

Cambridge IGCSE · Economics 0455 · Notes

Market failure

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Read first: [The role of markets in allocating resources](#), [Price elasticity of demand \(PED\)](#)

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What you need to know

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

1. **Define market failure and its key terms.** Market failure is when the forces of demand and supply, left alone, do not allocate resources efficiently. Know exactly what each of these means: **public good**, **merit good**, **demerit good**, **private costs**, **external costs**, **social costs**, **private benefits**, **external benefits** and **social benefits**.
2. **Explain the causes of market failure.** The syllabus lists only these: public goods; merit and demerit goods; external costs and external benefits; abuse of monopoly power; and factor immobility. Be able to give an example of each.
3. **Explain the consequences of market failure.** Resources are misallocated: demerit goods and goods with external costs are **over-consumed**, and merit goods and goods with external benefits are **under-consumed**.

0455 has no Core/Extended split, so all of this is for everyone. The syllabus says **demand and supply diagrams for market failure are not required**, so everything here is explained in words and numbers. How a government can step in (taxes, subsidies, rules, providing goods itself) is the next topic, the mixed economic system, but exam questions tagged here often ask you to judge those actions, so "How to do it" shows how to use market-failure reasoning in them.

Understand it

What "failure" means here

In the topic on markets and resource allocation, prices signal what people want and move resources to it. That works well for most products. **Market failure** is when it doesn't: the market, on its own, produces **too much** of some things, **too little** of others, or **none at all** of something society wants. The resources are **misallocated**: they would give society more benefit used another way.

Market failure is **not** the same as a firm going bust, prices rising, or a shortage for a few weeks. Those can be the market working normally. It is about the **allocation of resources** being wrong from society's point of view.

Private, external and social

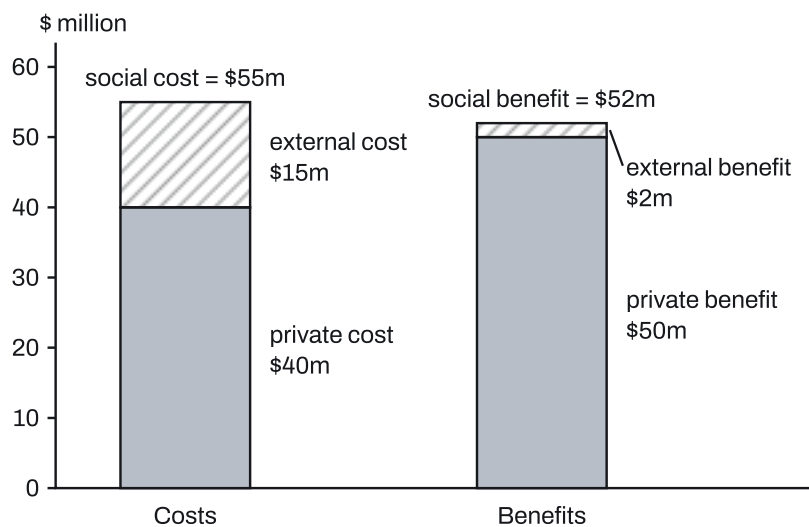
Every time something is produced or consumed, there are costs and benefits. The question is **who** gets them.

- **Private costs** are paid by the people directly involved: the firm making the product (wages, materials, rent) or the consumer buying it (the price, the time).
- **Private benefits** go to the people directly involved: the consumer's satisfaction or use from the product, and the firm's revenue and profit.
- **External costs** fall on a **third party**, someone who is neither the buyer nor the seller and did not choose to be involved, and who is not paid for it: breathing a factory's smoke, losing sleep to noise, a farmer whose river is polluted upstream.
- **External benefits** go to a third party who did not pay for them: your neighbours are less likely to catch a disease because you were vaccinated; a firm gains when a worker it hires was trained elsewhere.

Add them up to get the effect on the **whole of society**:

$$\text{social cost} = \text{private cost} + \text{external cost}$$

$$\text{social benefit} = \text{private benefit} + \text{external benefit}$$



Take a paper mill. Its owners pay \$40m a year in private costs and earn \$50m in private benefits (revenue), so to them it is worth running: \$10m profit. But its waste water harms fishing and drinking water downstream, an external cost of \$15m, and its extra jobs bring local shops \$2m of external benefit. For society, the social cost is $40 + 15 = 55$, so \$55m, and the social benefit is $50 + 2 = 52$, so \$52m. Society loses \$3m a year from the mill, even though its owners gain.

