



Dendrite Education

The architecture of understanding

Build an AI Tutor

A guide for Key Stage 4

A learning and revision toolkit

A word to students

You are growing up in the first generation of students with a personal tutor available twenty-four hours a day. That is an extraordinary privilege, and a serious responsibility. Used wisely, an AI tutor can explain a tricky idea in three different ways until it clicks, quiz you relentlessly without getting bored, and mark your essays at two o'clock on a Sunday morning. Used lazily, it will happily do your thinking for you, and your learning will quietly evaporate.

This booklet shows you how to use AI the first way. It is not a shortcut. It is a method: five simple steps, a handful of powerful prompts, and a habit of honest self-reflection. Follow it, and you will revise less and remember more. You will walk into your exams knowing not only the content, but how to answer the questions.

Three principles run through everything that follows. Honesty: be clear with yourself about what you know and what you do not. Curiosity: push beyond the first answer the AI gives you. Discipline: small, regular sessions beat occasional marathons. The architecture of understanding is built one connection at a time.

Now let us get started.

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1. Why this works

The science of smart revision

Decades of research in cognitive science point to a small number of techniques that reliably move information from short term into long term memory. Most students, if we are honest, spend their revision time re-reading notes and highlighting them in interesting colours. This feels productive. It is not. Here is what actually works.

The four pillars of effective revision

1. Active recall

Pulling information out of your brain is many times more effective than pushing it in. Every time you successfully retrieve a fact, you strengthen the neural pathway to it. Re-reading does almost nothing. Closing the book and trying to write down what you remember does almost everything.

2. Spaced repetition

You forget things on a predictable curve. If you revisit a topic just as it is starting to fade, you interrupt the forgetting and lock it in for longer. Short, frequent sessions spread over weeks beat a single marathon cram session every time.

3. Feedback

Practice without feedback bakes in your mistakes. You need someone, or something, to tell you not just that you were wrong, but why you were wrong and what a top mark answer looks like. This is where most students struggle to revise alone.

4. Deliberate practice

You cannot get better at the 100-metre sprint by jogging. You get better by sprinting, failing, adjusting, sprinting again. In exams, that means past paper questions under timed conditions, in exam board style, at the grade you are targeting.

Where an AI tutor fits in

An AI tutor gives you active recall on demand, infinite patience for spaced repetition, instant feedback on every answer, and an unlimited supply of exam style questions. That is why this booklet works. You are stacking four of the most powerful learning techniques into a single habit.

2. Using AI responsibly

The rules of the road

AI is a tool. Like a calculator, a library, or a set of past papers, it is only as good as the hands it is in. Before you start, read this page carefully and return to it whenever you are unsure.

Your AI integrity pledge

By using an AI tutor for revision, you commit to the following:

- I will use AI to learn, not to cheat. I will never submit AI generated text as my own coursework or exam work.
- I will treat the AI as a tutor, not a ghostwriter. It explains, questions, and corrects. I still do the thinking.
- I will always verify important facts against my exercise book, textbook, or a trusted source before I rely on them.
- I will not share personal information such as full names, addresses, dates of birth, school IDs, or contact details with any AI tool.
- I will tell a teacher, tutor or parent if the AI ever gives advice that feels unsafe, upsetting, or inappropriate.

What counts as malpractice?

Copying an essay, paragraph or solution produced by AI and presenting it as your own work is **malpractice** under JCQ (Joint Council for Qualifications) rules. It risks disqualification from the subject, the exam series, or in severe cases all qualifications in that session. It is also pointless. You sit your real GCSEs alone, in silence, with a paper and a pen.

Using AI to explain a topic, quiz you on it, or give feedback on writing that you then redraft yourself is not cheating. These are the uses this booklet is built around.

A quick test

The exam hall test

Before you hand in any piece of work after an AI session, ask: "If I were sitting the real exam tomorrow, could I write this from memory?" If yes, it was revision. If no, you have outsourced your learning, and you need to go back through the material properly.

3. Choosing your AI and getting set up

A two-minute setup that saves you hours

Several AI tools are suitable for schoolwork, including Claude, ChatGPT, Google Gemini, and Microsoft Copilot. All of them will work with the prompts in this booklet. Check with your parents or a teacher which tools you are allowed to use, and make sure any account meets the minimum age requirement (usually 13 or 18 depending on the platform).

