A-Level Mathematics

Exam Technique · 应试技巧

Marks are given for what you write, not for what you know. This guide is about the gap between the two: what each command word obliges you to put on the page, how examiners count marks, and the specific ways a strong student writing in a second language loses marks anyway. 分数只给写在纸上的内容。本指南讲的是如何把你会的东西写成得分点。

Command words – what each one obliges you to write

Cambridge publishes the meaning of every command word, and marks follow it exactly. A DESCRIBE answer to an EXPLAIN question scores nothing, however true it is.

State / Give / Name 说出 — express in clear terms. One short sentence, no reasoning, no example. If the question says 'state', do not explain – you are spending time on marks that do not exist.

Define 定义 — give the precise meaning. Use the syllabus wording, and include the quantities it relates: 'work done per unit charge', not 'a kind of energy'.

Describe 描述 — state the features of something, without saying why. For a graph: shape, direction, where it changes. For a process: the sequence of what happens.

Explain 解释 — set out purposes or reasons – the mark is on the BECAUSE, not on the what. Every explain answer should contain a linking word: because, so, therefore, which means that.

Suggest 建议 — apply knowledge to a situation the syllabus does not cover directly. There is no single right answer; there is a right kind of reasoning. Say what you would expect AND why.

Calculate 计算 — work out a numerical answer, showing your working. Quote the formula, substitute with units, then evaluate.

Determine 确定 — calculate, but the question expects you to extract the data yourself – from a graph, a table, or an earlier part.

Compare 比较 — identify similarities AND differences. Both sides in one sentence: 'X has …, whereas Y has …'. Two separate paragraphs describing X then Y usually scores half.

Discuss 论述 — write about the issue from more than one side, and reach a position. An answer with only one side caps at partial marks whatever its quality.

Evaluate / Assess 评价 — judge, with criteria and a conclusion. Say what the judgement depends on, then commit: 'in the short run …, but if demand is elastic …'.

Justify 论证 — support a statement with evidence. Name the evidence; do not gesture at it.

Sketch 画草图 — a shaped, labelled drawing – not to scale, but the shape, intercepts and asymptotes must be right, because that is where the marks are.

Show that 证明 — work FORWARD to the printed answer and write more steps than feel necessary. The printed answer earns nothing; the working earns everything.

How marks are actually counted

The number of marks tells you the number of separate points to make. A 4-mark question wants four distinct scoring statements, not one statement written four ways.

Nothing is scored twice. Repeating a point in different words is one mark. If you have written a paragraph and can only find two ideas in it, you have two marks.

Marks are for content, not for length. A three-line answer that names three mechanisms beats a page that names one.

In calculations, method marks survive an arithmetic slip – but only if the method is visible. An answer with no working scores zero when the number is wrong, and full marks when it is right; showing working removes the downside.

Carry error forward: if part (b) uses a wrong answer from part (a) correctly, (b) still scores. So never abandon a question because an earlier part failed.

Quote the unit and a sensible number of significant figures – usually the fewest given in the data. A correct number with no unit routinely loses the final mark.

For a scheme point expressed as OR, any one alternative earns it. Do not write three alternatives hoping one lands; a wrong alternative alongside a right one can cancel the mark.

The traps that cost ESL students marks

Everyday words are not technical words. Write 'the resultant force is zero', not 'the forces are balanced out'; 'the reaction is exothermic', not 'it gives heat'. The technical term IS the mark.

Vague comparatives lose marks: 'higher', 'faster', 'more' – higher than what? Always name the comparison: 'a higher rate of reaction than at 20 °C'.

Avoid 'it'. In a two-clause answer the examiner cannot tell which noun 'it' refers to, and an ambiguous answer is not credited. Repeat the noun.

Do not translate a Chinese sentence structure directly. Short simple English sentences score better than long ones with the reasoning buried in the middle.

Broken English still earns the mark when the idea is unambiguous – so write the idea even if you cannot phrase it elegantly. What is never credited is a sentence whose meaning cannot be determined.

Do not restate the question. 'The reason why the temperature increases is because the temperature increases' is a real pattern and scores nothing.

Working the paper

Read the mark allocation before writing, and plan the answer to it. Two marks means two things – decide what both are before you start the sentence.

Answer in the space given. The space is sized to the expected answer; needing three extra lines usually means you are explaining something the question did not ask.

Use the data in the stem. If the question gives a value, a graph or a table, marks depend on using it. An answer that could have been written without reading the stem is usually the wrong answer.

For a question worth six or more marks, spend thirty seconds listing your points in the margin. The commonest way to lose marks on a long answer is to make three points where the scheme has six.

If you cannot finish a calculation, write the method and the substitution anyway. Method marks are the majority of the marks in most numerical questions.

Never leave a multiple-choice blank. There is no negative marking, and eliminating two options makes a guess worth half a mark on average.

Cross out rejected work with a single line rather than erasing. Crossed-out work is not marked, but an examiner may still read it if nothing else is offered.

Practical and data-handling papers

For a plan, name the independent variable, the dependent variable, and at least two variables you would keep constant – the control variables are almost always separate marks.

Describe measurements with the instrument and its precision: 'measure the length with a ruler to the nearest millimetre', not 'measure the length'.

Repeat and mean: say that you would repeat the measurement and take a mean, and say what you would do with an anomaly.

When plotting: sensible scale that uses over half the grid, axes labelled with quantity AND unit, points as neat crosses, a best-fit line judged by eye. Each is separately credited.

A gradient must be calculated from a large triangle with the coordinates shown – a gradient stated with no triangle is not credited.

Uncertainty: absolute uncertainty adds when quantities are added or subtracted; percentage uncertainty adds when they are multiplied or divided.

Conclusions must be supported by YOUR data. 'The results support the hypothesis' earns nothing without the numbers that show it.

Essay and extended-response subjects

Structure earns marks: a position, developed reasoning for it, developed reasoning against, and a conclusion that follows from what you wrote.

Depth beats breadth. Two developed points score more than six mentioned ones – 'develop' means a chain of at least two linked consequences.

Use the case material. In business and economics, an answer with no reference to the given context is capped, however good the theory.

Define the key term in the question in your first paragraph. It is often worth a mark on its own and it forces you to answer the question that was asked.

The conclusion must decide something. 'It depends on many factors' scores nothing; 'it depends on whether demand is elastic, and here it is, so …' scores the evaluation marks.