That is the heart of market failure: **buyers and sellers only weigh their own private costs and benefits**. External effects are left out of their decisions, so the market's answer differs from what is best for society. Production is harmful to society overall whenever **social cost is greater than social benefit**.

Cause 1: external costs

When producing or consuming something creates external costs, the people making the decision don't pay them, so the product looks cheaper than it really is to society. The market makes and sells **more than the socially best amount**: it is over-produced and over-consumed.

To spot an external cost, ask what an outsider **loses** because of someone else's choice. The losses fall into a few groups:

What the third party loses	How it can happen
Health	Fumes from a brick kiln give nearby families asthma; dust from a quarry settles on a village's crops and water tanks
Money	A factory's waste silts up a shared canal, so other users pay to dredge it; a council (so taxpayers) pays to clear dumped rubbish
Income from their own work	A foul smell from a tannery drives diners away from the cafés next door; a polluted lagoon ruins a fishing co-operative's catch
Value and enjoyment of what they own	Floodlights and crowds from a new stadium make nearby homes harder to sell; a view or a quiet beach others used is spoiled
Nature and the future	Clearing mangroves removes the storm protection a coastal village relied on; burning fossil fuels adds to climate change for everyone

Anything a third party loses (health, time, income, enjoyment) counts. Costs the firm itself pays, such as wages, materials or taxes, are **private**, not external.

Cause 2: external benefits

When something creates external benefits, the buyer only counts their own gain and ignores the gain to others, so they buy less than society would want. The product is **under-produced and under-consumed**. Education (a better-trained workforce raises output and tax revenue for everyone), healthcare and vaccination (fewer people infected), and public transport (fewer cars, less congestion) are standard examples.

Cause 3: merit goods and demerit goods

A **merit good** is one that is better for the consumer than they realise. People **under-value** it, often because they lack information or think short term, so the free market leaves it **under-consumed**. Merit goods usually have external benefits too. Examples: education, healthcare, eye tests, fruit and vegetables. A merit good is still an ordinary private product: it is **rival and excludable** (see below) and private firms can and do sell it.

A **demerit good** is one that is more harmful to the consumer than they realise. People **over-value** it, so the free market leaves it **over-consumed**. Demerit goods usually have external costs too. Examples: cigarettes, alcohol, sugary drinks, gambling.

Merit and demerit goods are not opposites that trade off: making people buy less of a demerit good does not by itself make them buy more of a merit good.

Cause 4: public goods

Two properties decide whether something is a public good.

- **Non-excludable:** once it is provided, no one can be stopped from benefiting, even if they haven't paid.
- **Non-rival:** one person benefiting does not reduce the amount left for anyone else.

	Rival	Non-rival
Excludable	Private goods: a sandwich, a haircut, a school place, a hospital bed	e.g. a film on a streaming service
Non-excludable	e.g. fish in the open sea	Public goods: street lighting, national defence, flood barriers, a lighthouse

A **public good** is both non-excludable and non-rival. Because no one can be excluded, people can wait for others to pay and still benefit. This is the **free-rider problem**. A firm cannot charge enough people to cover its costs, so it cannot make a profit, and a free market **does not supply it at all**. That is why governments provide public goods and pay for them from taxation.

Education and healthcare are **not** public goods: a place can be refused to someone who doesn't pay, and a doctor treating one patient can't treat another at the same time. They are merit goods. Most roads fail at least one test: a toll barrier can keep out drivers who don't pay, and at rush hour every extra car slows everyone else down, so the road is rival too.

Cause 5: abuse of monopoly power

A **monopoly** is a single firm (or one dominant firm) supplying a market. Without rivals, it can **restrict output and raise prices** above what competition would allow. Consumers pay more, buy less and have less choice; the firm may also let quality slip or innovate less, because customers have nowhere else to go. Resources are misallocated because less is produced than consumers would buy at a competitive price.

Cause 6: factor immobility

Markets need resources to move from where demand is falling to where it is rising. **Factor immobility** is when they can't.

