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

$$2 = \frac{20}{\Delta P} \times \frac{20}{100}$$

$$\Delta P = \frac{4}{2}$$

$$\Delta P = 2$$

$$P_1 = P - \Delta P$$

$$= 20 - 2$$

$$P_1 = 18$$

Question

When price of a pen was 10 per unit, demand was 250 units, When price decreased to 8 per unit, demand increased. find out new demand. if

price $\epsilon_d = 1$

$$P = 10$$

$$P_1 = 8$$

$$\Delta P = -2$$

$$Q = 250$$

$$Q_1 = ?$$

$$\Delta Q = ?$$

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

$$1 = \frac{\Delta Q}{-2} \times \frac{10}{250}$$

$$1 = \frac{\Delta Q}{-50}$$

$$\Delta Q = -50$$

(negative sign)

$$Q_1 = Q + \Delta Q$$

$$= 250 + 50$$

$$= 300$$

Question

When price of mobiles decreased by 10% its demand increased by 30%

$$\epsilon_d = \frac{\% \text{ change in } Q_d}{\% \text{ change in price}}$$

$$= \frac{30}{10} = 3$$

Question

When price of books decreased by 20%, its demand increased from 100 to 150 books

$$\% \text{ change in price} = 20\%$$

$$\% \text{ change in } Q_d = ?$$

$$Q = 100$$

$$Q_1 = 150$$

$$\Delta Q = 50$$

$$\% \Delta \text{ in } Q_d = \frac{\Delta Q}{Q} \times 100$$

$$\frac{50}{100} \times 100 = 50$$

$$\epsilon_d = \frac{50}{20} = 2.5$$

Question

When price increased from Rs 20 per kg to Rs 25, demand fell down by 25%

$$P = 20$$

$$P_1 = 25$$

$$\Delta P = P_1 - P = 5$$

$$\% \text{ change in price} = \frac{\Delta P}{P} \times 100$$

$$= \frac{5}{20} \times 100$$

$$= 25$$

$$\epsilon_d = \frac{\% \text{ change in } Q_d}{\% \text{ change in price}}$$

$$= \frac{25}{25} = 1$$

Question

When price of horse decreased from 100 per kg to 80 per kg, demand increased by 30%

$$P = 100$$

$$P_1 = 80$$

$$\Delta P = -20$$

$$\% \Delta \text{ in Price} = \frac{\Delta P}{P} \times 100$$

$$= \frac{-20}{100} \times 100$$

$$= -20$$

$$\epsilon_d = \frac{\% \text{ change in } Q_d}{\% \text{ change in price}}$$

$$= \frac{30}{-20}$$

$$= -1.5$$

Question

When price decreased to $\frac{1}{2}$ of existing, demand got doubled find Ed.

$$\% \Delta \text{ in price} = 50\%$$

$$\% \Delta \text{ in } Q_d = 100\%$$

$$Ed = \frac{100}{50} = 2$$

Question

When price reduced by 33%, demand increased to 66%

$$\% \text{ change in demand} = 66\%$$

$$\% \text{ change in price} = 33\%$$

$$Ed = \frac{\% \Delta \text{ in price}}{\% \Delta \text{ in } Q_d}$$

$$= \frac{66}{33}$$

$$= 2$$

Income Elasticity of Demand

Proportionate Method

$$\text{Income } Ed = \frac{\% \text{ change in } Q_d}{\% \text{ change in income}}$$

$$= \frac{\Delta Q}{Q} \times 100$$

$$\frac{\Delta Y}{Y} \times 100$$

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

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

Question

When income of a consumer was increased by 20% , demand increased by 50%

$$\text{Income Ed} = \frac{\% \Delta \text{ in Dd}}{\% \Delta \text{ in income}}$$

$$= \frac{50}{20}$$

$$= 2.5$$

Question

When income of Mr. X increased from 10,000 to Rs 12,000 per month, he increased the demand of Wheat from 100 kg to 125 kg

$$Y = 10,000$$

$$Y_1 = 12,000$$

$$\Delta Y = 2,000$$

$$q = 100$$

$$q_1 = 125$$

$$\Delta q = 25$$

$$\text{Income Ed} = \frac{\Delta q}{\Delta Y} \times \frac{Y}{q}$$

$$= \frac{25}{2000} \times \frac{10,000}{100}$$

$$= \frac{5}{4}$$

$$= 1.25$$

Gross elasticity of demand by Proportionate Method.

$$\epsilon_d = \frac{\% \text{ change in demand of } x}{\% \text{ change in price of } y}$$

$$= \frac{\Delta q_x}{q_x} \times 100$$

$$\frac{\Delta p_y}{p_y} \times 100$$

$$= \frac{\Delta q_x}{\Delta p_y} \times \frac{p_y}{q_x}$$

Question

When price of Pepsi decreased from 10 to 9, demand for coke decreased from 200 to 150 bottles

$$p_x = 10$$

$$p_{1x} = 9$$

$$\Delta p_x = -1$$

$$q_y = 200$$

$$q_{1y} = 150$$

$$\Delta q_y = -50$$

$$\frac{\Delta q_y}{\Delta p_x} \times \frac{p_x}{q_y}$$

$$= \frac{-50}{-1} \times \frac{10}{200}$$

$$\text{Gross } \epsilon_d = 2.5$$

Method II

Expenditure Method

OR

Total outlay Method

According to this method elasticity of demand is measured by observing the behaviour of expenditure on change in price of the product. There can be three cases of elasticity given as below:

