

Cambridge AS & A Level · Economics 9708 · Notes

Consumer and producer surplus AS

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Read first: [Demand and supply curves](#), [The interaction of demand and supply](#), [Price elasticity, income elasticity and cross elasticity of demand](#), [Price elasticity of supply](#)

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What you need to know

By the end of this topic you should be able to:

1. **Explain what consumer surplus is and why it matters.** It is the difference between the most consumers would be willing to pay for a good and the price they actually pay, added up over every unit they buy. It measures the extra benefit buyers get from a market.
2. **Explain what producer surplus is and why it matters.** It is the difference between the price producers actually receive and the lowest price at which they would have been willing to supply, added up over every unit they sell. It measures the extra benefit sellers get from a market.
3. **Explain what causes consumer and producer surplus to change:** shifts in demand or supply, and anything else that changes the price and the quantity traded, such as a tax, a subsidy or a price fixed by the government.
4. **Explain how price elasticity of demand (PED) and price elasticity of supply (PES) decide how large those changes are.**

This topic uses demand and supply diagrams and what shifts them (Demand and supply curves, The interaction of demand and supply), and the meaning of PED and PES (their own topics).

Understand it

Consumer surplus

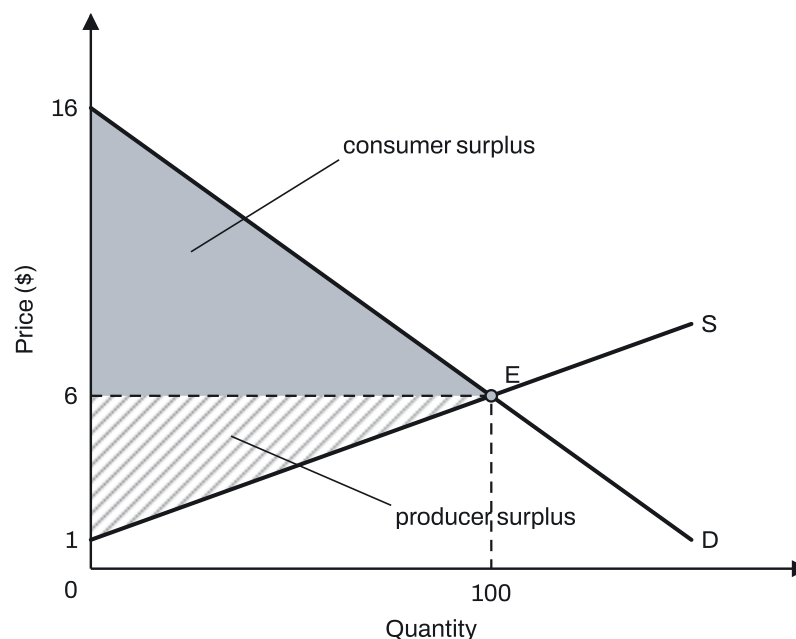
Think of one buyer and one good. Aisha would pay at most \$12 for her first cinema ticket of the month, \$9 for a second, \$7 for a third and \$4 for a fourth, because each extra film is worth a little less to her. Tickets cost \$6. She buys three (the fourth is worth only \$4, less than the price). On the first ticket she gets \$12 of value for \$6, a gain of \$6; on the second, \$3; on the third, \$1. Her **consumer surplus** is $6 + 3 + 1 = \$10$.

A market demand curve does the same for all buyers at once. Its height at each quantity shows the most **someone** would pay for that unit. Everyone pays the same market price, so the gain on each unit is the gap between the demand curve and the price. Added up, it is the **area below the demand curve and above the price, up to the quantity bought**.

- The buyer of the **last** unit (the **marginal** consumer) pays exactly what it is worth to them, so gets no surplus on it.
- Consumer surplus is **not** money anyone has; it is the value of the benefit over and above what was paid.

Producer surplus

The supply curve shows, at each quantity, the **lowest** price at which a firm would be willing to supply that unit, roughly the extra cost of producing it. The market price is paid for every unit, so on every unit except the last the seller receives more than the minimum they would accept. **Producer surplus** is the **area above the supply curve and below the price, up to the quantity sold**.



Here demand is $P = 16 - \frac{Q}{10}$ and supply is $P = 1 + \frac{Q}{20}$, with equilibrium at \$6 and 100 units.

- Consumer surplus = $\frac{1}{2} \times 100 \times (16 - 6) = \500 .
- Producer surplus = $\frac{1}{2} \times 100 \times (6 - 1) = \250 .
- Consumer expenditure (the producers' total revenue) is the rectangle $6 \times 100 = \$600$, **below** the price line. Don't confuse it with either surplus.

Producer surplus is **not** profit: fixed costs have not been taken off. But the larger it is, the more room firms have to make a profit.

