PRICE ELASTICTY OF DEMAND.

Price Elasticity of demand measures the responsiveness of the quantity demanded of a commodity to a change in its price.

The more **ELASTIC** a good is the more a change in price will effect the demand for it.
e.g. If the price of a good changes by 10% and the resulting change in the quantity demanded changes by 40% then we can say that the good is elastic – a small change in price has caused a much larger change in the quantity demanded.

For an **INELASTIC** good a change in price will have little effect on the demand for the product.
e.g. A 10% increase in price will lead to only a 11% change in the quantity demanded.

ELASTICITY can be calculated using the following formulae –

$$P_{Ed} = (-)\frac{\%\triangle Q}{\%\triangle P}$$

OR Using the mid-point method

$$P_{Ed} = (-)\frac{\dfrac{\triangle Q}{(Q1+Q2)/2}}{\dfrac{\triangle P}{(P1+P2)/2}}$$

The mid-point method is the most common method used.

WORKED EXAMPLE:

$$P_{Ed} = \frac{\dfrac{6}{(4+10)/2}}{\dfrac{1}{(1+2)/2}}$$

$$= \frac{\dfrac{6}{7}}{\dfrac{1}{1.5}}$$

$$= 1.3$$

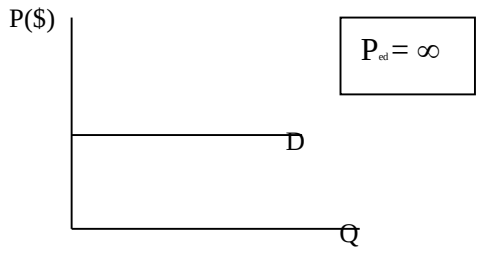
Explanation:
Change in the quantity demanded = 6 (ignoring the negative sign).

Average on the two quantities is derived from (4+10 / 2) = 7.

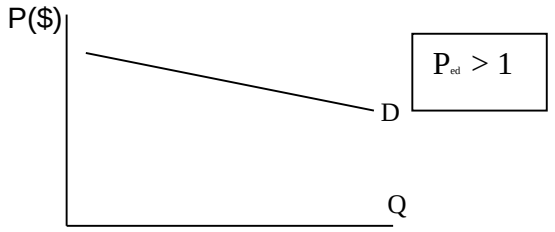
Therefore, change in quantity divided by average quantity = 6 / 7.
Change in price = 1.
Average of the two prices is derived from (1+2) / 2 = 1.5.
Therefore change in price divided by the average price = 1 / 1.5.
Price elasticity of demand is calculated by dividing 6 / 7 by 1 / 1.5 = 1.3

The higher the price elasticity of demand is, the more elastic the good is.

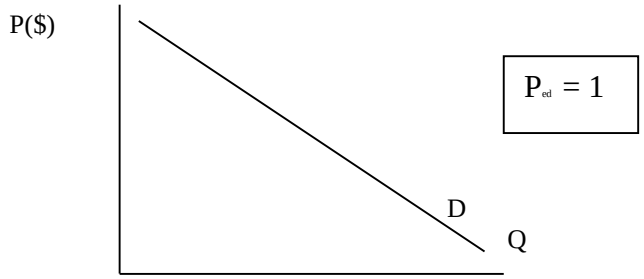
Infinite elasticity. (perfect elasticity)



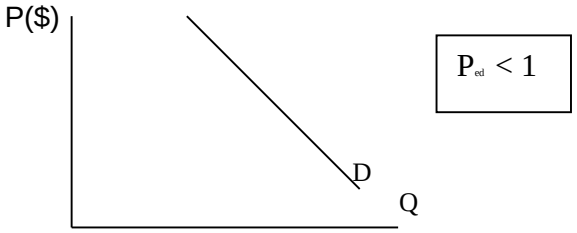
Elastic demand, elasticity greater than one



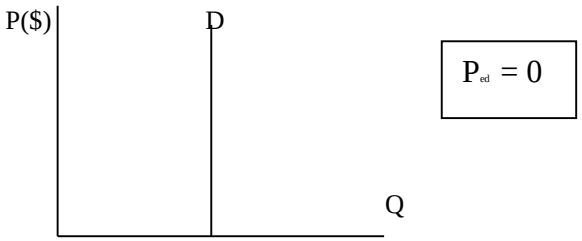
Unit elasticity, elasticity equal to one.