If your school provides institutional access to a particular tool, prefer that one. The prompts in this guide work across all the major models, so the choice of platform matters less than the discipline of using it well.

Before your first session

- Find a quiet place with your exercise book, textbook, and a pen. AI is a revision partner, not a replacement for your own notes.
- Have the exam board specification open in another tab. You will use it to check what your tutor covers.
- Decide what you want to achieve in this session: learn a new topic, test an old one, or practise an exam question.
- Set a timer. Twenty-five minutes of focused AI revision is worth more than an hour of drifting.

Name your tutor

Give your AI tutor a name and a consistent role at the start of every long session. This sounds silly but it genuinely works. You behave more like a student and less like someone typing at a search box. The next section shows you how.

A note on privacy

Never paste photos of yourself or others, full names of teachers or classmates, or anything from the school's internal systems into an AI chat. Treat every conversation as if it might one day be read by a stranger, because in a sense, it might be.

4. The five step framework

One method. Every subject. Every topic.

Every productive revision session follows the same arc. You set up your tutor, you learn, you test, you practise exam questions, and you reflect on what to do next. Miss any of these steps and the session leaks effectiveness. Do all five and you will be astonished at how fast you progress.

Step	What you do	What you get
1. Create	Set up your tutor with subject, exam board and target grade.	A tutor that knows your level and gives answers pitched at it.
2. Learn	Ask for a clear, structured explanation of the topic.	Working knowledge you can explain to someone else.
3. Test	Get quizzed on what you have just learned.	Proof of what you can recall, and what you cannot.
4. Practise	Attempt GCSE style questions under exam conditions.	Exam technique, not just knowledge.
5. Improve	Identify weaknesses and plan your next session.	A shorter, sharper to do list for tomorrow.

How long should a session take?

A full run through all five steps for a single GCSE subtopic takes around 45 to 60 minutes. You do not have to do it all in one sitting. You can learn on Monday, test on Wednesday, practise exam questions on Friday, and review over the weekend.

In fact, spacing the steps out is even more powerful as it bakes in spaced repetition automatically.

5. Step 1. Create your tutor

Access elite-level tutoring at your fingertips!

This is the single most important prompt you will ever use. It tells the AI who it is, who you are, and what you need from it. Paste it at the start of every long revision session. Edit the parts in square brackets for your subject, exam board, and target grade.

The master setup prompt

PROMPT Master tutor setup

You are my expert GCSE [SUBJECT] tutor. Your name is [NAME]. Your role is to:

- Explain clearly, using examples I can remember.
- Assume I have zero prior knowledge of this topic. Rely strictly on the official specification for my exam board to identify the necessary concepts, rather than asking me to provide them.
- Quiz me often and increase difficulty gradually.
- Give me honest feedback. Tell me when I am wrong and why.
- Link everything back to the exam board's assessment objectives.
- Model top grade answers so I can see what I am aiming for.
- Adopt a friendly, encouraging and conversational tone.

My details:

- Exam board: [AQA / Edexcel / OCR / WJEC / CIE]
- Tier (if relevant): [Foundation / Higher]
- Current working grade: [e.g. 5]
- Target grade: [e.g. 7]
- Topic today: [insert topic]

Ground rules:

1. Keep explanations concise. Use bullet points and examples.
2. Use UK English spelling and GCSE appropriate vocabulary. Use clear, accessible language suitable for a 14- to 16-year-old student, and define any complex terms or jargon simply before using them.
3. If you are unsure of a fact, say so. Do not invent information.
4. Never just give me the direct answer. Ask scaffolding questions to help me figure it out myself, and actively identify and tackle any underlying misconceptions in my thinking.

Why this prompt works

- It sets a clear role: an expert GCSE tutor, not a general assistant.
- It gives the AI your exam board, so its examples match your real papers.
- It pegs difficulty to your target grade, so no more answers pitched at university level.
- The "do not invent information" rule reduces (though does not eliminate) made up facts.

Tip

Save this prompt in a Note on your phone. At the start of every session, copy it, fill in the brackets, and paste. Ten seconds of setup saves ten minutes of drifting.

