

Exercise walk-through

1.2

Consumer behaviour, demand and elasticities (1.3.2)

Pearson Edexcel · International A-Level · Economics

1. Topic 1 at a glance

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WEC11 first half: spec sections 1.3.1 to 1.3.4 in full - introductory concepts (six rows), consumer behaviour and demand (three rows), supply (two rows) and price determination (four rows). One original model runs through everything: demand $Q_d = 140 - 2P$ and supply $Q_s = 20 + 4P$, so equilibrium is $P = 20$, $Q = 100$ and every printed number cross-checks.

Must-know: ceteris paribus models; scarcity and opportunity cost; the PPF; rationality and its six limits; PED, YED, XED and PES formulae with their threshold tables; total revenue $= P \times Q$ maximised where $|PED| = 1$; consumer and producer surplus triangles; the rationing, incentive and signalling functions; tax and subsidy incidence by relative elasticity.

3. Consumer behaviour and demand

Consumer behaviour and demand

Rationality is an assumption: consumers maximise utility, firms profit; herding, habit, inertia, poor computation, the need to feel valued and framing bend it (1.3.2.1).

Demand is willingness AND ability to pay; own-price changes move along the curve; substitutes' and complements' prices, real income, tastes, population structure and advertising shift it (1.3.2.2).

Diminishing marginal utility - each extra item adds less satisfaction - explains the downward slope: a second identical unit is only bought at a lower price. On the shared curve, a rise from 20 to 22 cuts quantity from 100 to 96: the shift-versus-movement discipline keeps every later calculation honest.

4. Elasticities of demand

Elasticities of demand

$PED = \frac{\% \text{change in quantity}}{\% \text{change in price}}$. On the model at $P = 20$: price to 22 gives quantity 100 to 96, so $PED = -4\% / +10\% = -0.4$, inelastic. The five cases run from perfectly elastic to perfectly inelastic; PED depends on substitutes, branding, budget share, addictiveness, durability (1.3.2.3a-d).

Total revenue = $P \times Q$: 2000 at price 20, 2112 at price 22 - inelastic demand means price rises RAISE revenue; along a straight curve PED passes through unitary at the midpoint, so TR peaks at $P = 35$, $Q = 70$, $TR = 2450$ (1.3.2.3e-g). $YED = +0.8$ for income $+10\%$, quantity $+8\%$: a normal, income-inelastic good; $XED = +1.0$ identifies close substitutes; firms price with PED, forecast with YED, watch rivals with XED; governments tax inelastic goods (1.3.2.3h-j).

Exercises 2.1·2.3

2.1 State the rationality assumption for consumers and for firms, and give one reason consumers may not maximise utility. [2]

2.2 For each event on the market for tea, state movement along or shift (and direction):
(a) the price of tea falls; (b) the price of coffee rises. [2]

2.3 On $Q_d = 140 - 2P$, price rises from 20 to 22. Calculate PED. [3]

Exercises 2.1·2.3

2.1 State the rationality assumption for consumers and for firms, and give one reason consumers may not maximise utility. [2]

2.1 Consumers maximise utility; firms maximise profit. One limit: herding (others: habit, inertia, poor computation, need to feel valued, framing).

2.2 For each event on the market for tea, state movement along or shift (and direction): (a) the price of tea falls; (b) the price of coffee rises. [2]

2.2 (a) Movement along the demand curve (a fall in the own price raises quantity demanded). (b) Shift of the demand curve right – coffee is a substitute, so tea becomes relatively more attractive at every tea price.

2.3 On $Q_d = 140 - 2P$, price rises from 20 to 22. Calculate PED. [3]

2.3 At $P = 20$, $Q_d = 100$; at $P = 22$, $Q_d = 96$. $\% \Delta Q = -4\%$, $\% \Delta P = +10\%$, so PED = -0.4 .

Exercises 2.4·2.6

2.4 Calculate total revenue at prices 20 and 22, and state what the pair implies about demand. [3]

2.5 Incomes rise by 10% and the quantity of a good demanded rises by 8%. Calculate YED and classify the good. [3]

2.6 The price of good B rises 10% and the quantity demanded of good A rises 10%. Calculate XED and state the relationship. [2]

Exercises 2.4·2.6

2.4 Calculate total revenue at prices 20 and 22, and state what the pair implies about demand. [3]

2.4 TR at 20 = $20 \times 100 = 2000$; TR at 22 = $22 \times 96 = 2112$. Revenue rises when price rises, confirming demand is price inelastic ($|PED| = 0.4 < 1$) over this range.

2.5 Incomes rise by 10% and the quantity of a good demanded rises by 8%. Calculate YED and classify the good. [3]

2.5 $YED = 8\% \div 10\% = +0.8$: positive, so a normal good; between 0 and 1, so income inelastic.

2.6 The price of good B rises 10% and the quantity demanded of good A rises 10%. Calculate XED and state the relationship. [2]

2.6 $XED = +10\% \div +10\% = +1.0$: positive, so A and B are substitutes (close ones at this magnitude).

Exercises 2.7·3.1

2.7 Explain, using diminishing marginal utility, why a consumer only buys a second identical item at a lower price. [2]

3.1 (*Original.*) A firm sells 100 items per day at 20 currency units each on the demand curve $Q_d = 140 - 2P$. Using elasticity, advise the firm on the price that maximises total revenue, showing the revenue at that price. [5]

Exercises 2.7·3.1

2.7 Explain, using diminishing marginal utility, why a consumer only buys a second identical item at a lower price. [2]

2.7 The second item gives less additional satisfaction than the first (diminishing marginal utility), so the consumer only sacrifices the price if it is lower – this behaviour aggregated gives the downward-sloping demand curve.

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3.1 Along a straight demand curve, TR is maximised where $|PED| = 1$. $PED = (dQ/dP)(P/Q) = -2(P/Q)$; setting $-2P/Q = -1$ gives $Q = 2P$, and with $Q = 140 - 2P$: $140 - 2P = 2P$, so $P = 35$ and $Q = 70$. Maximum TR = $35 \times 70 = 2450$ currency units/day, above the current 2000. Advice: raise price towards 35; beyond it demand is elastic and revenue falls.

Exercise 3.2

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3.2 Branded medicine: strong branding and few perceived substitutes make demand inelastic; salt: a tiny share of expenditure, a necessity with many generic versions, is even more inelastic BUT with no branding premium the factors differ – the expected contrast: substitutes available (medicine has chemical alternatives; salt none), branding (medicine yes, salt no), percentage of total expenditure (both small, salt smaller), addictiveness neither, durability: medicine perishable when ill (short-run need) vs salt storable. Any two specification factors applied with a direction earns the marks.

Local review guidance: percentage changes computed before dividing, with the sign convention stated; classifications use the threshold table ($|\text{PED}| = 1$ boundaries); the unitary midpoint located by calculus or by testing prices either side; accept TR tabulation as an alternative method. This is authored classroom guidance.