- **Occupational immobility:** workers can't switch jobs because they lack the skills or qualifications (a coal miner can't become a nurse overnight).
- **Geographical immobility:** workers can't move to where jobs are, because housing there is too expensive, or because of family ties or moving costs.

So some areas and industries have **surpluses** of workers (unemployment) while others have **shortages** that go unfilled. Output is lower than it could be.

Consequences: misallocation of resources

Each cause pushes the market away from the best allocation for society.

Cause	What the free market does	Consequence
External costs, demerit goods	Too much produced and consumed	Over-consumption: society bears harm (ill health, pollution) it never agreed to; resources wasted on too much of a harmful product
External benefits, merit goods	Too little produced and consumed	Under-consumption: health, skills and productivity lower than they could be
Public goods	None produced	Society goes without useful services (defence, lighting)
Monopoly power	Too little produced, prices too high	Consumers pay more and have less choice
Factor immobility	Resources stuck in the wrong places	Surpluses and shortages; unemployment, lower incomes, poverty

In each case the resources would give society more benefit if some were moved out of the over-produced products and into the under-produced ones. That is what "misallocation of resources" means.

Key facts and formulas

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

Formula or fact	Status
Market failure: the market forces of demand and supply fail to allocate resources efficiently	Learn it
$\text{social cost} = \text{private cost} + \text{external cost}$	Learn it
$\text{social benefit} = \text{private benefit} + \text{external benefit}$	Learn it
$\text{external cost} = \text{social cost} - \text{private cost}$; $\text{external benefit} = \text{social benefit} - \text{private benefit}$	Learn it
Production harms society when $\text{social cost} > \text{social benefit}$	Learn it
Private = the buyer and seller; external = a third party, not involved and not paid	Learn it
Public good: non-excludable and non-rival; free riders, so no profit, so not supplied by the market	Learn it

Formula or fact	Status
Merit good: benefit under-valued, under-consumed, usually external benefits (education, healthcare)	Learn it
Demerit good: harm under-valued, over-consumed, usually external costs (cigarettes, alcohol)	Learn it
Causes: public goods, merit and demerit goods, external costs and benefits, abuse of monopoly power, factor immobility	Learn it
Consequences: over-consumption of demerit goods and goods with external costs; under-consumption of merit goods and goods with external benefits	Learn it

How to do it

We have tagged 42 questions on this topic (2021–2025): 23 multiple choice on Paper 1 and 19 structured questions on Paper 2. Counted by the parts about this topic, they came up this often. 0455/21/O/N/21 Q2 has no part on this topic and three Paper 2 questions have two parts on it, so there are 44 parts.

Question type	Question parts
Multiple choice (concept)	22
Explain (4 marks)	9
Discuss (8 marks)	5
Analyse (6 marks)	4
Identify (2 marks)	3
Multiple choice (calculation)	1

1. Multiple choice (concept) (22 question parts)

1. **Decide which idea is being tested:** third parties, the two properties of public goods, merit or demerit, causes, or consequences.
2. **For "which is an external cost or benefit", ask of each option: who gets this?** If it is the buyer, the seller, or money paid in the deal (price, wages, building costs, tax, profit), it is private. Only an effect on an outsider who didn't choose it is external.
3. **Watch for "not"** in bold, and cross out options that describe a market working normally.

Variations you will meet:

- **Public goods** (7 parts): the pair of properties (non-excludable **and** non-rival, sometimes set as a yes/no grid of "excludable" and "rival": the answer is no, no), picking the example (street lights, defence; health, education and vaccinations are merit goods, not public goods), and why governments must provide or fund them (firms can't make a profit from them).