6. Step 2. Learn

Build working knowledge before you test yourself

Once your tutor is set up, it is time to learn. The goal here is not to skim. It is to understand the topic well enough that you could explain it to a friend. Use the prompts below in order.

The teach me prompt

PROMPT Teach me this topic

Teach me [TOPIC] step by step. For each step, please include:

- A one sentence definition in plain English.
- A worked example (or quoted evidence, for literature).
- The exam board keyword or command word I should know.
- How this links to the GCSE mark scheme.

After the explanation, give me three checking questions that prove I have understood the basics before we move on.

Follow up prompts when something does not click

If a part of the explanation does not land, do not just stare at it. Push back with one of these:

FOLLOW UP Re explain differently

Explain that again in a different way. Use a real-world analogy and assume I have never heard of [the confusing term] before.

FOLLOW UP Build a concept map

Give me a concept map of [topic] showing the links between all the key ideas. Use bullet points and indentation instead of a picture.

FOLLOW UP Teach me the common mistakes

What are the three most common mistakes students make on [topic] at GCSE? For each one, show me the wrong answer and the correct one.

7. Step 3. Test

If you cannot recall it, you have not learned it

Testing is where the real learning happens. The moment you close the explanation and try to retrieve the information yourself; you are rewiring your brain for long term memory. Do not skip this step, even if you feel like you already know it.

The testing prompt

PROMPT Test me

Test me on [TOPIC]. Please:

- Ask me ten short answer questions, one at a time.
- Wait for my answer before revealing the correct one.
- After each question, tell me if I was right, partially right, or wrong.
- For every wrong or partial answer, ask guiding questions to help me discover what I missed.
- Keep score. After question ten, tell me my total and my weakest area.
- Use an encouraging, conversational tone when revealing if an answer is right or wrong, rather than just stating it robotically.

Start with easy questions and get harder. Do not let me off the hook if my answer is vague. Push me to be precise.

Upgrade the challenge

Once you are scoring 8 out of 10 or higher, it is time to step up. Use these variations:

- **Mixed topic recall:** "Test me on a mix of the last three topics we studied, so I cannot predict which one is coming next."
- **Interleaved practice:** "Alternate between calculation questions and explanation questions."
- **Explain back:** "Instead of testing me, ask me to teach the topic back to you as if you were a Year 8 student. Interrupt with questions whenever I am unclear."

The Feynman trap

If you cannot explain a topic simply to a younger student, you do not understand it yet. This is called the Feynman technique, and it is the most honest test of your own knowledge. An AI tutor is the perfect audience. It will happily play the role of a confused Year 8.

8. Step 4. Exam practice

Knowing the content is not the same as answering the question

Every year, students who know their subject lose marks because they did not answer the question that was asked. GCSE exams use specific command words (describe, explain, evaluate, compare) and specific mark schemes. Your AI tutor can replicate both.

The exam question prompt

PROMPT Full exam drill

Give me three GCSE style exam questions on [TOPIC] at [TARGET GRADE] level, from [EXAM BOARD]. Format each question exactly like the real paper:

- State the number of marks.
- Use the real command words (describe, explain, evaluate, etc.).
- Vary the type. At least one short answer and one extended response.

After I have answered all three, please:

1. Mark my work against the official style mark scheme.
2. Show me a model Grade 7+ answer for each question.
3. Tell me where I lost marks and exactly what to add to get them.
4. Highlight any exam technique issues (timing, structure, keywords).

Command words. Learn them, love them.

Command word	What it actually wants you to do
State / Identify	A one-line fact. No explanation needed. Do not waste time.
Describe	Say what happens, in order. No reasons required.
Explain	Give reasons. Use the word 'because'. Link cause to effect.
Compare	Point out similarities AND differences. Both, every time.
Evaluate	Weigh up strengths and weaknesses. Reach a supported conclusion.
Analyse	Break it into parts. Show how each part affects the whole.
Discuss	Present arguments on more than one side. Reach a judgement.

Exam technique drill

Ask your tutor: "Give me five questions that use five different command words on the same topic. Tell me how my answer should change depending on the command word." This is one of the most powerful exam technique drills you can do.

9. Step 5. Improve

Turn every session into a plan for the next

The students who improve fastest are not the ones who work longest. They are the ones who finish every session with a clear list of what went wrong and what to do about it. Your AI tutor can build this list for you.