Why the surpluses matter

- **Consumer surplus** is a money measure of how much buyers gain from being able to buy in the market. When it rises, consumers are better off; when it falls, they are worse off. Firms know that many buyers would pay more than the price, and they try to capture some of that surplus, for example by charging higher prices to those who value the good most.

- **Producer surplus** is the gain to sellers. It rewards them for supplying and, through profit, gives an **incentive** to stay in the market and expand.
- **Together**, consumer surplus plus producer surplus is the total gain from trade in the market. Comparing the surplus areas before and after an event (a shift, a tax, a subsidy, a price control) shows **who gains, who loses and by how much**.

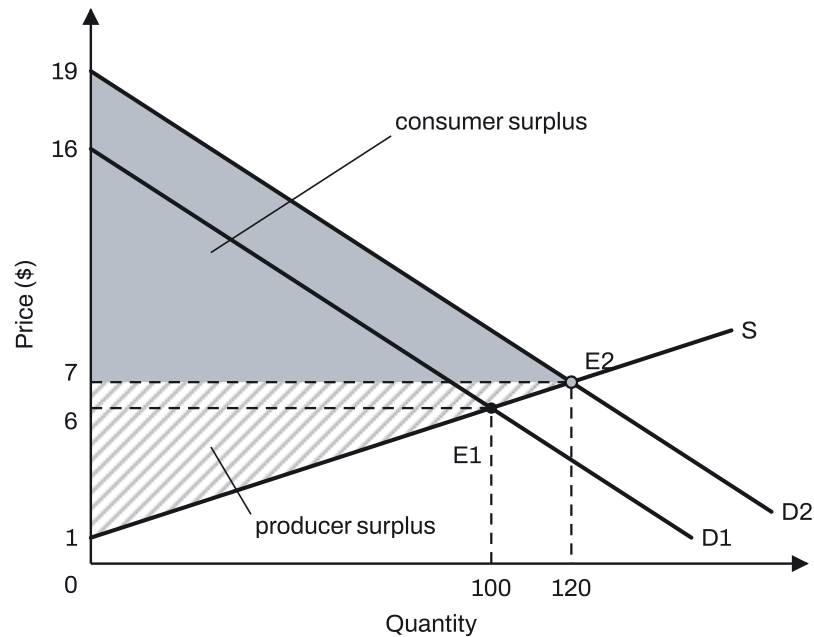
Causes of changes

Consumer and producer surplus change whenever the equilibrium price or quantity changes.

Change	Price	Quantity	Consumer surplus	Producer surplus
Supply increases (lower costs, a subsidy, better technology)	Falls	Rises	Rises	Usually rises
Supply decreases (higher costs, an indirect tax, a bad harvest)	Rises	Falls	Falls	Usually falls
Demand increases (higher incomes for a normal good, a dearer substitute)	Rises	Rises	Usually rises	Rises
Demand decreases	Falls	Falls	Usually falls	Falls

The **bold** entries are certain. When supply shifts, consumers stay on the same demand curve: a lower price and more bought must raise consumer surplus, and a higher price must lower it. When demand shifts, producers stay on the same supply curve: a higher price and more sold must raise producer surplus. The "usually" entries depend on the shape of the new curve.

A rise in demand usually raises consumer surplus too, even though the price rises, because more buyers now value the good highly and more is bought.



Demand rises from $P = 16 - \frac{Q}{10}$ to $P = 19 - \frac{Q}{10}$. The new equilibrium is \$7 and 120 units. Consumer surplus rises from \$500 to $\frac{1}{2} \times 120 \times (19 - 7) = \720 and producer surplus from \$250 to $\frac{1}{2} \times 120 \times (7 - 1) = \360 . Both gain.

A price rise on a given demand curve splits the lost consumer surplus in two:

- a **rectangle**: the extra price paid on every unit still bought. This is not destroyed; it is **transferred** to producers as extra revenue;
- a **triangle**: the surplus on the units no longer bought. Nobody gets this.

A price fall works the other way: consumers gain a rectangle (paying less on units they were already buying) and a triangle (surplus on the extra units).

