

Elasticity – the concept

- If price rises by 10% - what happens to demand?
- We know demand will fall
- By more than 10%?
- By less than 10%?
- **Elasticity measures the extent to which demand will change**

Elasticity

- 3 basic demand elasticities:
- Price elasticity of demand
- Income elasticity of demand
- Cross elasticity

Elasticity

- Price Elasticity of Demand
 - The responsiveness of demand to changes in price
 - Where % change in demand is greater than % change in price – **elastic**
 - Where % change in demand is less than % change in price - **inelastic**

Elasticity

The Formula:

$$E_d = \frac{\% \text{ Change in Quantity Demanded}}{\% \text{ Change in Price}}$$

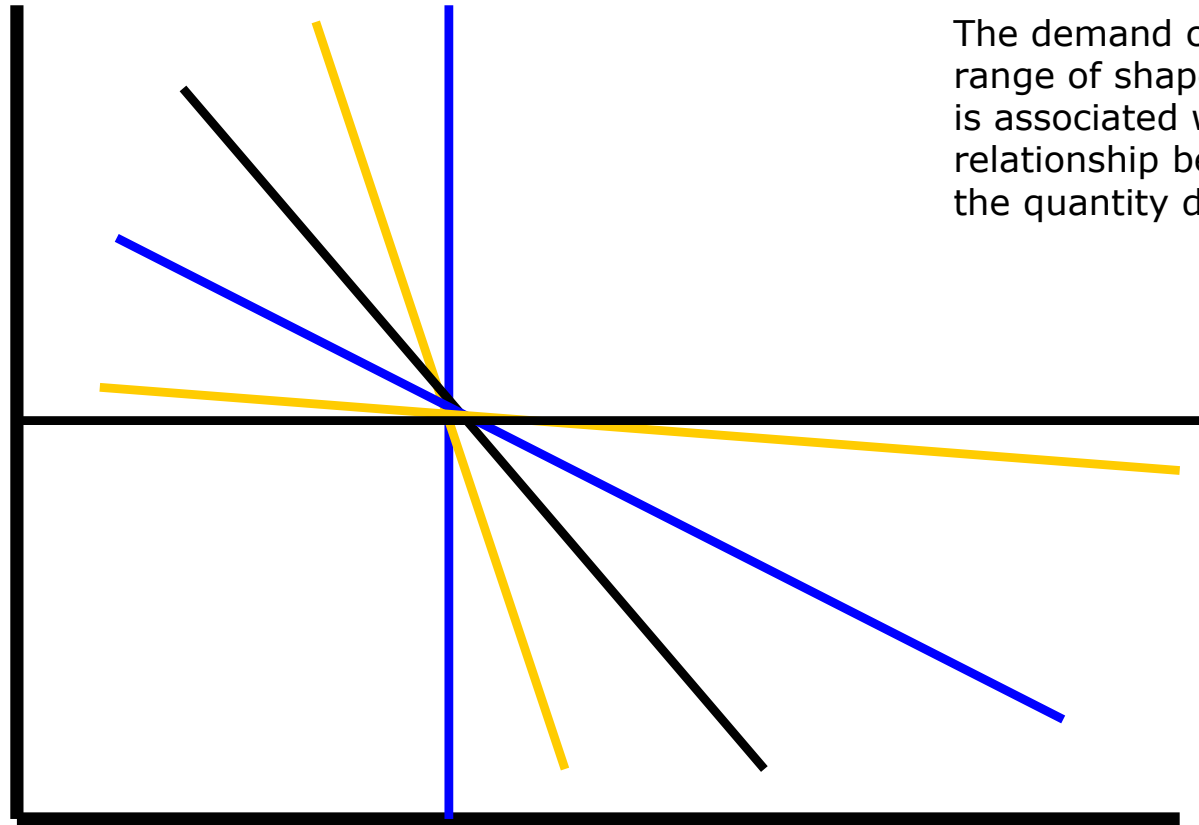
If answer is between 0 and -1: the relationship is inelastic

If the answer is between -1 and infinity: the relationship is elastic

Note: PED has – sign in front of it; because there
Is an inverse relationship between price and quantity demanded