If price of the commodity and expenditure moving opposite direction i.e. with the increase in price expenditure decreases and vice-versa. This is a case of highly elastic demand i.e. $E_d > 1$

If expenditure & price of the product move in same direction i.e. with the increase in price, expenditure also increases & vice-versa. This is a case of lesser elasticity of demand i.e. $E_d < 1$.

When expenditure does not change even on change in price of the product, it is a situation of unit elastic demand.

$$\text{Expenditure} = P \times Q$$

① $\rightarrow$ $\left. \begin{array}{l} \text{Price } \uparrow \\ \text{Price } \downarrow \end{array} \right\} \begin{array}{l} \text{Exp}^n \downarrow \\ \text{Exp}^n \uparrow \end{array} \quad E_d > 1$

② $\rightarrow$ $\left. \begin{array}{l} \text{Price } \uparrow \\ \text{Price } \downarrow \end{array} \right\} \begin{array}{l} \text{Exp}^n \uparrow \\ \text{Exp}^n \downarrow \end{array} \quad E_d < 1$

$$\sum d = 1$$

expⁿ ↔

(3)

→ Price ↑↓

Example

$$P = 10$$

$$Q = 100$$

$$\text{exp}^n = P \times Q$$

$$= 10 \times 100$$

$$= 1000$$

$$P_1 = 12$$

$$Q_1 = 50$$

$$\text{exp}^n = P_1 \times Q_1$$

$$= 12 \times 50$$

$$= 600$$

Price 10 — 12 ↑
expⁿ 1000 — 600 ↓

∴ $\sum d > 1$

Method III - Graphic / Point Method.

$\sum d$ at any point = $\frac{\text{lower segment}}{\text{upper segment}}$

① $\sum d$ at pt C = $\frac{CE}{AC}$

since CE = AC

$\sum d$ at C = 1

② $\sum d$ at D = $\frac{DE}{AD}$

since DE > AD

$\sum d$ at D < 1

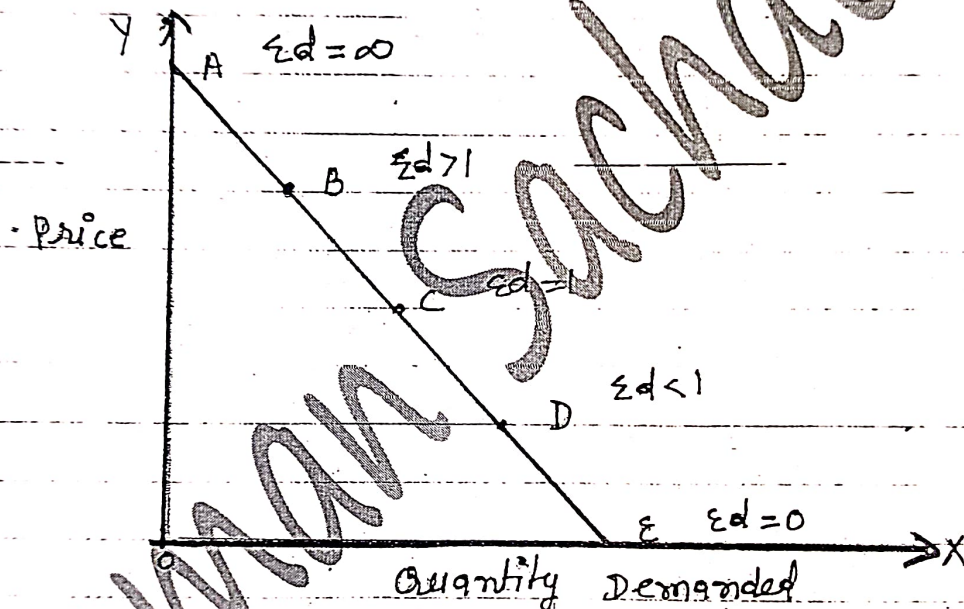
$$(3) \epsilon_d \text{ at } B = \frac{BE}{AB}$$