Government policies:

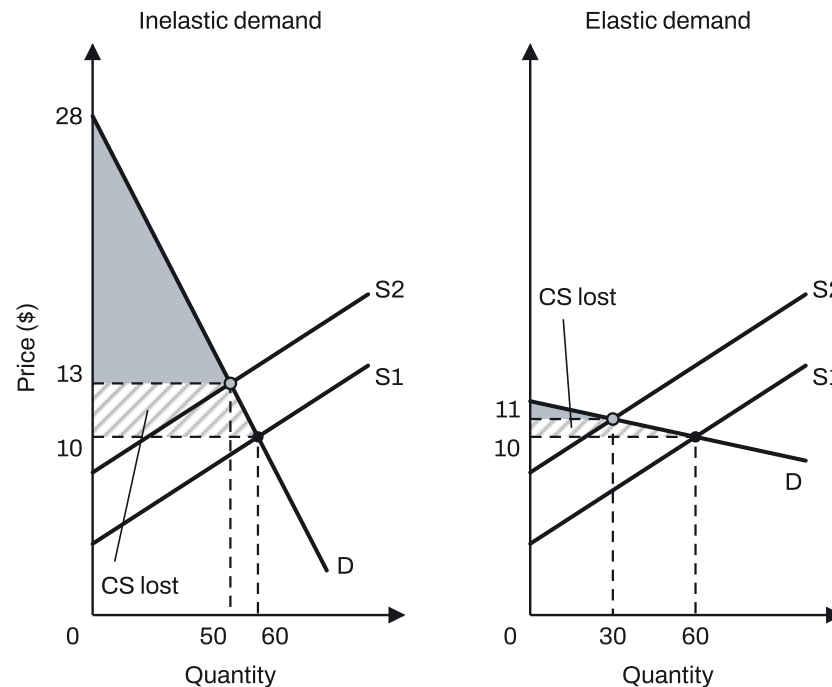
- A **subsidy** to producers shifts supply right: the price falls and more is bought, so consumer surplus **always** rises.
- An **indirect tax** shifts supply left, so consumer surplus falls and so does producer surplus.
- A **maximum price** below equilibrium lowers the price, but less is supplied, so the effect on consumer surplus is uncertain: those who get the good gain, those who can't lose. A **minimum price** above equilibrium lowers consumer surplus.

The significance of PED and PES

Size of the surplus. A steep (inelastic) demand curve means many buyers would pay far more than the price, so consumer surplus is large. A flat (elastic) demand curve means buyers would switch to substitutes if the price rose a little, so the surplus is small. When demand is **perfectly elastic** (horizontal), nobody would pay

more than the price and **consumer surplus is zero**. In the same way, the more elastic supply is, the smaller the producer surplus; **perfectly elastic supply** gives **zero producer surplus**, and perfectly inelastic (vertical) supply makes all of the revenue producer surplus.

Size of the change. Take the same fall in supply, a rise in costs of \$4 on every unit, in two markets that start at the same point, \$10 and 60 units.



Supply moves from $P = 4 + \frac{Q}{10}$ to $P = 8 + \frac{Q}{10}$.

	Inelastic demand, $P = 28 - 0.3Q$	Elastic demand, $P = 12 - \frac{Q}{30}$
PED at \$10 and 60 units	-0.56	-5
New price and quantity	\$13, 50 units	\$11, 30 units
Consumer surplus before → after	\$540 → \$375	\$60 → \$15
Consumer surplus lost	$3 \times 50 + \frac{1}{2} \times 3 \times 10 = \165	$1 \times 30 + \frac{1}{2} \times 1 \times 30 = \45
Producer surplus before → after	\$180 → \$125	\$180 → \$45
Total revenue before → after	\$600 → \$650	\$600 → \$330

- **Inelastic demand:** buyers have few substitutes, so they keep buying. The price rises a lot and quantity falls only a little. Consumers lose more surplus in money terms, mostly the **rectangle**: they pay more on almost every unit. Firms pass most of the cost rise on, so producer surplus falls less and total revenue even rises.
- **Elastic demand:** buyers switch to substitutes. The price hardly rises, quantity falls a lot, and the cost rise mostly falls on producers: producer surplus and revenue fall sharply. Consumers lose less surplus in money terms, but it is a larger **share** of what they had (75% against about 31%).

The same logic runs in reverse for a **fall** in costs or a subsidy: with inelastic demand the price falls further, and consumers gain more surplus.

PES works the same way on the other side of the market. When **demand rises**:

- with **inelastic supply**, output can't expand quickly, so the price rises a lot: producers gain most, and consumers gain little;
- with **elastic supply**, output expands and the price rises only a little: consumers gain more and producers less.

Key facts and formulas

Economics has no formula list in the exam. "Learn it" means you must remember it.

Formula	Status
Consumer surplus on one unit = most the consumer is willing to pay – price paid	Learn it
Producer surplus on one unit = price received – lowest price the producer would accept	Learn it
Consumer surplus: area below the demand curve and above the price, up to the quantity bought	Learn it
Producer surplus: area above the supply curve and below the price, up to the quantity sold	Learn it
Straight-line curves: $\text{surplus} = \frac{1}{2} \times \text{quantity} \times \text{height of the triangle}$	Learn it
Consumer expenditure = total revenue = $P \times Q$ (the rectangle below the price)	Learn it
Total surplus = consumer surplus + producer surplus	Learn it
Perfectly elastic demand: consumer surplus = 0; perfectly elastic supply: producer surplus = 0	Learn it

How to do it

In the questions we have tagged for this topic (39 questions, 2021–2025), 33 are Paper 1 multiple choice and 6 are Paper 2 data response or essay questions, where we counted only the part about this topic. No question mixes types.