Elasticity

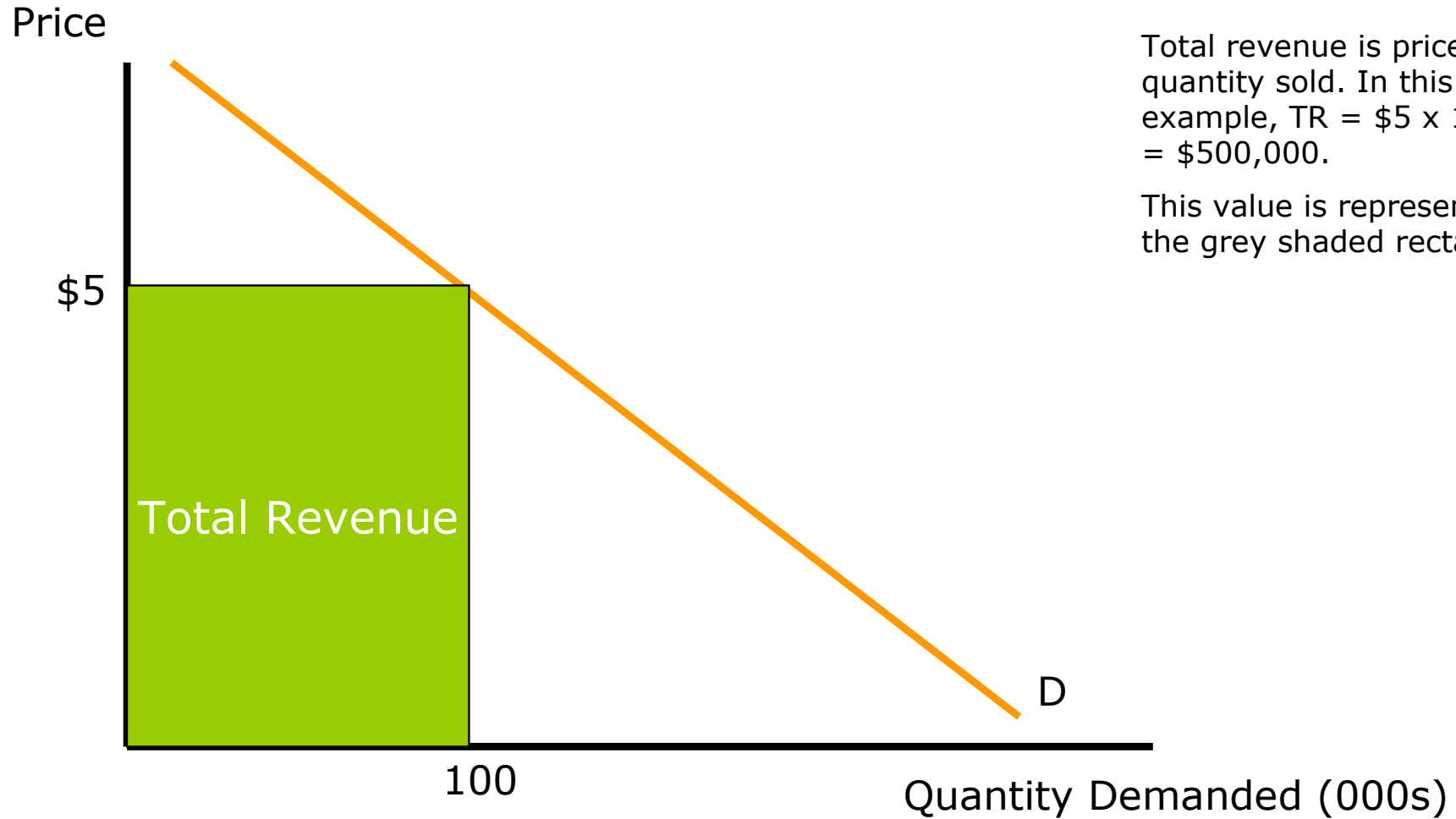
Price (\$)



The demand curve can be a range of shapes each of which is associated with a different relationship between price and the quantity demanded.