- **Spotting the external effect** (5 parts): a project or activity is described, and one option is the effect on third parties, such as people who used a beauty spot, non-smokers' health, other road users, or the taxpayers who gain from a more productive workforce. The others are private: the builder's costs, the consumer's own fitness or savings, the university's fees, graduates' own wages.
- **Definition and causes of market failure** (4 parts): the definition is about resources not being allocated efficiently (not about some people being unable to afford things). The feature that causes failure is being non-rival and non-excludable; perfect information and "no external effects" do **not** cause failure. People under-use a product with external benefits because they weigh only private costs and benefits. Internal diseconomies of scale are a firm's cost problem, **not** market failure.
- **Private, external and social** (2 parts): external benefit = social benefit – private benefit; production is certain to harm society only when social cost > social benefit (not just when there are externalities, or when social cost exceeds private cost).
- **Merit and demerit goods** (2 parts): a demerit good is over-consumed and more harmful than people think. "More beneficial than the consumer realises", "under-produced" and "external benefits" describe a merit good.
- **Consequences** (2 parts): merit goods are under-supplied. One item showed a private-cost and a social-cost supply curve for a polluting product; that kind of diagram is not required, but the idea is the same: the market produces more than the social-cost amount, and the gap between the two quantities is the over-production.

2. Explain (4 marks) (9 question parts)

Marked 1 mark for identifying each point and 1 for explaining it, so **two points, each with one development**. If there are two things to contrast, give each its explanation and example.

1. **Name the point** precisely (1).
2. **Develop it**: say who is affected and how, or give the example and why it fits (1).
3. Repeat for the second point.

Variations you will meet:

- **"Explain two external costs (or benefits) of ..."** (2 parts): name the effect, then the harm (or gain) to third parties. Pick from the external-cost table: pollution → worse health nearby; habitat loss → wildlife gone; congestion → slower, costlier journeys. For external benefits of something like vaccination: others are less likely to be infected; a healthier workforce produces more.
- **"Explain, with examples, the difference between a merit good and a public good"** (2 parts): the contrast is really about *why* the market gets each one wrong. Run both goods through the two tests from "Understand it". One passes them like any ordinary product, so firms will sell it; the problem is that buyers under-rate it, so too little is bought. The other fails both tests, so firms cannot sell it at all and nothing is supplied without the government. Say that for each good, then give an example you can defend with the tests (ask yourself: could a seller turn away someone who won't pay?).

- **"Explain the difference between private and external benefits"** (2 parts): the only difference is **who receives** the benefit. Define both that way, then show it with **one activity** so the contrast is obvious. For a family that fits solar panels: the private benefit is their lower electricity bill; the external benefit is cleaner air for people living near the power station that now burns less fuel. Don't say "private sector" and "public sector".
- **"Explain why public goods would not be supplied in a market economy"** (1 part): non-excludable → free riders → firms can't charge → no profit, so no supply; non-rival → an extra user adds no cost, so charging makes no sense.
- **"Explain two reasons why a government may discourage (a demerit good)"** (1 part): go back to the two reasons a demerit good is over-used, and make each one a reason. First, the user misjudges the harm to themselves, so their own choice leaves them worse off; develop it with what that harm is for this product. Second, some of the harm spills onto people who never chose it; develop it with a named third party (for alcohol, people hurt by drunk drivers; for gambling, the gambler's family). A third route is what the harm costs everyone else, such as treatment paid for from taxes.
- **Source question: explain two government plans to cut external costs** (1 part): name each plan from the source (1), then how it cuts the harm, for example a ban or limit reduces the polluting activity directly (1).

3. Discuss (8 marks) (5 question parts)

These are **levels-marked**: Level 3 (6–8) needs **both sides developed** and a judgement; a one-sided or undeveloped answer stays in Level 2 (3–5). Aim for **two developed points each side** plus a justified conclusion.

The five set so far all ask whether a government action on market failure is a good idea: taxing a product with external costs, providing a merit good free, and regulating or encouraging a change in behaviour (less screen time, more walking or cycling).

1. **Name the market failure** in one sentence: "X is a demerit good / has external costs, so it is over-consumed" or "X is a merit good / has external benefits, so it is under-consumed".
2. **For: two developed chains** showing how the action corrects it: action → price or behaviour changes → consumption moves towards the social optimum → a named gain (better health, higher productivity, less pollution, lower healthcare spending, lower clean-up costs).
3. **Against: two developed chains** showing why it may not work or may cost too much.
4. **Judgement**: say what it depends on and which side is stronger, with a reason (not a summary).

To build the chains, ask these questions of whatever action the question names. Each one gives you a chain, for or against, depending on the product in the stem.

1. **Does it tackle the actual cause?** If people under-rate the product, information or making it cheaper or free goes to the root. If the problem is harm to third parties, making the product dearer or limiting it acts on the harm directly.