Question type	Questions
Identify surplus areas on a diagram	8
Read the change in surplus areas after a shift or a price change	8
Define consumer or producer surplus	7
Identify what causes surplus to rise or fall	6
Explain both surpluses with a diagram and the effect of a price change (essay part (a), 8 marks)	4
Calculate consumer surplus from willingness to pay	2

Question type	Questions
Link elasticity to the size of a surplus	2
Consider the effect of an event on consumer surplus (data response, 4 marks)	1
Assess how PED decides the change in consumer surplus (essay part (b), 12 marks)	1

Paper 2 parts are marked in three ways. **Data response parts of 4 marks** give points for the diagram and explanation (up to 3) and 1 for evaluation. **Essay part (a), 8 marks**, is point-based: up to 3 for knowledge (AO1), 3 for analysis (AO2) and 2 for evaluation (AO3). **Essay part (b), 12 marks**, is levels-marked: Table A gives up to 8 for knowledge and analysis (Level 3 is 6–8) and Table B up to 4 for evaluation. A one-sided answer gets **no** evaluation marks.

1. Identify surplus areas on a diagram (8 questions)

All multiple choice.

1. **Find the equilibrium** (or the price you are told) and imagine a horizontal line across at that price.
2. **Consumer surplus**: the area **between the demand curve and the price line**, from the price axis to the quantity bought (usually a triangle at the top).
3. **Producer surplus**: the area **between the price line and the supply curve**, from the price axis to the quantity sold (usually a triangle below the price line).
4. **Expenditure or revenue**: the **rectangle** from the origin up to the price and across to the quantity.

Variations you will meet:

- **Areas given as letters of corners** (such as "WXY" or "OXYZ"): trace each set of corners and check which curves and lines bound it. The area with the origin in it is always expenditure, not surplus.
- **Areas as differences**, such as "OXYZ minus OYZ": the whole area under one curve minus the area under another. Area under the demand curve minus expenditure is consumer surplus; expenditure minus area under the supply curve is producer surplus.
- **Three things at once** (consumer surplus, producer surplus and expenditure in one row): find each separately, then pick the row.
- **"What consumers are willing to pay minus what they pay"** at equilibrium is a description of consumer surplus, so pick that area.

2. Read the change in surplus areas after a shift or a price change (8 questions)

All multiple choice.

1. **Mark the old and new equilibria**. Which curve moved, and which way did the price go?
2. **Draw the old and new price lines**. Write the old consumer surplus and old producer surplus as sums of the lettered areas.
3. **Write the new ones** using the curves that apply now: the **new** demand curve for consumer surplus if demand shifted, the **new** supply curve for producer surplus if supply shifted.

4. **Subtract** to get the change, and check the direction against the table in "Understand it".

Variations you will meet:

- **Supply shifts left:** consumer surplus falls by the rectangle between the old and new prices on units still bought, plus the triangle on the units no longer bought. Producer surplus gains that rectangle but loses the areas cut off by the new, higher supply curve, so its change is written "increases by $a - b$ " or "falls by ...".
- **Price rises on one demand curve** (as in Example 2): the new consumer surplus is only the triangle above the new price.
- **A demand shift** (rising incomes for a normal good): the new consumer surplus is under the **new** demand curve and above the new price; the new producer surplus is above the (unchanged) supply curve and below the new price.
- **A charge introduced where there was none** (free parking that starts costing \$1, free health care replacing a market): at a zero price consumer surplus is the whole area under demand; the charge moves part of it (a rectangle) to the seller as revenue and the rest of what is lost comes from fewer units used. Free provision does the reverse: consumers gain the rectangle and the extra triangle.

3. Define consumer or producer surplus (7 questions)

All multiple choice.

1. **Consumer surplus:** what a consumer is **willing to pay** minus what they **actually pay**. It exists because some consumers would pay **more** than the market price.
2. **Producer surplus:** the **price received** minus the **lowest price at which firms would be willing to supply**. On the diagram it is **above the supply curve and below the equilibrium price**.

Wrong options to reject: income minus tax or spending, demand exceeding supply, bulk discounts, profit, "the value of the next best alternative" (that is opportunity cost) and anything about "profit-maximising revenue".

4. Identify what causes surplus to rise or fall (6 questions)

All multiple choice.

