

## 2.2 Price elasticity, income elasticity and cross elasticity of demand

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Name: \_\_\_\_\_ Class: \_\_\_\_\_ Date: \_\_\_\_\_

**Total: 19 marks**

**KEY WORDS** elasticity of demand 需求弹性 • price elasticity of demand 需求价格弹性 • cross elasticity of demand  
• total revenue 总收益 • cross (xed) 交叉弹性

### Objective

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Build the skills to answer exam questions on **elasticity of demand** 需求弹性 — **price (PED)** 价格弹性, **income (YED)** 收入弹性 and **cross (XED)** 交叉弹性 elasticity, their formulae, and the link between **PED and total revenue** 总收益.

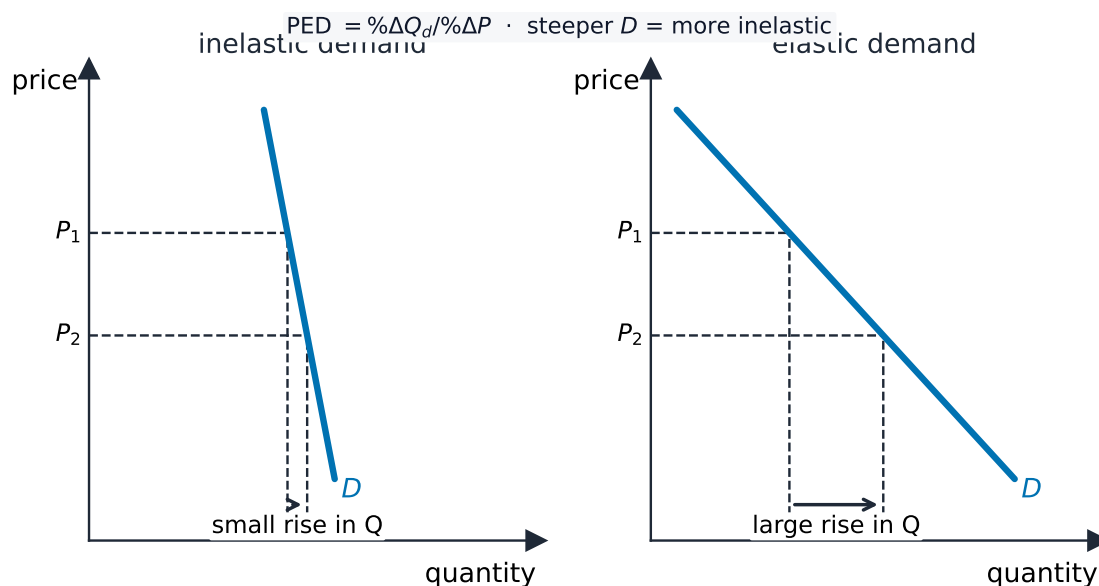
**You must be able to:**

- calculate and interpret PED, YED and XED
- classify goods (elastic/inelastic; normal/inferior; substitute/complement)
- analyse the link between PED and total revenue

### 1 Worked examples

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- The three elasticities



*Inelastic: quantity barely moves; elastic: quantity moves a lot*

$$\text{PED} = \frac{\% \Delta Q_d}{\% \Delta P} \quad \text{YED} = \frac{\% \Delta Q_d}{\% \Delta Y} \quad \text{XED} = \frac{\% \Delta Q_{d,A}}{\% \Delta P_B}$$

- **PED:** price +10%, quantity -25% →  $\frac{-25}{10} = -2.5$  → **elastic** (ignore the sign).
- **YED:** income +20%, demand +30% → +1.5 → **normal**, a **luxury** 奢侈品 (>1).
- **XED:** tea price +10%, coffee +4% → +0.4 → **substitutes** 替代品 (positive).
- **TR link:** if demand is inelastic, a price **rise** raises total revenue; if elastic, a price **fall** raises it.

**Answer shapes:** AO1 + AO2 + AO3 (analysis) + AO4 (judgement, for evaluate questions).

## 2 Practice

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**2.1** Define *price elasticity of demand (PED)*. [2]

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**2.2** The price of a good falls by 5% and quantity demanded rises by 15%. Calculate the PED and classify the demand. [2]

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**2.3** A 10% rise in income causes a 4% fall in demand for a good. Calculate the YED and classify the good. [2]

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## 3 Exam-style questions

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**3.1** A good has a PED of 0.4. To raise total revenue, the firm should: [1]

- **A** lower the price
- **B** raise the price
- **C** keep the price the same
- **D** stop producing the good

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**3.2** When the price of good B rises by 20%, the demand for good A rises by 5%.

(a) Calculate the cross elasticity of demand (XED). [2]

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(b) State, with a reason, the relationship between goods A and B. [2]

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**3.3** Discuss the usefulness of price elasticity of demand to a firm setting its prices. [8]

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## Solutions

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Economics answers are marked by **level of response** against the assessment objectives: award **AO1** knowledge, **AO2** application, **AO3** analysis and **AO4** evaluation.

**2.1** a measure of how much the quantity demanded responds to a change in the good's price, equal to  $\% \Delta Q_d \div \% \Delta P$  (2 for a clear definition; 1 for a partial idea).

**2.2**  $PED = \frac{+15}{-5} = -3$ ; ignoring the sign,  $3 > 1$ , so demand is **elastic** (2; award 1 for a correct value with no classification).

**2.3**  $YED = \frac{-4}{+10} = -0.4$ ; negative, so the good is **inferior** (2; award 1 for a correct value with no classification).

**3.1 B.** With PED 0.4 (inelastic), raising the price raises total revenue.

**3.2** (a)  $XED = \frac{+5}{+20} = +0.25$  (2; award 1 for a correct method with the wrong figure).  
(b) positive XED, so A and B are **substitutes** — a rise in B's price makes buyers switch to A (2 for relationship + reason; 1 for relationship only).

**3.3** [8] AO1/AO2/AO3 up to 5 + AO4 up to 3. **Useful:** PED predicts how a price change affects quantity and total revenue, helping the firm price for maximum revenue and judge a tax or discount. **Limits:** PED values come from estimates, change over time, and assume ceteris paribus; rivals may react. Judgement: PED is a valuable guide for pricing, but only alongside knowledge of costs and competitors — its usefulness depends on how reliable the estimate is.