2. **How strongly will people respond?** This is price elasticity of demand. A higher price changes little if the product is a habit, has few substitutes or is a small part of income; free provision changes little if price was never what kept people away.
3. **Who pays, and what else could the money do?** Government spending on the action is money not spent elsewhere. Ask whether it mainly reaches people who were already buying the product, and whether giving it away leads to waste.
4. **Can people get round it?** They may switch to a substitute that is just as harmful, buy it somewhere the rule doesn't apply, or trade it unofficially.
5. **What happens to the people who make and sell it?** Their output, jobs and profits change, and so does the tax the government collects from the product.
6. **What does society gain if it works?** Name the gain for this product: fewer illnesses and so a more productive workforce, less damage to clean up, a cleaner local area.

For example, for a tax on sugary drinks: (1) it works on over-consumption through price; (2) cheap alternatives such as sweets might soak up the demand; (3) it raises money rather than costing it; (5) drinks makers may reformulate their recipes, which cuts sugar even if sales hold up; (6) less tooth decay and diabetes. Pick the two strongest for and the two strongest against, then weigh them.

4. Analyse (6 marks) (4 question parts)

Marked 1 mark per link in a chain, so write **two or three developed chains** (at least three links each), starting with a definition.

1. **Define** market failure (1), and name the kind involved.
2. **One paragraph per chain.** Each link says why the next happens.
3. **End each chain with the effect on resource allocation:** over-consumed, under-consumed, not supplied, too dear, left idle.

Variations you will meet:

- **"Analyse the causes of market failure"** (1 part): a paragraph per cause from the six, each with an example and its chain. Public goods → free riders → no profit → not supplied; demerit goods → harm under-valued → over-consumed; external costs → third parties bear costs the producer ignores → over-produced; monopoly → restricts output → higher price, less choice; factor immobility → workers can't move → unemployment alongside shortages.
- **"Analyse the consequences of market failure"** (1 part): over-consumption of demerit goods and goods with external costs, under-consumption of merit goods and goods with external benefits, each with an example and a result, then public goods not supplied, monopoly prices, and immobility leading to surpluses, shortages, unemployment and poverty. Tie it all to misallocation of resources.
- **"Analyse how a government could encourage consumption of merit goods"** (1 part): a chain per measure: subsidy → lower costs → lower price → more bought; free state provision → no price barrier; information → people learn the true benefit → demand rises; rules → making it compulsory (such as school to a certain age). Don't argue via cutting demerit goods.

- **"Analyse how cleaning up pollution could benefit an economy"** (1 part): less external cost → better health → fewer days off, higher productivity, lower healthcare spending; cleaner environment → more tourism, fishing and farming income; resources freed for other uses.

5. Identify (2 marks) (3 question parts)

1 mark per item, no explanation needed.

- **"Identify two external costs"** from a source (2 parts): lift two different harms to third parties straight from the text, such as air pollution and habitat damage. Don't give private costs.
- **"Identify the two types of cost that make up social cost"** (1 part): private costs and external costs. Examples of pollution are not what is asked.

6. Multiple choice (calculation) (1 question part)

1. Write the relationship you need: $\text{social} = \text{private} + \text{external}$.
2. Pick the two numbers of the **same kind** (both benefits or both costs). Adding a benefit to a cost, or subtracting, is always wrong for "social".
3. Check the units in the table (often \$000).

Worked examples

Example 1

A ferry company runs a service across a harbour. Running it costs the company \$6m a year and it collects \$5.5m in fares. The ferry takes cars off a crowded harbour bridge, which saves the drivers who still use the bridge time worth \$2m a year, and its engines cause pollution damage of \$0.5m a year.

(a) Calculate the social cost and the social benefit of the ferry service. [2]

(b) Explain whether the ferry would keep running in a free market, and whether society is better off with it. [2]

(a) Social cost = private cost + external cost = $6 + 0.5 = 6.5$, so \$6.5m (1). Social benefit = private benefit + external benefit = $5.5 + 2 = 7.5$, so \$7.5m (1).

(b) The company's fares (\$5.5m) don't cover its own costs (\$6m), so it loses \$0.5m a year and would close in a free market (1). But society gains \$1m a year from the service (\$7.5m – \$6.5m), because the bridge drivers' gain never reaches the company: it is an external benefit, so the market under-provides the service (1).