1. **Decide which curve the change shifts** and which way.
2. **Use the table in "Understand it":** a supply increase always raises consumer surplus; a demand increase always raises producer surplus.
3. **Watch the wording.** "Definitely" or "always" means the certain cases only; "could" allows the "usually" cases.

Variations you will meet:

- **What will definitely increase consumer surplus?** A rightward shift in supply, or a subsidy. A rightward demand shift **could** (and usually does), but not for certain.
- **Rising incomes for a normal good:** demand shifts right, most likely raising consumer surplus. More substitutes or a dearer complement shift demand left.

- **Producer surplus of farmers:** cheaper inputs (seed, fertiliser) shift supply right and raise it; less demand, a cheaper substitute crop or a cut in subsidy lowers it.
- **Cheaper energy for manufacturers:** supply shifts right, so both surpluses rise.

5. Explain both surpluses with a diagram and the effect of a price change (4 questions)

Paper 2, essay part (a), 8 marks: "explain what is meant by consumer surplus and producer surplus and consider whether a rise in price caused by higher costs always reduces consumer surplus", "...consider whether producers always gain", "...the impact of an indirect tax when demand is price elastic compared with price inelastic", "...a price fall for a luxury with many substitutes and an essential with few".

1. **Knowledge (AO1, 3 marks).** Define consumer surplus (1) and producer surplus (1) precisely, and draw one **fully labelled** diagram with both areas marked (1): axes "Price" and "Quantity", D, S, P and Q at equilibrium, the triangle under demand and above price labelled "consumer surplus", the triangle above supply and below price labelled "producer surplus".
2. **Analysis (AO2, 3 marks).** Show the change on a diagram, usually a leftward shift in supply for a cost rise or a tax (1). Then **two diagrams**, one with steep demand and one with flat demand, using the **same** supply shift, and explain each (1 each): *inelastic demand* → *few substitutes* → *quantity falls by a smaller percentage than the price rises* → *price rises a lot* → *consumers lose more surplus, and producers pass on most of the cost*; *elastic demand* → *many substitutes* → *quantity falls by a larger percentage* → *price rises only a little* → *consumers lose less, producers bear more*. For the producer side, add PES: how easily producers can change output affects how much the price moves.
3. **Evaluation (AO3, 2 marks).** An "it depends" point (1): the size of the change depends on PED (and PES); consumer surplus always falls when the price rises because supply fell, but by how much depends on PED; producers **don't** always gain from a higher price, because their costs have risen too, and with elastic demand their revenue falls. Then a justified conclusion (1).

For a **price fall** (the luxury against the essential): with elastic demand, the fall brings in many extra buyers, so the gain includes a large triangle; with inelastic demand, the gain is mostly the rectangle on units already bought.

6. Calculate consumer surplus from willingness to pay (2 questions)

All multiple choice.

1. **Find how many units are bought:** every unit whose maximum willingness to pay is at least the price.
2. **Subtract the price from each of those values** and add them up.
3. **For a deal** ("\$450 each if you buy three"), the buyer must take all the units in the deal, so include any unit where the value is **below** the price as a **negative** surplus.

For example, a family values three concert tickets at \$90, \$70 and \$40, and a deal offers three for \$60 each. The surplus is $30 + 10 - 20 = \$20$. A unit whose value **equals** the price adds nothing, so buying it leaves consumer surplus unchanged.

7. Link elasticity to the size of a surplus (2 questions)

All multiple choice.

1. **Consumer surplus is zero** when demand is **perfectly elastic**: no buyer would pay above the price.
2. **Producer surplus is zero** when supply is **perfectly elastic**, and smaller the more elastic supply is: a supply curve that becomes more elastic (flatter) through the same equilibrium **reduces** producer surplus.

8. Consider the effect of an event on consumer surplus (1 question)

Paper 2 data response, 4 marks: "with the help of a demand and supply diagram, consider the possible impact of [a harvest failure / higher price] on consumer surplus".

1. **Diagram** with the original consumer surplus clearly shown (1).
2. **The correct shift from the case** (a poor harvest: supply left) with the new, smaller consumer surplus shown (1).
3. **Explain** (1): the price rises, so the gap between what consumers are willing to pay and what they pay shrinks, and fewer units are bought; consumer surplus falls.
4. **Evaluate** (1): how far it falls depends on PED; for a cooking oil with few substitutes, demand is inelastic, so the price rises a lot and the loss is large.

9. Assess how PED decides the change in consumer surplus (1 question)

Paper 2 essay part (b), 12 marks. Plan (see Example 4):

1. **Knowledge**: define consumer surplus, with an accurate labelled diagram.
2. **Analysis, both sides**: a price **rise** and a price **fall**, each for **elastic** and **inelastic** demand, with diagrams, explained in percentage terms (the percentage change in quantity against the percentage change in price). Compare the rectangle and triangle parts.
3. **Evaluation**: the answer depends on what is held fixed. For a **given price change**, elastic demand changes quantity more, so the triangle is bigger. For a **given shift in supply**, inelastic demand makes the price move more, so the rectangle is bigger. Also: the size of the price change matters as well as PED; PED varies along a straight-line demand curve; it assumes nothing else changes. Then a justified conclusion.