since $BE > AB$

$$\epsilon_d > 1$$

$$(4) \epsilon_d \text{ at } E = \frac{CE}{AE} = 0$$

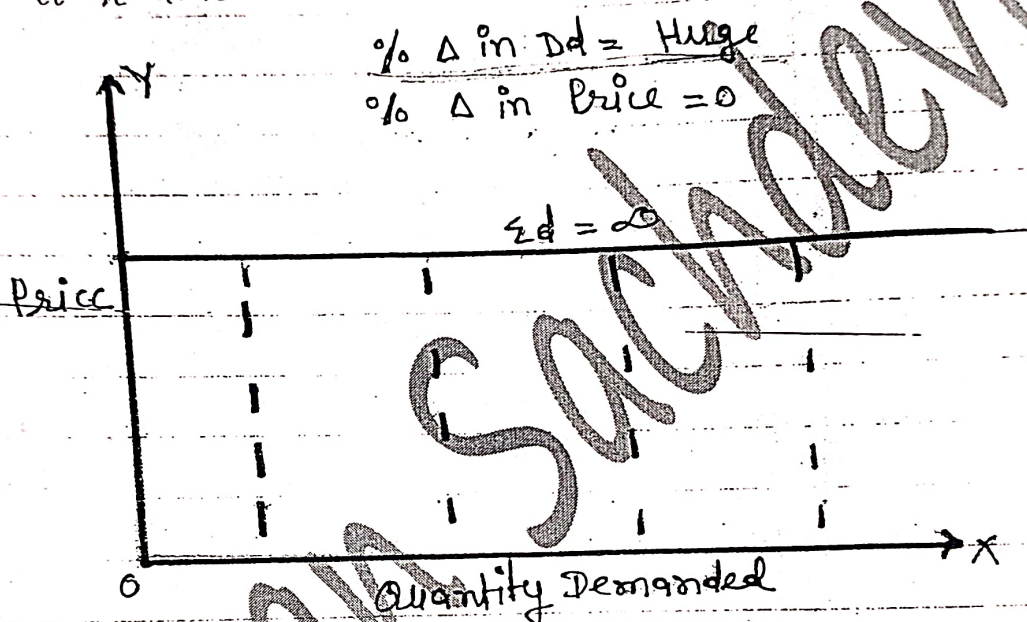
$$(5) \epsilon_d \text{ at } A = \frac{AE}{CE} = \infty$$



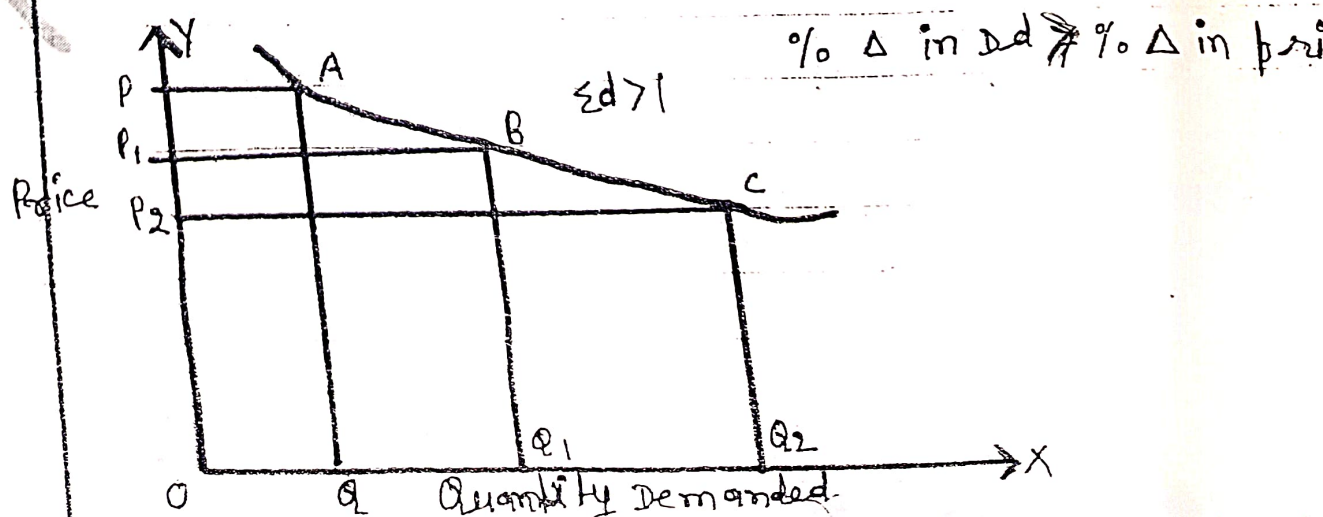
Q. What are the various degrees of elasticity of demand?

There are mainly five degrees of elasticity of demand explained as follows:

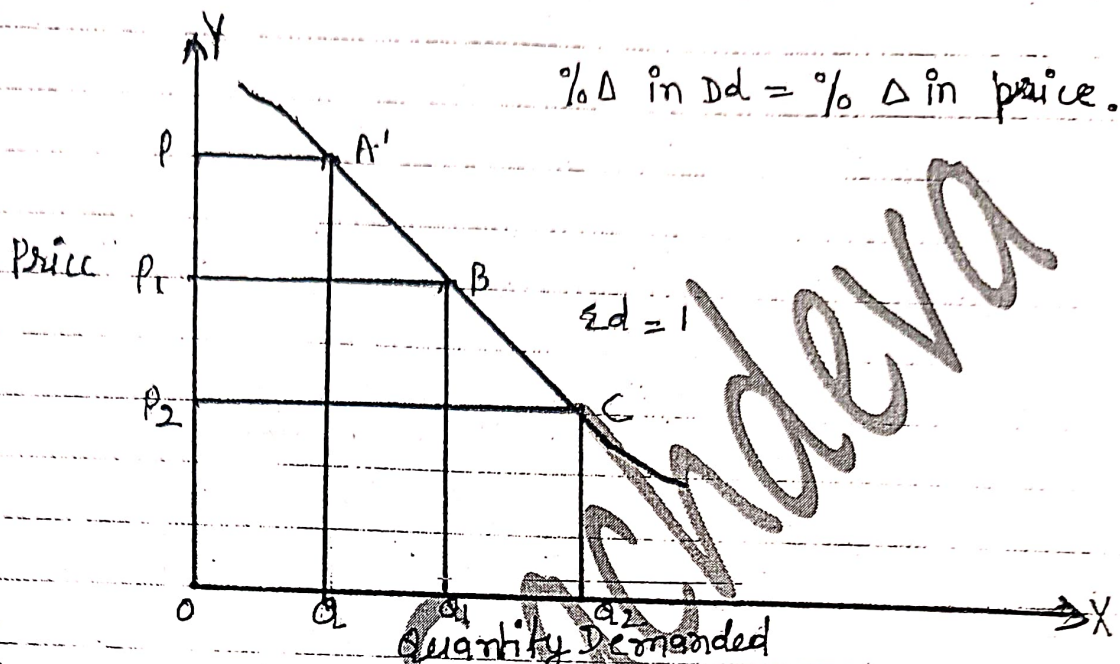
* Perfectly Elastic demand: It refers to a situation in which demand changes with a huge percentage with a negligible change in price. That is why the demand curve is a straight line parallel to x-axis.



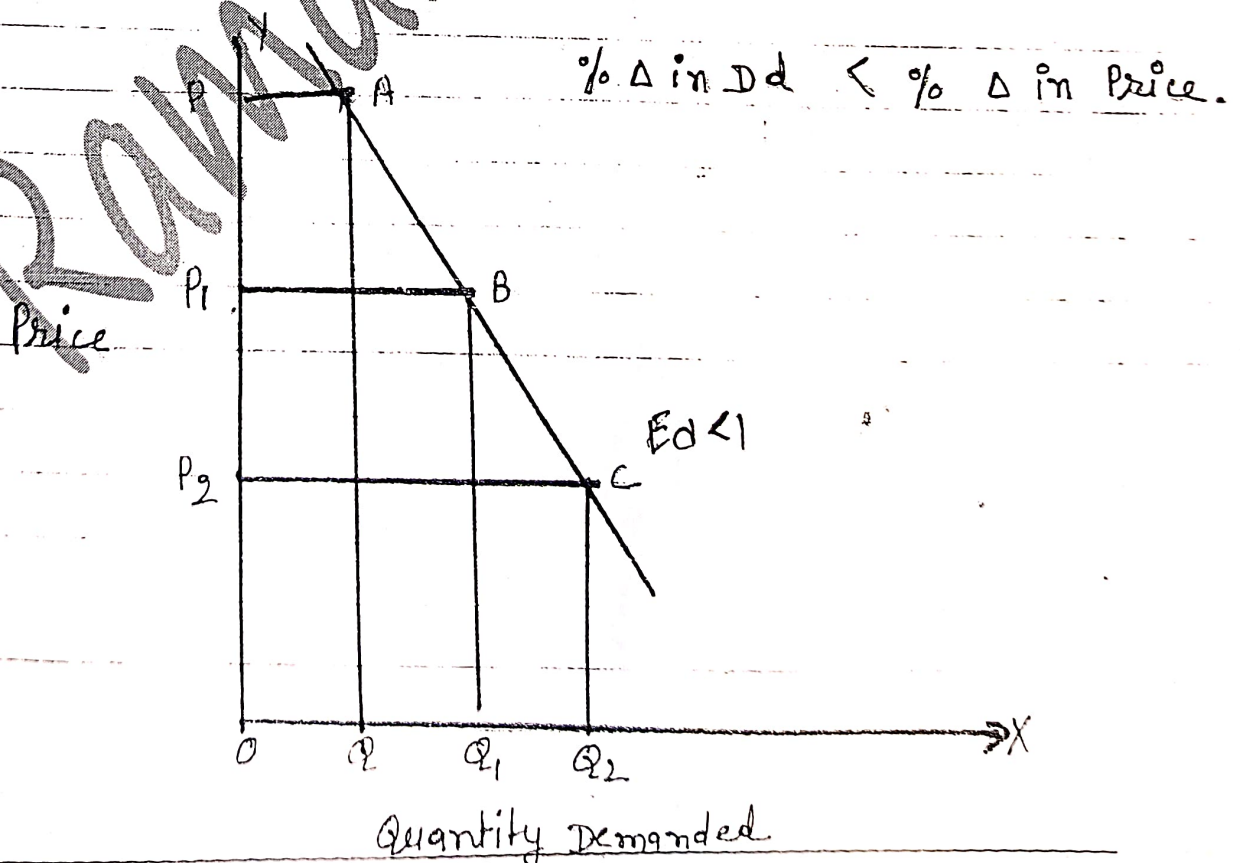
* Highly Elastic demand ($E_d > 1$): It refers to a situation in which demand changes with a greater % as compared to % change in price, as shown in the following diagram.



