



# eLearneconomics: Price elasticity of demand (1)

## Student response \_\_\_\_\_

(a) Define price elasticity of demand and give the formula to calculate  $E_p$ .

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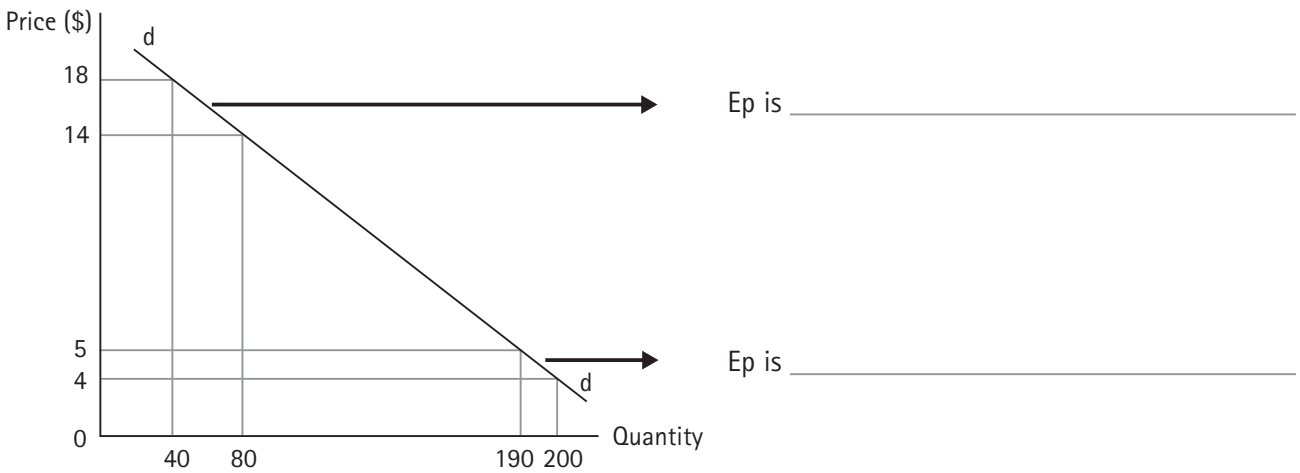
(b) Work out price elasticity of demand for each question below. Show your working (round to two decimal places). Use the midpoint method.

(i) The price of socks rose from \$3 to \$4 and sales fell from 12 000 to 10 000.

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(ii) Work out the  $E_p$  on the curve at the positions indicated.



(c) Complete the table by giving possible explanations for the price elasticity of demand coefficient indicated.

Product (and price elasticity of demand co-efficient)	Possible explanations
Petrol (0.56)	
A super yacht (5.89)	

# eLearneconomics: Price elasticity of demand (1a)



## Solutions

(a) Define price elasticity of demand and give the formula to calculate  $E_p$ .

$E_p$  measures the responsiveness of quantity demanded of a good or service to changes in its price.

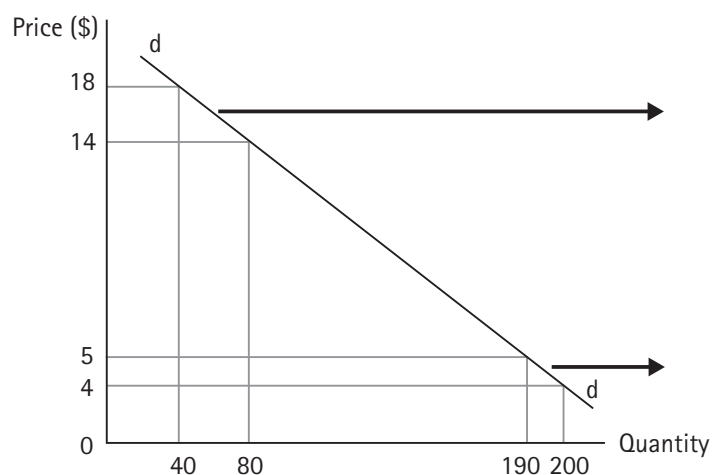
$$E_p = \frac{\frac{\Delta QD}{\text{midpt } QD}}{\frac{\Delta P}{\text{midpt price}}} \quad \text{or} \quad E_p = \frac{\% \Delta QD}{\% \Delta P}$$

(b) Work out price elasticity of demand for each question below. Show your working (round to two decimal places). Use the midpoint method.