Inelastic demand, elasticity less than one



Perfectly inelastic demand (zero elasticity)



EXAMPLES OF PRICE ELASTICITY COEFFICIENT AS DETERMINED FOR THE USA.

Product / Service	Elasticity coefficient.
Electrical engineering products	1.52
Furniture	1.39
Motor vehicles	1.14
Transportation services	1.03
Gas, electricity and water	0.92
Tobacco	0.61
Agricultural and fish products	0.42
Coal	0.32

CALCULATING Ed BY COMPARING THE CHANGE IN TOTAL REVENUE OR EXPENDITURE BEFORE AND AFTER A CHANGE IN PRICE.

Expenditure and revenue are the same. What the buyer spends (expenditure) is what the seller receives (revenue).

ELASTIC DEMAND

If price **rises** and total revenue **falls** then demand is elastic.
If price **falls** and total revenue **rises** then demand is elastic

Price Rises ↑ Revenue Falls ↓ Price Falls ↓ Revenue Rises ↑

INELASTIC DEMAND

If price **rises** and total revenue **rises** then demand is inelastic.
If price **falls** and total revenue **falls** then demand is inelastic

Price Rises ↑ Revenue Rises ↑ Price Falls ↓ Revenue Falls ↓

GOODS AND SERVICES MORE LIKELY TO BE ELASTIC

- Luxuries, e.g. wine, restaurant meals,
- Many close substitutes e.g. entertainment.
- Easily postponed. e.g. an overseas holiday.
- Involve a relatively high proportion of income. e.g. cars.

GOODS AND SERVICES MORE LIKELY TO BE INELASTIC

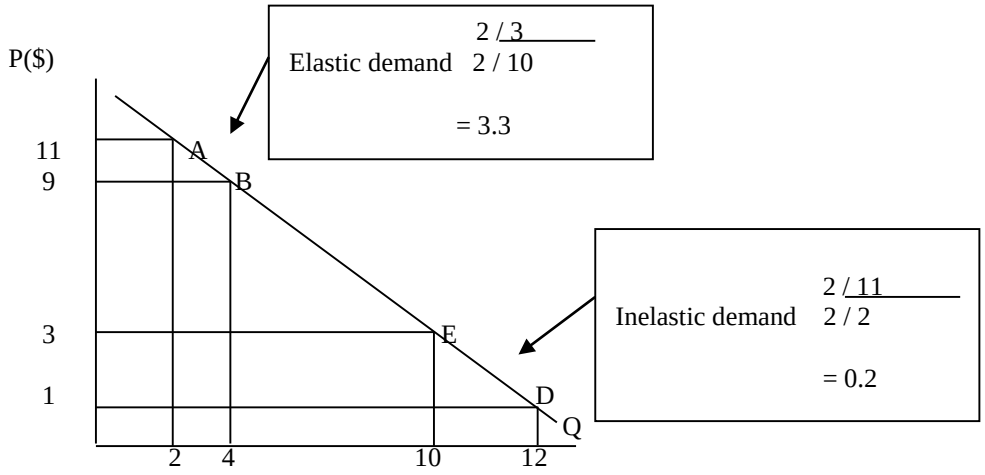
- Addictive. e.g. coffee, tobacco
- Necessities e.g. soap.
- There are few substitutes. e.g. petrol.
- Not easily postponed. It is not easy to put off buying basic food items or paying the rent.
- They are relatively unimportant in the overall pattern of expenditure. They use up a low proportion of income, e.g. cocoa.

VARIATIONS IN PRICE ELASTICITY OF DEMAND:

A market demand curve shows a variety of price / quantity combinations.

Since price elasticity of demand is tied to price, we can assume that the price elasticity of demand will vary along the demand curve.

e.g.