Quantity Demanded

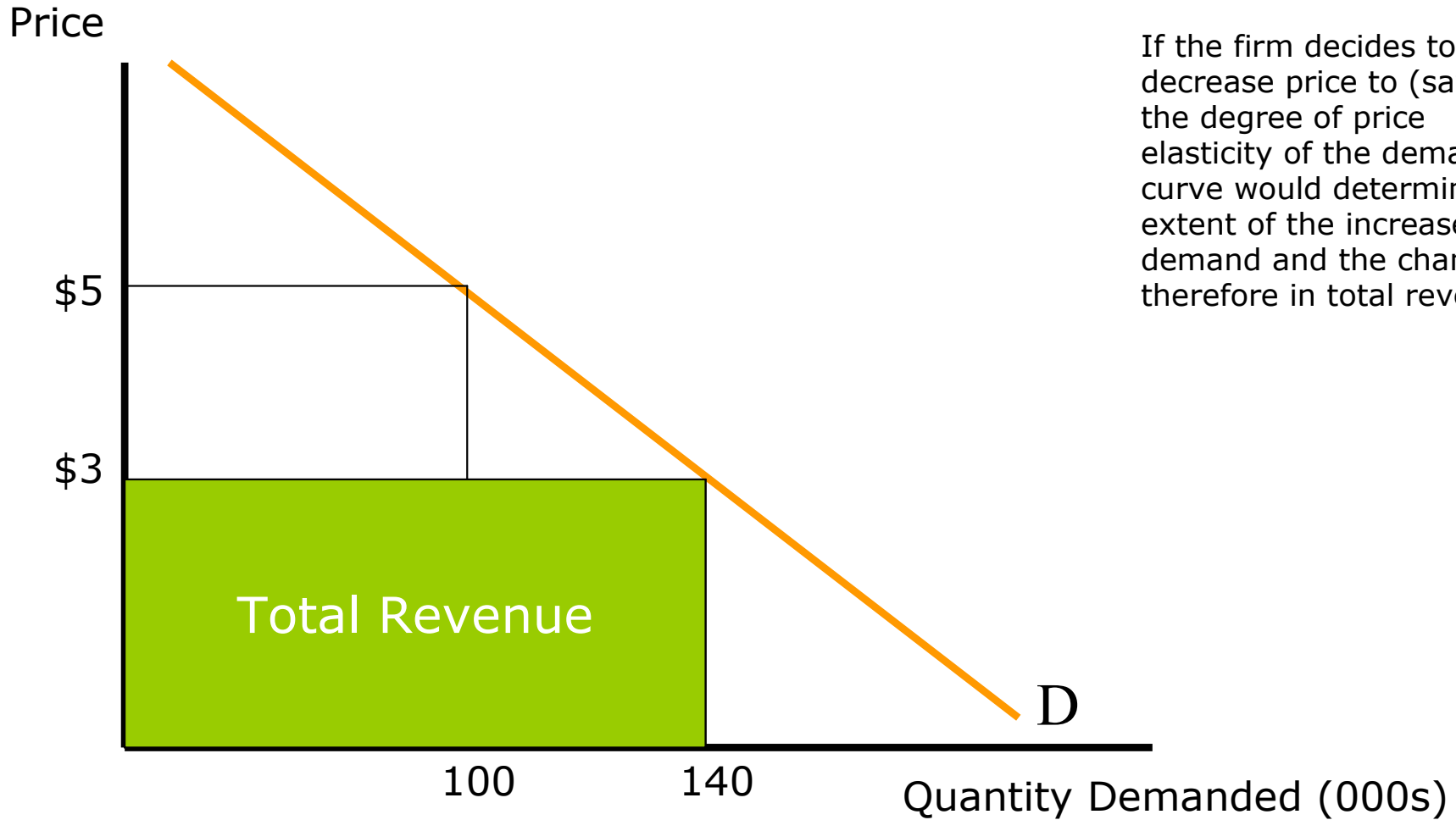
Elasticity



Total revenue is price x quantity sold. In this example, $TR = \$5 \times 100,000 = \$500,000$.