(i) The price of socks rose from \$3 to \$4 and sales fell from 12 000 to 10 000.

$$E_p = \frac{\left( \frac{-2\,000}{11\,000} \right)}{\left( \frac{1}{3.5} \right)} = -0.636 = 0.64$$

(ii) Work out the  $E_p$  on the curve at the positions indicated.



$$E_p \text{ is } \frac{\left( \frac{40}{60} \right)}{\left( \frac{-4}{16} \right)} = 2.67$$

$$E_p \text{ is } \frac{\left( \frac{10}{195} \right)}{\left( \frac{-1}{4.5} \right)} = 0.23$$

(c) Complete the table by giving possible explanations for the price elasticity of demand coefficient indicated.

Product (and price elasticity of demand co-efficient)	Possible explanations
Petrol (0.56)	Petrol is a necessity. There are few substitutes for petrol. Takes a small proportion of total income spent.
A super yacht (5.89)	A super yacht is a luxury. There are many substitutes. Takes a high proportion of total income spent.



# eLearneconomics: Price elasticity of demand (2)

## Student response \_\_\_\_\_

(a) Indicate the price elasticity of demand indicated by the situation outlined in the table below.

Situation	Elasticity of demand
(i) The response to a given change in price is an exactly proportionate change in quantity demanded	
(ii) The response to a given change in price there is a more than proportionate change in quantity demanded	
(iii) The response to a given change in price there is a less than proportionate change in quantity demanded	
(iv) A given change in prices evokes a more than proportionate change in quantity demanded	

(b) (i) Give two reasons why the price elasticity of demand coefficient of overseas trips is 2.67.

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(ii) What will happen to the total revenue for producers of overseas trip if the price rises by 4%?

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(c) Use the table to answer the questions.

Price (\$)	Quantity demanded
8	2 000
7	4 000
6	6 000
5	8 000
4	10 000
3	12 000

(i) Price elasticity between \$6 and \$7 using the midpoint method:

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(ii) If the price is lowered from \$4 to \$3, what happens to total revenue and what is this product's elasticity?

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(d) If the price per unit of a good with unit elasticity ( $E_p$ ) of demand is \$80 when total sales are 100 units, what will the price have to be for sales to increase to 120 units?

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# eLearneconomics: Price elasticity of demand (2a)



## Solutions

(a) Indicate the price elasticity of demand indicated by the situation outlined in the table below.

Situation	Elasticity of demand
(i) The response to a given change in price is an exactly proportionate change in quantity demanded	Unitary
(ii) The response to a given change in price there is a more than proportionate change in quantity demanded	Elastic demand
(iii) The response to a given change in price there is a less than proportionate change in quantity demanded	Inelastic demand
(iv) A given change in prices evokes a more than proportionate change in quantity demanded	Elastic demand

(b) (i) Give two reasons why the price elasticity of demand coefficient of overseas trips is 2.67.

There are many substitutes for overseas trips.

Overseas trips are a luxury.

A high proportion of income is spent on overseas trips.

(ii) What will happen to the total revenue for producers of overseas trip if the price rises by 4%?

Total revenue will decrease.

(c) Use the table to answer the questions.

Price (\$)	Quantity demanded
8	2 000
7	4 000
6	6 000
5	8 000
4	10 000
3	12 000

(i) Price elasticity between \$6 and \$7 using the midpoint method:

$$E_p = \frac{\left( \frac{-2\,000}{5\,000} \right)}{\left( \frac{-1}{6.5} \right)} = -2.60 = 2.60 \text{ elastic}$$

(ii) If the price is lowered from \$4 to \$3, what happens to total revenue and what is this product's elasticity?