Keep each total to one kind: costs with costs, benefits with benefits.

Example 2

Explain two external benefits of more people learning first aid. [4]

One external benefit is that strangers who collapse or are injured are more likely to survive (1), because a trained bystander can help them in the minutes before an ambulance arrives, even though the victim never paid for the training (1).

A second external benefit is less pressure on ambulance and hospital services (1): injuries treated early are less serious, so fewer people need emergency care and the health service can use those resources, and taxpayers' money, elsewhere (1).

Each benefit is named, then linked to a **third party** (the victim, the health service and taxpayers), not to the person who took the course.

Example 3

Analyse why a free market may lead to too few people having dental check-ups. [6]

Market failure is when the market forces of demand and supply do not allocate resources efficiently (1). Dental check-ups are a merit good (1).

People under-value check-ups because they cannot see the damage building up and do not know the long-term benefit (1). They weigh only the price and time today against a benefit they under-estimate, so fewer check-ups are demanded (1) and the service is under-consumed compared with what is best for people (1).

Check-ups also have external benefits: problems caught early need less emergency treatment, which is often paid for by the state (1). Buyers ignore this gain to others (1), so even more under-consumption results, and resources that could have prevented illness go elsewhere (1).

The price is also a barrier for people on low incomes, so the poorest may have the fewest check-ups (1).

That is more than 6 marks' worth; write a little over the maximum so one weak link still leaves full marks.

Example 4

Discuss whether or not a government should ban single-use plastic bags. [8]

For. Single-use plastic bags create external costs: they are used for minutes but blow into rivers and the sea, harming fish and wildlife and blocking drains, which can make floods worse. Shoppers and shops pay nothing for this harm, so bags are over-used (market failure named and explained). A ban removes the harm at its source: shoppers switch to reusable bags, litter and clean-up costs paid by councils fall, and the money saved can be spent on other services (developed point for).

A ban is also simple and quick compared with a tax. Demand for free or cheap bags hardly responds to a small charge, so a tax might leave use high; a ban works even when demand is inelastic (second developed point for).

Against. Substitutes have external costs too: paper and cotton bags use more energy and water to make, so if people use them only once the harm to the environment may not fall much (developed point against). Many households reuse their plastic bags as bin liners; after a ban they buy thicker bin bags instead, so the total

plastic used falls less than the number of shopping bags suggests (second developed point against). Street traders who sell loose rice, fish or vegetables rely on a cheap bag to hand over the goods; a ban raises their costs and the prices their low-income customers pay (third point against). Shopping bags may also be only a small share of the plastic in rivers compared with bottles and packaging, so the external cost removed could be small.

Judgement. A ban is likely to be worth it where bag litter is a serious problem and cheap reusable bags are easy to buy, because it cuts a large external cost directly. It works less well if people switch to other single-use bags, so it depends on the government also encouraging reuse; a tax that raises revenue may suit places where the litter problem is smaller (justified judgement). Both sides are developed and the conclusion says what the answer depends on, so this meets the Level 3 descriptor (6–8 marks).

Common mistakes

- **Confusing market failure with business failure.** Examiners report answers saying market failure is when firms close, lose money or raise prices. Those can be the market working properly. Market failure is about resources being allocated inefficiently for society.
- **Mixing up external and social.** Social cost is the **total**: private plus external. Pollution is an external cost; it is only part of the social cost. Asked for "the two types of cost that make up social cost", the answer is private and external, not examples like smoke or noise.
- **Thinking "private" means the private sector and "external" means the public sector or other countries.** Private means the buyer and seller themselves; external means a third party not involved in the deal. Examiners see this confusion year after year.
- **Describing a public good as "anything the government provides".** Say **non-excludable** and **non-rival**, and why that stops private firms (free riders, no profit). Education and healthcare are merit goods, not public goods: people can be charged and places run out.
- **Giving a private cost as an external one.** Wages, building costs, materials, tax and the price paid are private. Ask "who pays?" each time.
- **Assuming less of a demerit good means more of a merit good.** A tax on cigarettes does not, by itself, make people eat more fruit. To encourage a merit good, explain a measure that acts on that good directly.
- **Naming a measure without saying how it works.** "Put a quota on imports" or "tax it" earns only the identification mark. Say what happens to price, cost or behaviour, and then to consumption.
- **Wandering from the question.** In a Discuss question about one action (a tax, free provision), stay on that action. General points about government or economic growth get little credit.
- **Drawing diagrams that aren't asked for.** Market-failure diagrams are not required at IGCSE; the marks are for the reasoning.