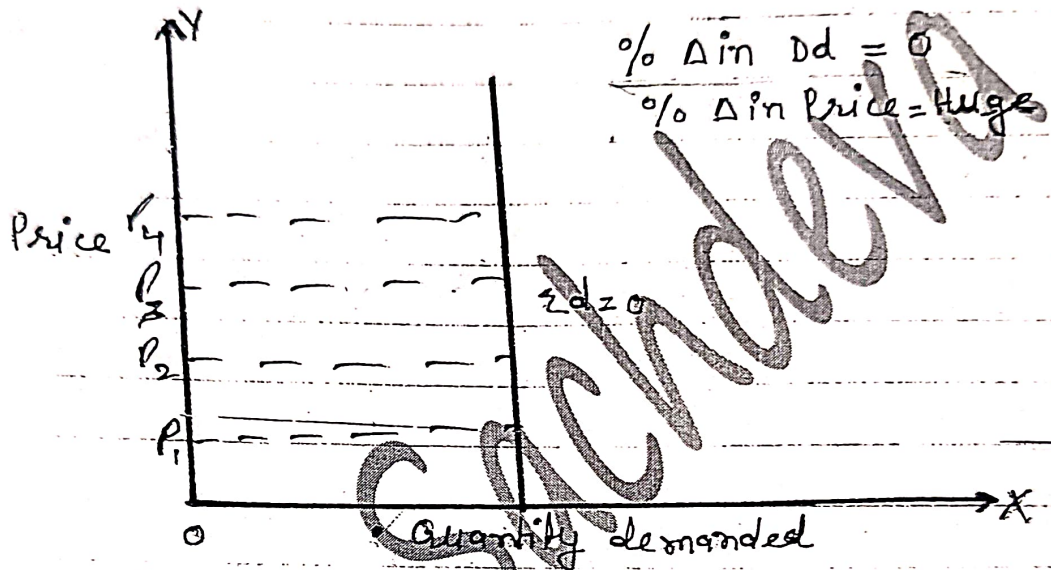
unit elastic demand ($\epsilon_d = 1$) : it refers to a situation in which % change in demand is just equal to % change in price, as shown in the following diagram.



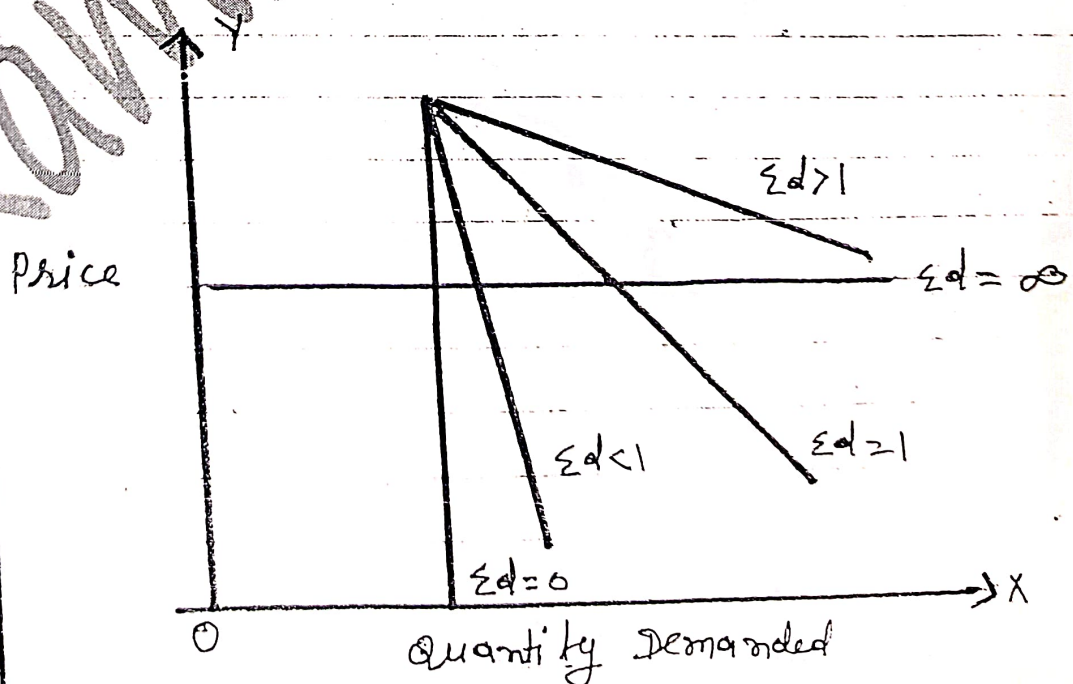
lesser elastic Demand ($\epsilon_d < 1$) : it refers to a situation in which demand changes with a lesser % as compared to % change in price, as shown in the following diagram.