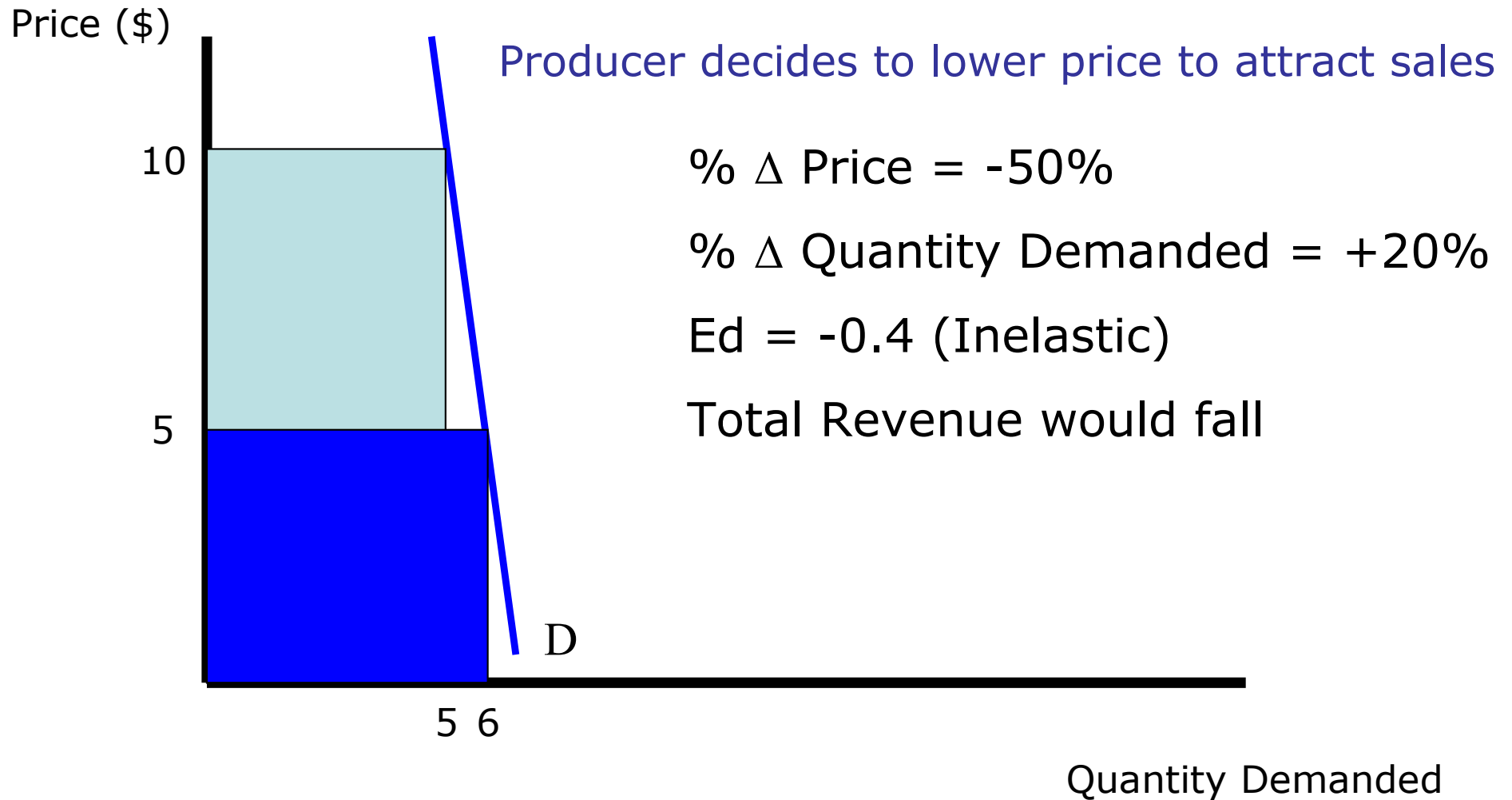
This value is represented by the grey shaded rectangle.

Elasticity



If the firm decides to decrease price to (say) \$3, the degree of price elasticity of the demand curve would determine the extent of the increase in demand and the change therefore in total revenue.

Elasticity



Elasticity

Price (£)

Producer decides to reduce price to increase sales

$\% \Delta$ in Price = - 30%

$\% \Delta$ in Demand = + 300%

$E_d = - 10$ (Elastic)