The improvement prompt

PROMPT End of session review

Look back over our whole session today. Please give me:

1. A summary of what I got right and what I got wrong.
2. My top three weaknesses, in order of priority.
3. For each weakness, one specific action I should take next time (e.g. 'Re read pages 45 to 48 and do Q4 from 2023 paper 2').
4. A three session revision plan for the rest of this week, each session being 30 minutes long.

Be honest. Do not be encouraging if I do not deserve it.

Write it down

Do not just read the AI's response and close the tab. Copy the top three weaknesses and the next session action into the Weakness and Reflection Log at the back of this booklet. This is the single highest value minute of your whole session.

Spaced review

Every Friday, ask your tutor to quiz you again on the topics you flagged as weaknesses earlier in the week. Then every month, do the same thing with everything you flagged that month. This is spaced repetition in action.

WEEKLY Friday recap

This week I studied [list topics]. Quiz me on the areas I was weakest in, mixing questions from all of them. Keep going until I score at least 80 per cent on each topic.

10. English Literature

Case study: the theme of ambition in Macbeth

English Literature rewards precise quotations, sharp analysis, and confident use of subject terminology. Your AI tutor is excellent at drilling all three. It will also invent quotations if you let it. Always check every quote against your annotated text before you memorise it.

Full topic tutor prompt

PROMPT Macbeth: ambition

Teach me the theme of ambition in Macbeth for AQA GCSE English Literature at Grade 7+. Please cover:

- How Shakespeare presents ambition in Macbeth and Lady Macbeth.
- How ambition changes across the play (Acts 1 to 5).
- Five key quotations with act and scene references.
- Identify and teach the key contextual factors required by the exam board specification.
- Three subject specific terms I should use (e.g. hamartia, foreshadowing).

IMPORTANT: Only give quotations you are confident are accurate. If you are unsure, say so and tell me to check the text myself.

Then give me a past paper style essay question with a plan.

Analytical drills

- **Quotation sandwich:** "Give me three unseen quotations from Macbeth. For each, model a 'point, evidence, analysis, context' sandwich that would score top band."
- **Alternative readings:** "Offer a feminist reading and a psychological reading of Lady Macbeth's 'unsex me here' speech. Which would score higher at Grade 9, and why?"
- **Essay planner:** "Here is a sample essay question. Give me a five-paragraph plan with a thesis statement, three analytical points, a counter argument, and a conclusion."

Never trust AI on quotations

AI tools are known to hallucinate plausible sounding quotes that are not in the text. Cross check every single quotation against your copy of the text before you memorise it. A fabricated quote in an exam essay will cost you an entire assessment objective.

11. Mathematics

Case study: solving quadratic equations

Maths is the ideal subject for an AI tutor: problems have correct answers, working is easy to mark, and the supply of practice questions is effectively infinite. Use the AI to work alongside you, not instead of you. Always attempt each question yourself first.

Full topic tutor prompt

PROMPT Quadratic equations

Teach me how to solve quadratic equations for Edexcel GCSE Maths Higher Tier, targeting Grade 7. Cover all the methods outlined in the exam specification. For each method:

- Show one fully worked example with every line of algebra explained. Ask me why specific algebraic steps were taken.
- Give me one guided problem where you prompt me step by step.
- Give me two independent problems to attempt on my own.

Then ask me when I would choose each method, and mark my reasoning. Finish with two exam style problems worth 3 to 4 marks each.

High value maths drills

- **Show your workings:** "Mark my working, not just my final answer. Tell me which marks I would earn from the method even if my answer is wrong."
- **Spot the error:** "Show me three worked solutions with a deliberate error in each. I will spot the mistake and correct it."
- **Topic interleave:** "Give me five mixed questions: algebra, geometry, and statistics, so I cannot predict the method."
- **Word problem translation:** "Give me exam style word problems that test quadratics disguised as real life situations."

Non calculator practice matters

Always tell the AI whether you are practising for the calculator or non calculator paper. On non calculator days, ask it to penalise any solution that relies on decimal arithmetic beyond what you could do in your head.

12. Science

Case study: photosynthesis

Science rewards precision: exact equations, named processes, correct units. It also rewards good application, being able to use what you know to explain an unfamiliar situation. Use your AI tutor for both.

