2.5 Other Elasticities

Name: _____ Class: _____ Date: _____ **Total: 13 marks**

KEY WORDS cross-price elasticity • income elasticity • elastic • demand • price elasticity of demand

Objective

Build the skills to answer exam questions on **other elasticities**.

You must be able to:

- define and calculate **cross-price elasticity of demand**
- use its sign to classify goods as **substitutes** or **complements**
- define and calculate **income elasticity of demand**
- use its sign to classify goods as **normal** or **inferior**

1 Key knowledge and worked examples

Study these first. Each one shows the method for a question type used later.

■ **Cross-price elasticity**

$$\text{XED} = \frac{\%\Delta Q_d \text{ of good A}}{\%\Delta P \text{ of good B}}.$$

Positive → substitutes; **negative** → complements.

■ **Income elasticity**

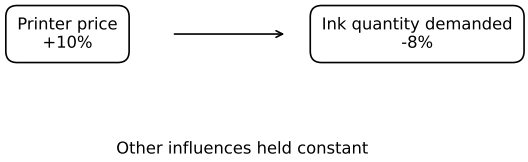
$$\text{YED} = \frac{\%\Delta Q_d}{\%\Delta \text{income}}.$$

Positive → normal good; **negative** → inferior good.

■ **Worked application: Keep the signs and the two markets separate**

In a supplied case, the price of printers rises by 10% and the quantity of ink demanded falls by 8%, with other influences held constant. Cross-price elasticity is $\%\Delta Q_{\text{ink}}/\%\Delta P_{\text{printer}} = -8/10 = -0.8$. The negative sign indicates complements. This is not the own-price elasticity of ink: the changed price belongs to a different good. Separately, a 5% income rise accompanied by a 2% fall in demand gives income elasticity $-2/5 = -0.4$, indicating an inferior good for that population and range. A

sign classifies the observed relationship, not every possible market condition.



2 Practice

2.1 State what a **positive** cross-price elasticity means about two goods. [1]

2.2 State what a **negative** income elasticity means about a good. [1]

2.3 When income rises 10%, demand for a good falls 5%. Find the income elasticity and classify the good. [2]

3 Exam-style questions

3.1 Two goods with a **negative** cross-price elasticity are [1]

- ☐ **A** substitutes
- **B** complements
- **C** normal goods
- **D** inferior goods

3.2 A normal good has an income elasticity that is [1]

- ☐ **A** negative
- **B** zero
- **C** positive
- **D** infinite

3.3 The price of tea rises 20% and the quantity of coffee demanded rises 10%.

(a) Find the cross-price elasticity. [2]

(b) State whether tea and coffee are substitutes or complements. [1]

3.4 Using the supplied percentage changes, income rises 8% and demand for a good rises 12%. (a) Calculate income elasticity and classify the good. [2]

(b) The price of a second good rises 6% while demand for the first falls 3%, other influences unchanged. Calculate cross-price elasticity and classify the relationship. [2]