Worked examples

Example 1

A student is willing to pay at most \$12, \$9, \$7 and \$4 for her first, second, third and fourth cinema ticket in a month. The price of a ticket is \$6. What is her consumer surplus?

- **A \$4**

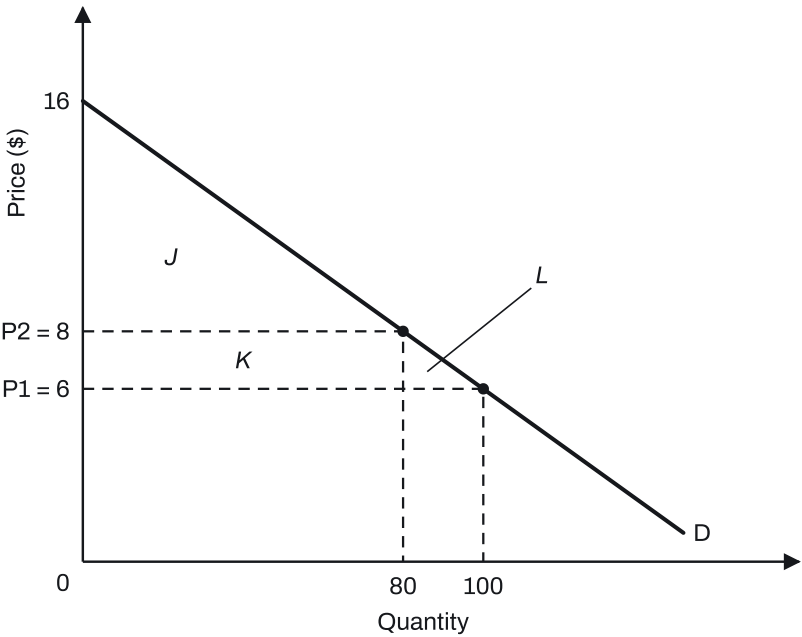
- **B** \$10
- **C** \$18
- **D** \$28

[1]

She buys three tickets, since the fourth is worth \$4, less than the \$6 price. Her surplus is $(12 - 6) + (9 - 6) + (7 - 6) = 6 + 3 + 1 = \10 . The answer is **B**. (1)

C is her spending (3×6); D is the total value of the three tickets to her ($12 + 9 + 7$).

Example 2



A fall in supply raises the price of a good from P1 to P2. Which row shows the consumer surplus after the change, and the part of the consumer surplus lost that becomes extra revenue for producers?

	Consumer surplus after	Transferred to producers
A	J + K	L
B	J	K
C	J	K + L
D	J + K + L	K

[1]

Before, consumer surplus was the whole area under D above P1: J + K + L. After, it is only the area above P2: J. Consumers lose K + L. K is the higher price paid on the 80 units still bought, which producers receive; L is the surplus on the 20 units no longer bought, which nobody receives. The answer is **B**. (1)

With the numbers on the diagram: $J = \frac{1}{2} \times 80 \times 8 = \320 , $K = 2 \times 80 = \$160$ and $L = \frac{1}{2} \times 20 \times 2 = \20 . Consumer surplus falls from \$500 to \$320.

Example 3

With the help of a diagram, explain what is meant by consumer surplus and producer surplus, and consider whether a subsidy paid to bus companies for each journey they provide benefits passengers more than the bus companies. [8]

Consumer surplus is the difference between the most passengers are willing to pay for a bus journey and the fare they actually pay, added over all journeys made (AO1, 1). Producer surplus is the difference between the fare bus companies receive and the lowest fare at which they would be willing to provide each journey, added over all journeys provided (AO1, 1).

Diagram 1: fare and number of journeys on the axes, D and S crossing at P_1, Q_1 ; the triangle below D and above P_1 labelled "consumer surplus", the triangle above S and below P_1 labelled "producer surplus" (AO1, 1).

The subsidy lowers the cost of providing each journey, so supply shifts right from S_1 to S_2 . The fare falls from P_1 to P_2 and more journeys are made. Passengers pay less on journeys they already made and gain surplus on the extra journeys, so consumer surplus rises (AO2, 1: *diagram 2 shows the shift and the larger consumer surplus*). The companies receive the fare plus the subsidy, which is more than P_1 , on more journeys, so producer surplus rises too (AO2, 1).