How to get the marks

- **Identify** (2 marks): two separate, short answers. If you write more than two, often only the first ones count, so don't list five.

- **Define:** one exact sentence with the key word: "an external cost is a cost to a **third party** who is not involved in producing or consuming the product".
- **Explain** (4 marks): point + development, twice. "With an example of each" means an example is worth a mark: give one clear example each time that plainly meets the definition you gave.
- **Analyse** (6 marks): chains of reasoning, each link saying *why* the next follows, starting with a definition. Name the resource-allocation result at the end of each chain.
- **Discuss** (8 marks): both sides, each with at least two developed points, then a **judgement** that says what the answer depends on. A strong one-sided answer can't reach Level 3.
- **Use the terms:** third party, over-consumed, under-consumed, misallocation of resources, non-excludable, non-rival, free rider, merit good, demerit good, social cost, social benefit. Examiners reward precise vocabulary.
- **Link to the stem.** If the question names a product (fruit, video games, a tax on digital money), say which kind of market failure it is in your first sentence.
- **Multiple choice:** 1 mark each, no penalty for guessing, so answer every one. In calculations, add like to like.

Quick check

1. Which is a public good?
 - **A** private swimming lessons
 - **B** a tsunami warning siren system for a coastal town
 - **C** travel on a toll motorway
 - **D** a place on a university course
2. A chemical plant has private costs of \$80m a year and the social cost of its production is \$110m. Its private benefit is \$95m and it creates no external benefits. Calculate the external cost, and state whether the plant's production harms society.
3. Which is **not** an external effect of building a new metro line?
 - **A** shops near the new stations get more passing trade
 - **B** people who keep driving find the roads less congested
 - **C** passengers pay fares to ride the metro
 - **D** vibration from tunnelling cracks the walls of nearby houses
4. Sugary fizzy drinks are cheap and sold everywhere in a country. Explain why a free market may lead to too many of them being consumed. **[4]**
5. A family pays \$900 a year for their daughter's music lessons, which they value at \$1200. Her playing in local concerts gives neighbours and audiences enjoyment worth \$150 a year. State the private benefit and the social benefit of the lessons. **[2]**

Answers

1. **B.** No one in the town can be stopped from hearing the siren (non-excludable), and one person hearing it doesn't reduce anyone else's warning (non-rival). A, C and D are excludable (you can be refused if you don't pay) and rival. (1)
2. External cost = social cost – private cost: $110 - 80 = 30$, so \$30m. Social benefit = $95 + 0 = 95$, so \$95m, which is less than the social cost of \$110m, so production harms society by $110 - 95 = 15$, that is \$15m a year, even though the plant earns more than its private costs.
3. **C.** Fares are paid by the passengers who choose to use the metro, so they are part of the deal between buyer and seller (private). A is an external benefit to shopkeepers, B an external benefit to drivers, and D an external cost to homeowners. (1)
4. Fizzy drinks are a demerit good: buyers under-estimate the damage to their teeth and the risk of diabetes (1), so they drink more than they would if they fully understood the harm (1). There are also external costs: treating diet-related illness is often paid for by the state, from everyone's taxes (1). Buyers ignore this cost to others, so consumption is higher than is best for society and resources are misallocated (1).
5. The private benefit is the value to the family, \$1200 (1); the \$900 is the price, a private cost. Social benefit = $1200 + 150 = 1350$, so \$1350 (1).

Past questions to try

- **0455/13/O/N/24 Q9:** the relationship between external, private and social benefit.
- **0455/22/O/N/22 Q4:** part (b), why public goods are not supplied in a market economy.
- **0455/23/M/J/22 Q4:** part (c), analysing the causes of market failure.
- **0455/22/M/J/24 Q2:** part (d), discussing whether a government should encourage walking to school and work.