* Perfectly inelastic Demand : It refers to a situation in which demand does not change even on huge change in price that is why the demand curve is a straight line parallel to y-axis, as shown in the following diagram :



All degrees of elasticity of demand shown in one diagram



Imp.

What are the factors which effect elasticity of demand?

Following are the factors

Nature of the Product: If the product is of necessity nature for instance water, electricity, medicine etc, the elasticity of demand will be less than 1 ($E_d < 1$), because consumer will purchase the product whether the price increases or decreases. On the other hand, consumer can avoid consumption of luxury goods therefore their demand is highly elastic.

Necessity
Luxury

Availability of Substitutes: The product which has substitutes available in the market will be having highly elastic demand. Since when the price of one increases consumers start consuming the substitute and demand of given product falls. On the other hand, the product which does not have any substitute available will be having lesser elastic demand.

yes
no

Number of Uses: Greater is the number of uses of a product higher will be the elasticity because with the change in price there is a considerable change in the number of uses and hence the demand. On the other hand, demand of the product having only one use will be having lesser elastic demand.

many
single

Product in habit: Those goods which have become habitual necessities have lesser elasticity of demand. For example wine, liquor, cigarettes etc.

yes
no

* Range of Prices : The product from very high or very low range of price generally have lesser elastic demand. because change in their prices does not change the demand to a great extent. On the other hand, product of moderate price level has comparatively highly elastic demand.

very high
moderate
low

* Possibility of Postponement : The product whose demand can possibly be postponed has highly elastic demand as compared to the demand of the product whose consumption cannot be postponed.

yes
no

Helping points to learn the above question

① Nature → necessity] $E_d < 1$
→ luxury] $E_d > 1$

② Availability of substitutes → Yes Pepsi] $E_d > 1$
→ No] $E_d < 1$

③ No. of uses → More than 1 use] Price ↑ Dd ↓ $\epsilon_d > 1$
→ only one use
Price ↑ Dd ↔ $\epsilon_d < 1$

④ Product in habit → in habit] Price ↑ Dd (↔)] $\epsilon_d < 1$
→ Not in habit]
Price ↑ Dd ↓] $\epsilon_d > 1$

⑤ Range of Price → very high or very low] $\epsilon_d < 1$
→ Moderate] $\epsilon_d > 1$

⑥ Possibility of Postponement : → Yes] $\epsilon_d > 1$
→ No] $\epsilon_d < 1$

Demand highly changes] Highly Elastic $\epsilon_d > 1$

Demand hardly changes] Lesser elastic $\epsilon_d < 1$

Elasticity of Demand

Methods to calculate Ed.:

1. Proportionate method
2. Total Outlay Method
3. Point Method

1. Proportionate Method

$$Ed. = \frac{\% \text{ change in demand}}{\% \text{ change in price of the product}}$$

$$\Rightarrow \frac{\frac{\text{change in dd}}{\text{initial dd}} * 100}{\frac{\text{change in price}}{\text{initial price}} * 100}$$

$$\Rightarrow \frac{\frac{\text{change in dd}}{\text{initial dd}}}{\frac{\text{initial price}}{\text{change in price}}}$$

$$\Rightarrow \frac{\frac{\Delta q}{q}}{\frac{p}{\Delta p}}$$

$$\Rightarrow \frac{\Delta q}{\Delta p} * \frac{p}{q}$$

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Questions for practice

1. When the price of a product falls from 10 to 5 per unit its demand rose to 150 units from 100 units Find Elasticity of demand. (-1)
2. At Rs. 100 per kg Mr X was buying 10 units of good Y but when price increased to Rs. 120 per kg his demand decreased to 8 units find elasticity of demand. (-1)
3. Price of a product increased by 10% because of which demand decreased from 50 to 40 units find price elasticity of demand. (-2)
4. With change in price by 20% the demand changed by 50% find elasticity of demand.
5. When the price increased by 20% the demand decreased to half of existing. Find price elasticity of demand. 9.6.
6. When price increased by Half of existing the demand decreased by 80 units which was earlier 160 units find Ed. (-1)
7. When price got doubled of existing the demand reduced to half find the price elasticity of demand. (0.5)
8. Price of a product was 100 per kg but when it reduced to 80 per kg the demand increased by 10% Find the price elasticity of demand.

Problems when Elasticity of demand is given in the question :

9. Price of a product is Rs 20 per kg but when it increased to Rs. 25 the demand decreased from existing 100 units if the price ed is 2 find the new quantity.
10. Price ed of a product is 1 the initial price is 10 and initial quantity is 1000 units with the change in price the new quantity is 1200 units find the new price.
11. The coefficient of Ed of a commodity is 2. consumer buys 20 units of the commodity at a price of 10 per unit How much quantity of this commodity will he buy when its price rises to Rs 12 per unit.