How the gain is shared depends on elasticity. If demand for bus travel is price inelastic, because many passengers have no car, the percentage rise in journeys is smaller than the percentage fall in the fare, so companies must cut fares a lot to fill the extra buses: most of the subsidy is passed on and passengers gain most. If demand is elastic, because passengers can easily drive or take a train, a small fare cut brings many extra passengers, so the fare falls little and the companies keep most of the subsidy. Supply works the other way: the more elastic supply is, the more of the subsidy goes to passengers (AO2, 1).

So a subsidy does not always benefit passengers more. Both groups gain, but passengers gain more when demand is less elastic than supply, and the companies gain more when demand is more elastic than supply (AO3, 1).

For town buses, where many passengers have no alternative and companies can add buses fairly easily, demand is likely to be less elastic than supply, so passengers are likely to gain more; on routes with good rail links the companies may keep most of the subsidy (AO3, 1, justified conclusion).

Total: $3 + 3 + 2 = 8$.

Example 4

Assess whether a fall in the price of a product increases consumer surplus by more when demand for the product is price elastic than when it is price inelastic. [12]

Knowledge and analysis (Table A):

Consumer surplus is the difference between what consumers are willing to pay and the price they pay, shown as the area below the demand curve and above the price. When the price falls, consumer surplus increases in two ways: buyers who were already buying pay less on every unit (a rectangle), and new units are bought, each giving some surplus (a triangle).

Diagram: two demand curves through the same point, \$10 and 60 units, one flat (elastic) and one steep (inelastic), with the price falling to \$8 in both; the gains shaded.

With **elastic** demand, for example a brand of trainers with many substitutes, the 20% fall in price causes a larger percentage rise in quantity, because buyers switch from rival brands. If demand is $P = 12 - \frac{Q}{30}$, quantity rises from 60 to 120, and consumer surplus rises by $2 \times 60 + \frac{1}{2} \times 2 \times 60 = \180 .

With **inelastic** demand, for example a basic medicine with few substitutes, the same price fall causes a smaller percentage rise in quantity, because most people already buy what they need. If demand is $P = 25 - \frac{Q}{4}$, quantity rises only from 60 to 68, and consumer surplus rises by $2 \times 60 + \frac{1}{2} \times 2 \times 8 = \128 . The gain is mostly the rectangle on units already bought.

However, a price does not fall on its own; it falls because something shifts supply, such as lower costs. For the **same** fall in costs, the price falls further when demand is inelastic, because firms must cut the price a lot to sell more. If costs fall by \$4 a unit (supply from $P = 8 + \frac{Q}{10}$ to $P = 4 + \frac{Q}{10}$), with demand $P = 28 - 0.3Q$ the price falls from \$13 to \$10 and consumer surplus rises by \$165; with $P = 12 - \frac{Q}{30}$ it falls only from \$11 to \$10 and consumer surplus rises by \$45.

(Accurate knowledge, a diagram, and developed analysis of both elastic and inelastic demand from two angles: Level 3, 8 marks.)

Evaluation (Table B):

Whether elastic demand gives the bigger increase depends on what is held fixed. For the same fall in price, the statement is right, because elastic demand brings in more new buyers and a larger triangle of extra surplus. But for the same fall in costs, the opposite is true, since inelastic demand lets the price fall further and consumers gain most on the units they already buy. The size of the price change matters as much as PED, PED is not constant along a straight-line demand curve, and the comparison assumes nothing else, such as incomes, changes at the same time. Overall, the statement holds when we compare the same price change, but in most real markets the price change comes from a change in supply, and then consumers of goods with inelastic demand usually gain more.

(A balanced judgement that answers the question, says what it depends on and reaches a conclusion: Level 2, 4 marks.)

Common mistakes

- **Vague definitions.** Examiners report many answers that couldn't define consumer surplus precisely. Say "the difference between the price a consumer is **willing to pay** and the price they **actually pay**", and the matching words for producer surplus.

- **Mislabelled or wrong diagrams.** Consumer surplus is **below demand and above price**; producer surplus is **above supply and below price**. Shade and label both, and label the axes and curves. Examiners report diagrams with the original or new consumer surplus left out.
- **Shifting the wrong curve.** A rise in costs or a tax shifts **supply**. Answers that showed a demand shift instead, or both, lost the analysis marks.
- **Elastic and inelastic curves that look the same.** When comparing, draw one clearly steep and one clearly flat demand curve, with **identical** supply shifts, so the difference in the surplus lost is visible.
- **Stating instead of explaining the effect of PED.** "Inelastic demand means a bigger fall in consumer surplus" earns little. Explain it in percentages: the percentage fall in quantity is smaller than the percentage rise in price, so the price rises more and consumers keep paying it on most units.
- **Answering a prepared question.** A question on consumer surplus doesn't want the tax burden or producer surplus unless it asks. Examiners see many rehearsed answers on tax incidence.
- **Thinking a rise in demand lowers consumer surplus** because the price rises. Usually it rises, as more is bought by buyers who value it highly.
- **Confusing the surplus with expenditure.** The rectangle from the origin to the price and quantity is spending (revenue), not surplus.
- **Forgetting the negative unit in a deal.** In "buy three for \$X each", a ticket worth less than the price reduces the surplus.