On a downward sloping demand curve Ep will be unitary exactly mid way down the demand curve, where the co-efficient of elasticity is equal to 1.
At the lower end of the demand curve demand is relatively inelastic – this tends to be because price is lower and so a price increase will have a relatively smaller effect on consumer demand.

INCOME ELASTICITY OF DEMAND.

Income Elasticity of _____demand measures the responsiveness of quantity demand to changes in consumer income.

If there is an increase in income, do consumers just buy more of a product? I.e. if income doubles, does this mean that a consumer will buy twice as much of everything on their shopping list? Or do they increase expenditure on only certain items and perhaps buy something which they could not afford before, or put more money aside for the future?

Generally, when people have low incomes, most of their income is spent on necessities like food and accommodation. As income increases spending patterns tend to change. Only so much can be spent on necessities, as income rises, a greater *proportion* of income is spent on luxuries and less income, as a proportion, is spent on essentials. Although the consumer may spend more money on food, clothing and housing, these dollars represent a smaller proportion of income.

As income continues to increase, a consumer's spending habits will change. New demands will open up and spending on luxury goods will increase. The consumer may eat more meals at restaurants, go on more holidays, buy designer clothing etc.

MEASUREMENT OF INCOME ELASTICITY OF DEMAND.
Income elasticity of demand can be calculated using the following formulae

$$E_Y = \frac{\dfrac{\triangle Q}{(Q1+Q2)/2}}{\dfrac{\triangle Y}{(Y1+Y2)/2}}$$

Use the mid-point method to calculate income elasticity of demand

Or the percentage change method.

$$E_Y = \frac{\%\ Q}{\%\ Y}$$

Income elasticity of demand ____is a measurement of how a change in a persons income will impact upon their demand for a good or service.

The coefficient of income elasticity depends on the type of goods and services. These can be divided into the broad categories shown below.

CATERGORY	COEFFICIENT OF INCOME ELASTICITY
Normal goods	Positive (greater than 0)
Luxuries	Greater than 1
Necessities	Greater than 0 but less than 1
Inferior goods	Negative (i.e. less than 0)

Luxuries and necessities are regarded as ***normal goods***, with the proportion of income spent on them and the quantity demanded increasing as income increases.

For ***inferior goods,*** the proportion of income spent and the quantity demanded actually falls as income rises. Inferior goods include low quality clothing, no-frills products and cheap substitutes like budget cola. We may be forced to buy these goods when our income is low but change to other products as our income increases.

EXAMPLES OF INCOME ELASTICITY OF DEMAND

Product/ service	Income elasticity coefficient	
Airline travel	5.82	Elastic
Movie going	3.41	
Restaurant meals	1.61	
Haircutting	1.36	
Doctors services	1.15	
Foot wear	0.94	Inelastic
Alcoholic beverages	0.62	
Clothing	0.51	
Newspapers	0.38	
Telephone	0.32	

Interpretation: If income rises by 1%, expenditure on air travel will rise by 5.82%, while spending on newspapers rises by only 0.38%.

CROSS PRICE ELASTICITY OF DEMAND

The cross price elasticity of demand measures the responsiveness of quantity demanded (of, say good X) to changes in the price of a related good, holding all other things constant.

$$\text{cross-price elasticity of demand} = \frac{\%\Delta \text{QD OF GOOD X}}{\%\Delta \text{IN PRICE OF RELATED GOOD}}$$

The demand for good X is influenced by the prices of other goods. This relationship can take one of two forms. Suppose first that good X and good S are substitutes (butter and margarine). A rise in price of good S (Ps) will cause consumers to buy more of good X, demand for X will increase (a shift to the right of the demand curve). Here the cross- price elasticity of demand will have a positive value, indicating the goods are substitutes.
Now suppose that goods X and C are complementary goods (cars and petrol) they give more utility to consumers when used in conjunction. A rise in price of good C (Pc) will cause a fall in consumption of good X (a shift to the left of the demand curve). In this case the cross price elasticity will have a negative value.