

What is Price Elasticity of Demand?

Worksheet

Price elasticity of demand is calculated as the percentage change in quantity demanded divided by the percentage change in price: $PED = (\% \Delta Q_d) / (\% \Delta P)$.

$$PED = \% \Delta Q_d / \% \Delta P = \frac{(\Delta Q_d / Q_d^{(avg)})}{(\Delta P / P^{(avg)})} \times$$

PED = Price elasticity of demand (unitless)

ΔQ_d = Change in quantity demanded (units)

ΔP = Change in price (currency)

$Q_d^{(avg)}$ = Average quantity demanded (units)

$P^{(avg)}$ = Average price (currency)

Questions

1. Price drops 10%, quantity demanded rises 30%. What is PED?

- A) 0.33
- B) 3
- C) 10
- D) Cannot calculate

2. PED = 0.5 for a good. If price rises 10%, quantity demanded:

- A) Falls 5%
- B) Falls 50%
- C) Rises 5%
- D) Stays same

3. Which good likely has the highest PED?

- A) Insulin (medicine)
- B) Diamonds (luxury)
- C) Tap water (necessity)
- D) Gasoline (necessity)

4. If demand is perfectly inelastic (PED = 0):

- A) Price changes don't affect quantity
- B) Quantity changes don't affect price
- C) Supply is infinite
- D) Revenue decreases

5. A pizza place drops price from 10 to 8 (20% decrease). Quantity demanded rises from 100 to 150 slices (50% increase). What is PED?

6. A medicine price rises from 5 to 6 (20% increase). Quantity demanded drops from 1000 to 980 units (2% decrease). Calculate PED.

7. Concert tickets rise from 50 to 60 (20% hike). Demand drops from 5000 to 4000 tickets (20% fall). What is PED and what type?

8. Define: What does PED measure?

9. Define: How do you interpret PED = 2?

10. Define: When is demand elastic (PED > 1)?

Answer Key

1. B) 3 — $PED = 30\% / 10\% = 3$ (elastic).
2. A) Falls 5% — % change in $Q_d = PED \times \% \text{ change in } P = 0.5 \times 10\% = 5\%$ decrease.
3. B) Diamonds (luxury) — Diamonds are luxury — buyers cut spending easily if price rises. Medicine is inelastic.
4. A) Price changes don't affect quantity — Perfectly inelastic: zero % change in Q_d no matter what % change in P .
5. % change in $Q_d = (150-100)/100 \times 100 = 50\%$ % change in $P = (8-10)/10 \times 100 = -20\%$ $PED = 50\% / |-20\%| = 50 / 20 = 2.5$ (elastic)
6. % change in $Q_d = (980-1000)/1000 \times 100 = -2\%$ % change in $P = (6-5)/5 \times 100 = 20\%$ $PED = |-2\%| / 20\% = 2 / 20 = 0.1$ (inelastic)
7. % change in $Q_d = (4000-5000)/5000 \times 100 = -20\%$ % change in $P = (60-50)/50 \times 100 = 20\%$ $PED = |-20\%| / 20\% = 20 / 20 = 1.0$ (unit elastic)
8. How sensitive quantity demanded is to price changes — the % change in Q_d per 1% change in price.
9. A 1% price increase causes a 2% drop in quantity demanded (elastic — quantity is very responsive).
10. When buyers are sensitive to price — quantity changes a lot for small price changes. Examples: luxury goods, substitutes available.

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