How to get the marks

- **Command words.** *Explain*: give reasons, "because... so...". *Consider, assess, discuss*: both sides, then a judgement that answers the exact question ("always", "to what extent"). *With the help of a diagram*: the diagram earns marks and must be accurate and labelled, and the text must refer to it.
- **Definitions** earn one AO1 mark each: "willing to pay" against "actually pay", and "price received" against "willing to accept".
- **Diagrams**: "Price" and "Quantity" on the axes, D and S (with S_1 , S_2 or D_1 , D_2 after a shift), P_1 , P_2 , Q_1 , Q_2 , and the surplus areas shaded and labelled, old and new.
- **Analysis** of PED must be explained in terms of percentage changes in quantity and price, on a diagram. Examiners say most candidates stopped at 4 marks because they stated the effect of PED without explaining it; the explained version unlocks the evaluation marks too.
- **8-mark part (a)**: 3 knowledge (two definitions, one labelled diagram), 3 analysis (the shift, then elastic and inelastic cases), 2 evaluation (it depends on PED/PES, then a conclusion to "always").
- **12-mark part (b)**: Level 3 needs accurate, developed analysis of **both** elastic and inelastic demand, ideally for price rises and falls. Evaluation needs a weighed judgement; a one-sided answer gets no evaluation marks.
- **Data response**: use the case (drought, poor harvest, few substitutes) to justify the shift and the PED.
- **Multiple choice**: one mark each, no penalty for guessing. Draw the price line, write each surplus as a sum of letters before and after, and subtract.

Quick check

1. A consumer would pay at most \$20, \$15, \$11, \$8 and \$5 for successive units of a good. (a) The price is \$8. How many units does she buy, and what is her consumer surplus? (b) The price rises to \$11. By how much does her consumer surplus change?
2. Demand is $P = 30 - \frac{Q}{5}$ and supply is $P = 6 + \frac{Q}{10}$. Find the equilibrium, the consumer surplus and the producer surplus.
3. Say whether each will raise or lower consumer surplus in the market for bus travel, and whether the effect is certain: (a) a subsidy to bus companies; (b) higher fuel costs for buses; (c) a rise in the price of cars, a substitute.
4. Explain why consumer surplus is zero when demand is perfectly elastic.
5. A tax raises the price of cigarettes, for which demand is price inelastic. Explain what happens to consumer surplus and why the effect would be different for a product with elastic demand.

Answers

1. (a) She buys the units worth at least \$8: four units (the fourth, worth exactly \$8, gives no surplus). Surplus = $12 + 7 + 3 + 0 = \$22$. (b) At \$11 she buys three: surplus = $9 + 4 + 0 = \$13$, a **fall of \$9**.
2. $30 - \frac{Q}{5} = 6 + \frac{Q}{10}$, so $24 = 0.3Q$, $Q = 80$ and $P = 14$ (\$14). Consumer surplus = $\frac{1}{2} \times 80 \times (30 - 14) = \640 ; producer surplus = $\frac{1}{2} \times 80 \times (14 - 6) = \320 .
3. (a) Supply shifts right, the fare falls and more journeys are made: consumer surplus **rises**, certainly. (b) Supply shifts left, fares rise: consumer surplus **falls**, certainly. (c) Demand for buses shifts right: consumer surplus **usually rises**, but it is not certain, as it depends on the shape of the new demand curve.
4. With perfectly elastic demand, buyers will buy any amount at the market price but nothing at a higher price, so no one is willing to pay more than the price. There is no gap between willingness to pay and the price on any unit.
5. The tax shifts supply left, so the price rises and consumer surplus falls. With inelastic demand, smokers have few substitutes, so the percentage fall in quantity is smaller than the percentage rise in price: the price rises by most of the tax and they keep buying, so they lose surplus on almost every unit (mostly the rectangle). With elastic demand, buyers switch away, the price rises little and producers bear most of the tax, so consumers lose less surplus in money terms.

Past questions to try

- 9708/12/O/N/23 Q7: consumer surplus from a ticket deal.
- 9708/12/O/N/24 Q10: the change in both surpluses after a shift in supply.
- 9708/13/O/N/21 Q5: whether rises in demand and supply increase consumer surplus.
- 9708/21/M/J/21 Q3: part (a), a price fall with elastic and inelastic demand.