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Income Elasticity of Demand :

Note :

In case of income elasticity of demand the only change is the income in place of price now the new formula is as follows :

Income Ed :

=>

$$\frac{\Delta q}{\Delta y} * \frac{y}{q}$$

Problems for practise :

12. When income of Mr.A was Rs4000 his demand was 150 units but when the income rose to Rs.5000 his demand increased to 200 units find income elasticity of demand and give nature of product whether an inferior or superior.
13. Income elasticity of demand of a product was 2 initially when the income was 10000 the demand was 1000 units but when the income rose to 12000 the demand also increased find the new demand and give the nature of product whether inferior or superior.
14. With the increase in income of consumer by Rs. 5000 which was initially 10000 the demand decreased by 20% find the income elasticity of demand.
15. When the income increased by 50 % the demand decreased by 20 % find income elasticity of demand.
16. When the demand rose by half of the existing and income also increased in the same proportion find the elasticity of demand for income. (1)
17. If income and demand of product change in the same proportion what would be coefficient of income elasticity of demand. (1)
18. If demand has got doubled because of inc. ease in income by 100 % what would be income elasticity of demand. (1)

Cross Elasticity of demand

Note :

In case of cross elasticity of demand the responsiveness of demand of one product is calculated for the price of its related product therefore in the formula price for one product and quantity for another will be taken.

Cross Ed.

$$\Rightarrow \frac{\Delta Q_x}{\Delta p_y} * \frac{p_y}{Q_x}$$

Problems for practise :

19. When price for coke was Rs. 10 per bottle the demand was 200 bottles but when the price for pepsi reduced from Rs. 10 to 9 the demand for coke was reduced to 100 bottles find the cross elasticity of demand.
20. With the increase in price of good X by 20 % the demand for good Y decreased by 50 % find the cross elasticity of demand and give the nature of product whether complementary or substitute.

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Elasticity of Demand EXTRA PRACTISE QUESTIONS

1 Q. Find out the elasticity of demand on the basis of the following data:

Price	Quantity
Rs.10	20 quintals.
Rs.20	15 quintals.

($\frac{1}{4}$ or 0.25)

2 Q. From the information given below, compare the elasticity of demand for demand A and commodity B.

<u>Commodity A</u>		<u>Commodity B</u>	
Price	Demand	Price	Demand
10	100	8	200
12	40	10	100

Ans: (Commodity A = 3
Commodity B = 2)

3 Q. At Rs.5 per unit, consumer buys 40 units of a commodity and the price elasticity of demand is -2. How much will he buy if the price reduces to Rs.4 per unit?
(56 units)

4 Q. A consumer buys 100 units of good X at Rs.5 per unit. The price elasticity of demand for the good is 2. At what price will he be willing to buy 140 units of good X?
(Rs.4 per units)

5 Q. At a price of Rs.50 per unit, the quantity demand of a commodity is 1000 units. When its price falls by 10 %, its quantity demand rises to 1080 units. Calculate its price elasticity of demand. Is its demand inelastic? Give reasons for your answer.
(0.8)

6 Q. A consumer spends Rs.80 on a commodity when its price Rs. 1 per unit and spends Rs.96 when its price is Rs.2 per unit. What is the price elasticity of demand for the commodity?
(0.4)

7 Q. On the basis of the information given in the following table, compute price elasticities of demand, when:

- The price falls from Rs.7 per kg to Rs.5 per kg.
- The price rises from Rs.5 per kg to Rs.7 per kg.

<u>Price</u> (Rs. per kg)	<u>Total expenditure</u> (Rs.)
8	0
7	7,000
6	12,000
5	15,000
4	16,000

Ans: (a) 7 (b) ($\frac{5}{3}$ or 1.67)

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8 Q. Calculate price elasticity in the following cases using total expenditure method.

(i)	price (Rs.)	Quantity Demand
	8	100
	10	90

(ii)	price (Rs.)	Quantity Demand
	8	100
	10	80

(Ans (i) price elasticity $E_d < 1$

(ii) price elasticity $E_d = 1$)

9 Q.

- 80% fall in the price of a commodity leads to 100% increase in its demand. Calculate price elasticity of demand. (Ans. 1.25)
- As the price of peanut packets increases by 5%, the number of peanut packets demand falls by 8%. What is the elasticity of demand for peanut packets? (Ans. 1.6)
- As a result of 5% fall in the price of a good its demand rises by 12%. Find out price elasticity of demand and say whether demand is elastic or inelastic and why? (Ans. $E_d = 2.4$, more elastic demand)

10 Q. A 5% fall in the price of X leads to 10% rise in demand for X. A 2% rise in the price of Y leads to 6% fall in demand for Y. Calculate elasticity of demand of X and Y. (Ans. $X = 2$, $Y = 3$)

11 Q. (a) The price elasticity is 2. The % change in price is equal to 5. Find % change in quantity. (Ans. 10%)

(b) The price elasticity is 0.5. The % change in quantity is 4. What is the % change in price? (Ans. 2%)

