

Exercise walk-through

2.3

Price elasticity of supply

A-Level Economics

Price elasticity of demand

$$PED = \frac{\% \Delta \text{quantity}}{\% \Delta \text{price}}$$

$|PED| > 1$ **elastic**
little).

(responds a lot); $|PED| < 1$ **inelastic**

(responds

Worked example

price +10%, quantity -25% $\Rightarrow$ $PED = -2.5$ (elastic)

Reading a PED value

$$\text{PED} = 0$$

perfectly inelastic – quantity does not respond at all

$$0 < |\text{PED}| < 1$$

inelastic – quantity changes *less* than price, in percentage terms

$$|\text{PED}| = 1$$

unit elastic – they change in the same proportion

$$|\text{PED}| > 1$$

elastic – quantity changes *more* than price

$$|\text{PED}| = \infty$$

perfectly elastic – any price rise loses every buyer

the formula

$$\frac{\% \Delta Q_d}{\% \Delta P}, \text{ and it is negative for downward-sloping demand}$$

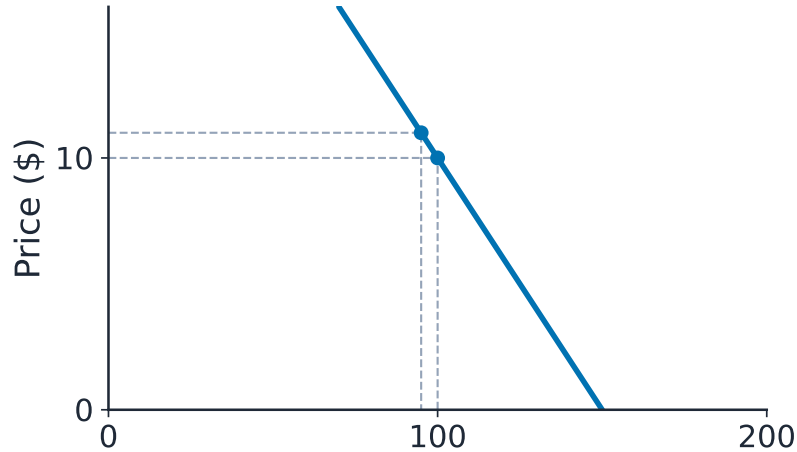
Compare the **percentage** changes, never the absolute ones. State whether your value is signed or a magnitude; use the sign for YED and XED.

Price elasticity of demand, in detail

Price: 10 → 11 (+10%); both quantities start at 100

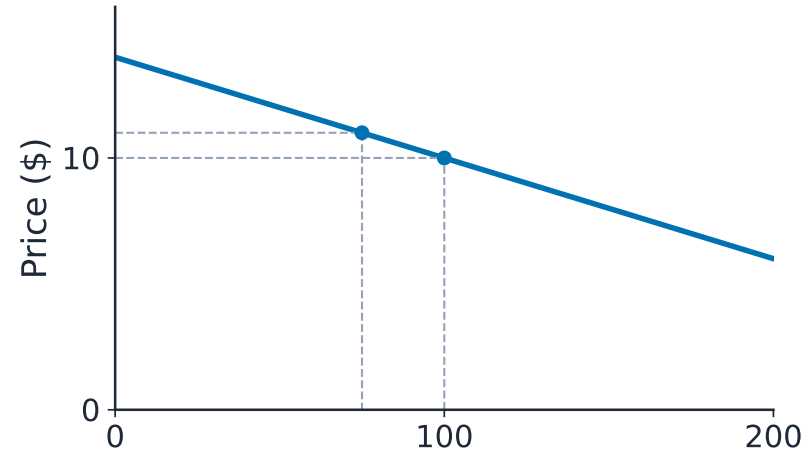
Inelastic

Elastic



Quantity demanded
Q: 100 → 95 (-5%)