Total Revenue rises

10

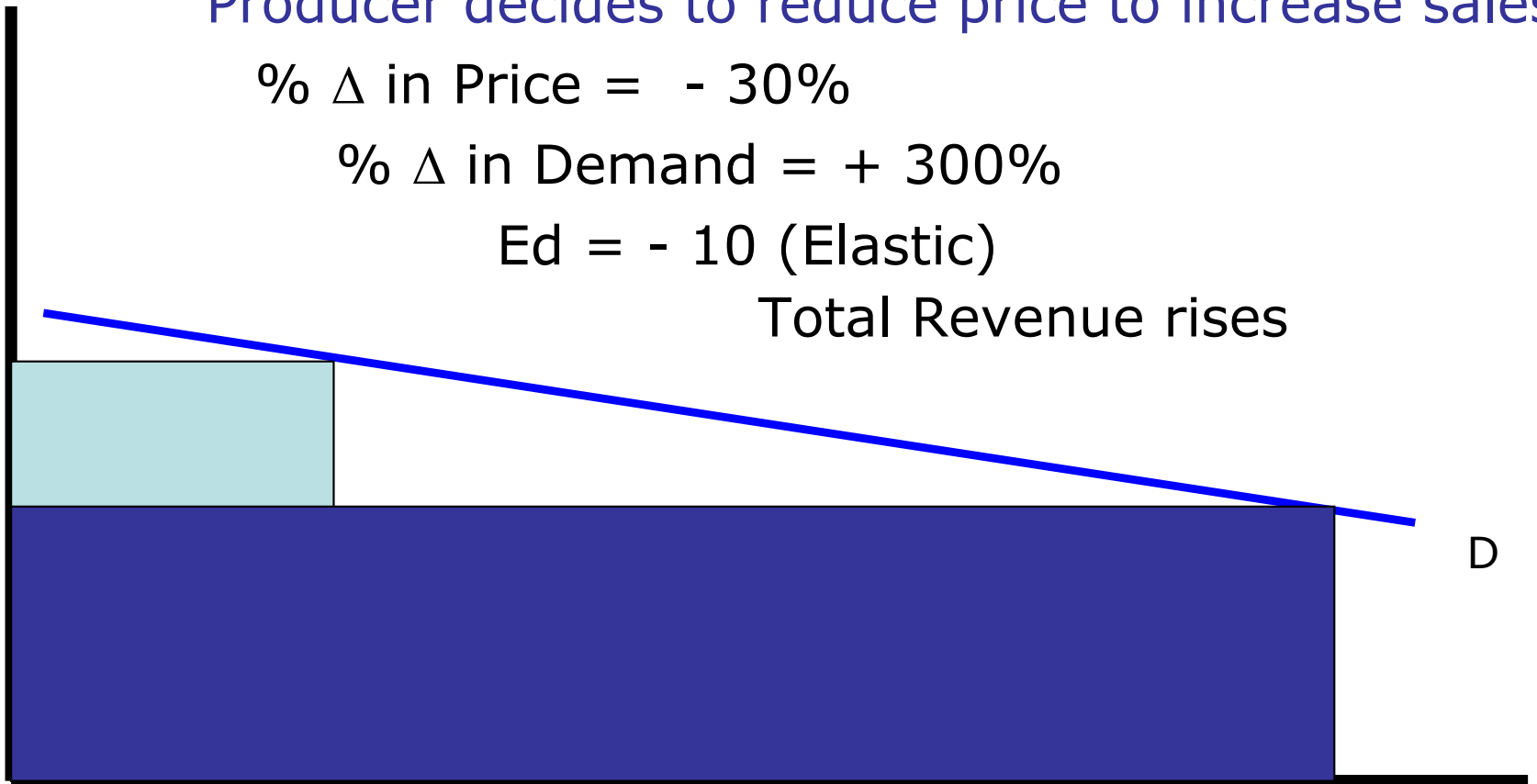
7

5

Quantity Demanded

20

D



Elasticity

- **If demand is price elastic:**
- Increasing price would **reduce** TR ($\% \Delta Q_d > \% \Delta P$)
- Reducing price would **increase** TR ($\% \Delta Q_d > \% \Delta P$)
- **If demand is price inelastic:**
- Increasing price would **increase** TR ($\% \Delta Q_d < \% \Delta P$)
- Reducing price would **reduce** TR ($\% \Delta Q_d < \% \Delta P$)

Elasticity

- **Income Elasticity of Demand:**
 - The responsiveness of demand to changes in incomes
- **Normal Good** – demand rises as income rises and vice versa
- A positive sign denotes a normal good
- **Inferior Good** – demand falls as income rises and vice versa
- A negative sign denotes an inferior good

Elasticity

- Examples:
- $E_y = - 0.6$: Good is an **inferior good** – a rise in income of 3% would lead to demand falling by 1.8%
- $E_y = + 0.4$: Good is a **normal good** a rise in incomes of 3% would lead to demand rising by 1.2%
- $E_y = + 1.6$: Good is a **normal good** a rise in incomes of 3% would lead to demand rising by 4.8%
- $E_y = - 2.1$: Good is an **inferior good** a rise in incomes of 3% would lead to a fall in demand of 6.3%

Elasticity

- **Cross Elasticity:**
- The responsiveness of demand of one good to changes in the price of a related good – either a substitute or a complement
- **Goods which are complements:**
 - Cross Elasticity will have negative sign (inverse relationship between the two)
- **Goods which are substitutes:**
 - Cross Elasticity will have a positive sign (positive relationship between the two)

$$E_x = \frac{\% \Delta Q_d \text{ of good } t}{\% \Delta \text{ Price of good } y}$$

Determinants of Elasticity

- **Time period** – the longer the time under consideration the more elastic a good is likely to be
- **Number and closeness of substitutes** – the greater the number of substitutes, the more elastic
- **The proportion of income taken up by the product** – the smaller the proportion the more inelastic
- **Luxury or Necessity** - for example, addictive drugs