12 Q. Construct a demand schedule indicating price elasticity of demand equal to unity.

13 Q. The price of a commodity goes up from Rs.5 to Rs.6 as a result of which demand falls from 10 units to 8 units. Calculate price elasticity of demand. (Ans. $E_d = 1$)

14 Q. A consumer purchased 10 units of a commodity when its price was Rs.5 per unit. He purchased 12 units of the commodity when its price fell to Rs.4 per unit. What is the price elasticity of demand for the commodity? (Ans. $E_d = 1$)

15 Q. Suppose, that originally, a product was selling for Rs.10 and the quantity demanded was 1,000 units. The product price changes to Rs.14 and as a result the quantity demanded changes to 500 units. Calculate the price elasticity of demand. (Ans. 1.25)

16Q. Given the following market demand schedule of a commodity X, calculate the co-efficient of price elasticity of demand when the price increases from Rs.3 per unit to Rs.5 per unit.

Price(Rs.):	7	6	5	4	3	2	1
Quantity of X:	500	750	1,250	2,000	3,250	4,750	8,000

(Ans. $E_d = 0.92$)

17Q. Calculate price elasticity by percentage method from the following data:

Price per unit (Rs. per unit)	Expenditure (Rs.)
5	500
6	450

(Ans. $E_d = 1.25$)

18Q. A dentist was charging Rs.300 for a standard cleaning job and per month it used to generate total revenue equal to Rs. 20,000. She has since last month increased the price of dental cleaning to Rs.550. As a result, fewer customers are now coming for dental cleaning, but the total revenue is now Rs.33,250. From this, what can we conclude about the elasticity of demand for such a dental service? (Ans. $E_d < 1$)

19Q. On the basis of information given below, compare price elasticities of goods A and B:

Commodity A		Commodity B	
Price per unit	Total expenditure	price per unit	Total expenditure
4	20	3	15
5	30	4	24

(Ans. Goods A=0.8

Goods B=0.6)

20Q. The price of commodity is Rs.15 per unit and its quantity demanded is 500 units. Its quantity demand rises by 80 units as a result of a fall in its price by 20%. Calculate its price elasticity of demand. Is its demand inelastic? Give reason for answer. (It is 0.8)

21Q. Given that the quantity previously demand was 100 units, decrease in quantity demanded 5 units, increase in price Rs.5 and price elasticity of demand 1.2, calculate price before change. (Rs.120)

22Q. Calculate the original price (i.e, initial price) of a commodity when its elasticity of demand, initial quantity demanded, change in quantity demanded and fall in price are given as 2, 10 units, 5 units and Rs.10 respectively. (Ans. Initial Price = Rs.40)

23Q. The co-efficient of price elasticity of demand of a commodity is 0.2. When its price is Rs.10 per unit, its quantity demanded is 40 units. If the price falls to Rs.5 per unit, how much will be its quantity demanded? (Ans 44 units)

24Q. A consumer buys 10 units of good X at a price of Rs.5 per unit. The price elasticity of demand for this good is 2. Price falls to Rs.4 per unit. How many units of good X will be now buy at this price?

(Ans 14 units)

25Q. Price elasticity of demand of good is -1. 60 units of this good are bought at a price of Rs.8 per unit. At what price will 45 units be bought? Calculate.

(Ans Rs.10 per unit)

26Q. The quantity demand of a commodity at a price of Rs.10 per unit is 40 units. Its price elasticity of demand is -2. Its price falls b Rs.2 per unit. Calculate its quantity demanded at the new price?

(Ans 56 units)

27Q. The market demand for a good at a price of Rs.10 per unit is 100 units. When its price changes, its market demand falls to 50 units. Find out the new price, if price elasticity of demand is (-) 2.

(Ans Rs.12.5 per unit)

28Q. The demand for a commodity decreases by 10% when its price increases from Rs.5 to Rs.6 per unit. What is price elasticity of demand for the commodity?

(Ans $E_d = 0.5$)

29Q. A 4% rise in price of X increases total expenditure incurred by a consumer of X. A 4 % fall in the price of Y has no effect on total expenditure incurred by a consumer of Y. Compare price elasticity of demand of goods X and Y.

(Ans. (i) Demand for X – commodity is less than unity (ii) Demand for Y – commodity is unity)

30Q. (i) If value of price elasticity of demand of a commodity is (-)3, What will be percentage change in demand as a result of 10% change in its price?

(ii) Suppose, price elasticity of demand is 1.5, What percentage change in price will bring 30% change in demand?

(Ans (i) 30%, (ii) 20%)

31Q. A consumer buys 50 units of good at Rs.4 per unit. When its price falls by 25%, its demand rises to 100 units. Find out price elasticity of demand.

(Ans. $E_d = 4$)

32Q. The price elasticity of demand for good X is known to be twice that of good Y. Price of X falls by 5% while that of Y rises by 5%. What is percentage change in quantities of X and Y?

(Ans. % change in price of X 10%,
% change in price of Y 5%)