P ↓ TR ↓  $E_p$  inelastic

(d) If the price per unit of a good with unit elasticity ( $E_p$ ) of demand is \$80 when total sales are 100 units, what will the price have to be for sales to increase to 120 units?

$$TR = TR' \quad \$8\,000 = 120 \times P \quad P = \$66.67$$



# eLearneconomics: Price elasticity of demand (3)

Student response \_\_\_\_\_

(a) Complete the table.

Relative changes in price/revenue	Elasticity – unitary, inelastic, elastic
(i) Price increases and total revenue remains unchanged	
(ii) Price increases and total revenue increases	
(iii) Price decreases and total revenue increases	
(iv) Revenue remains the same when price falls	
(v) Change in price and total revenue are in the same direction	
(vi) Changes in total revenue and price go in the opposite direction	

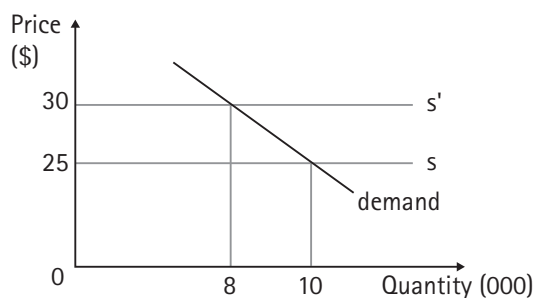
(b) Give THREE reasons why the price elasticity of demand coefficient of salt is 0.21.

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(c) Use the diagram about a sports stadium to answer the questions that follow.



(i) How many tickets are sold at \$25? \_\_\_\_\_

What is the revenue from ticket sales at the game? \_\_\_\_\_

(ii) When the price is raised to \$30, how many tickets are sold? \_\_\_\_\_

At \$30 what is the revenue from ticket sales at the game? \_\_\_\_\_

(iii) From the information in parts a and b, what is the price elasticity of demand?

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(iv) If you were the stadium manager, what price for a ticket would you charge and why?

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# eLearneconomics: Price elasticity of demand (3a)



## Solution

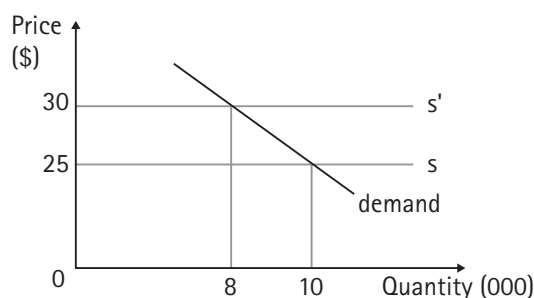
(a) Complete the table.

Relative changes in price/revenue	Elasticity – unitary, inelastic, elastic
(i) Price increases and total revenue remains unchanged	unitary
(ii) Price increases and total revenue increases	inelastic
(iii) Price decreases and total revenue increases	elastic
(iv) Revenue remains the same when price falls	unitary
(v) Change in price and total revenue are in the same direction	inelastic
(vi) Changes in total revenue and price go in the opposite direction	elastic

(b) Give THREE reasons why the price elasticity of demand coefficient of salt is 0.21.

A small percentage of income is spent on salt. There are few, if any, substitutes for salt. Salt is considered a necessity.

(c) Use the diagram about a sports stadium to answer the questions that follow.



(i) How many tickets are sold at \$25? 10 000

What is the revenue from ticket sales at the game? \$250 000

(ii) When the price is raised to \$30, how many tickets are sold? 8 000

At \$30 what is the revenue from ticket sales at the game? \$240 000

(iii) From the information in parts a and b, what is the price elasticity of demand?

P↑ TR↓ elastic (many substitutes)

(iv) If you were the stadium manager, what price for a ticket would you charge and why?

\$25; more revenue made (not more profit) also promotes the game, builds the brand, additional revenue could be made from the sale of merchandise.