$$|E| = |-5 / 10| = 0.5$$

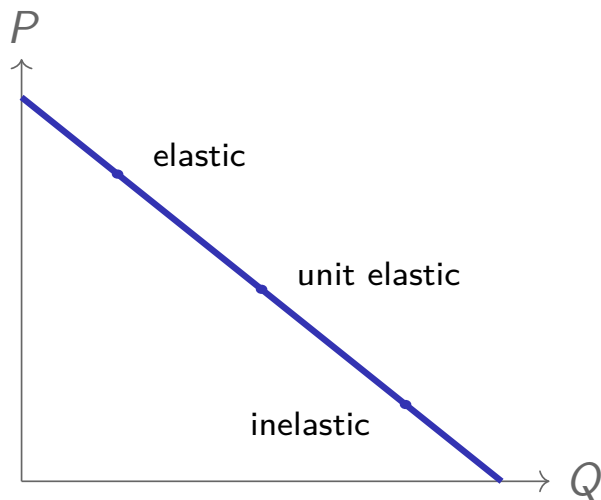


Quantity demanded
Q: 100 → 75 (-25%)

$$|E| = |-25 / 10| = 2.5$$

Worked example price +10%, quantity -25% $\Rightarrow$ PED = -2.5 (elastic)

Same slope, different price elasticity



For $Q = 10 - P$, $\Delta Q / \Delta P = -1$.

$$PED = \frac{\Delta Q}{\Delta P} \frac{P}{Q}$$

P	Q	Point	PED
8	2		-4
5	5		-1
2	8		-0.25

Point elasticity changes along a straight line. The midpoint maximizes $TR = PQ$ on this curve; a unit-elastic segment instead has constant revenue.

PED and total revenue

Two goods: both start at price \$10 and sales of 100 units

Price rises to \$11. Good A sells 95 units; good B sells 75. Other determinants stay fixed. Use initial values for percentage changes.

Calculate before the answer:

- 1 PED for each good, including its sign and magnitude.
- 2 Revenue before and after the price rise: $TR = PQ$.
- 3 Can the higher-revenue case alone establish higher profit?

Exercises 2.1-2.3

2.1 Define *price elasticity of supply (PES)*.

[2]

2.2 Price rises by 20% and quantity supplied rises by 30%. Calculate the PES and classify the supply.

[2]

2.3 State two factors that make supply more elastic.

[2]

Exercises 2.1-2.3

2.1 Define *price elasticity of supply (PES)*. [2]

2.1

- a measure of how much the quantity supplied responds to a change in price, equal to $\% \Delta Q_s \div \% \Delta P$ (2 for a clear definition; 1 for a partial idea)

2.2 Price rises by 20% and quantity supplied rises by 30%. Calculate the PES and classify the supply. [2]

2.2

- $PES = \frac{+30}{+20} = +1.5$; greater than 1, so supply is **elastic** (2; award 1 for a correct value with no classification)

2.3 State two factors that make supply more elastic. [2]

2.3

- any two of: spare capacity; large stocks; easily mobile factors of production; more time (1 + 1)

Exercises 3.1·3.2

3.1 Supply is most likely to be **price inelastic** when:

[1]

☐

A firms have spare capacity

B there are large stocks of the good

C the good takes a long time to produce

D factors of production move easily into the industry

3.2 Explain why the supply of a good is usually more elastic in the long run than in the short run.

[6]

Exercises 3.1·3.2

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3.1 C

- A long production time makes supply slow to respond, so it is inelastic

3.2 Explain why the supply of a good is usually more elastic in the long run than in the short run.

[6]

3.2

- [6] AO1 1 + AO3 up to 5 – in the short run at least one factor is fixed, so firms can increase output only a little when price rises; in the long run all factors can be varied (new machines, more workers, new firms enter)
- output can respond fully
- supply is more elastic

Exercise 3.3

3.3 Explain, with an example, why the supply of agricultural products is often price inelastic. [6]

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3.3

- [6] AO1 1 + AO2/AO3 up to 5 – crops take a growing season to produce, so a price rise cannot raise this year's output (momentary/short-run supply is fixed); farmers also cannot store some perishable goods
- quantity supplied responds little to price
- supply is inelastic