Full topic tutor prompt

PROMPT Photosynthesis

Teach me photosynthesis for AQA Combined Science (Trilogy) at Grade 7. Please cover:

- The word equation AND the balanced symbol equation.
- Where the reaction takes place (organelle, leaf structure).
- The three limiting factors (light intensity, CO₂, temperature) and how each affects the rate.
- Retrieve the required practicals and limiting factors directly from the AQA Combined Science (Trilogy) specification.
- Five exam style questions including one 6 mark extended response.

For the 6 mark question, mark my answer using the AQA level of response criteria and show me what a Level 3 answer would add.

Science specific drills

- **Required practicals:** "Quiz me on every required practical for [subject]. For each, ask me the hypothesis, method, variables, and one source of error."
- **Graph interpretation:** "Describe a graph in words and ask me to sketch it from your description, then tell me where I went wrong."
- **Apply to a new context:** "Give me a short scenario I have not seen before and ask me to explain it using what I learned about [topic]."
- **Command word translation:** "Take the same stem question and rewrite it with five different command words: describe, explain, compare, evaluate, suggest. Mark each of my answers separately."

Units, symbols, SI

Add this to your setup prompt: "Always write balanced equations with correct state symbols (s, l, g, aq) and always include SI units. Penalise me every time I forget one." You will stop losing the easiest marks on the paper.

13. History and Humanities

Case study: causes of World War I

Humanities exams reward precise knowledge of dates, people, and events, and crucially the ability to argue with evidence. Use your AI tutor to drill the facts, but be especially careful: AI tools can sometimes get historical details wrong or subtly biased.

Full topic tutor prompt

PROMPT Causes of World War I

Teach me the causes of World War I for Edexcel GCSE History (International Relations 1900 to 1939) at Grade 7+. Structure the causes based on what is outlined in the Edexcel GCSE History specification. For each cause, give me:

- Three specific facts with dates.
- One named individual and what they did.
- One short quoted phrase from a historian (and tell me the historian's name. Say so if you are unsure).

Then ask me: which cause was most important, and why? Mark my answer against the four mark 'explain' and sixteen mark 'how far do you agree' templates.

Humanities specific drills

- **Source skills:** "Write a short source in the style of a 1914 British newspaper. Ask me to analyse its purpose, provenance and usefulness as a source."
- **Counter argument practice:** "Give me a strong argument for why militarism was the main cause. Now give me a stronger counter argument. Mark me on whether my conclusion engages with both."
- **Timeline drill:** "Test me on the sequence of events from June to August 1914. Ask me to put ten events in order and explain the significance of each."
- **Comparative question:** "Set me a comparative essay (How similar were the causes of WWI and WWII?) and mark my structure as well as my content."

Check names, dates, and quotes

Historical AI answers sometimes contain wrong dates, invented historians, or mis attributed quotations. Never write a name or a date in your exam that you first saw in an AI response without checking it in a textbook or reputable source.

14. Modern Foreign Languages

French, Spanish, German. The prompts work for all three.

A language AI tutor is a near magical revision partner. It can translate, conjugate, pronounce (in many tools), and converse endlessly without judging your accent. Used well, it can genuinely pull a grade up.

Full topic tutor prompt

PROMPT MFL speaking and writing coach

You are my AQA GCSE [French / Spanish / German] Foundation Tier tutor. Target grade: 5. My weakest skill is speaking. For today's session on the topic of [e.g. 'My home town']:

1. Give me ten sentence starters I can use in both the writing and speaking exam.
2. Include at least three different tenses and two subordinate clauses.
3. Ask me to build my own ninety second speaking answer using your sentence starters, then correct my grammar and word order.
4. Finish with five likely General Conversation questions on this topic, and model high mark answers.

Respond in the target language where possible, with English only for corrections and grammar explanations.

Language drills that actually work

- **Translation ping pong:** "Translate this English sentence into French. I will translate it back into English. Compare our two versions and show me where meaning was lost."
- **Tense clinic:** "Give me ten English sentences and ask me to produce each one in the preterite, imperfect, present and near future tenses."
- **Photo card practice:** "Describe a photo to me in words. I will give you three full sentences describing it, then answer three follow up questions."
- **Role play:** "Play a French waiter. I have just arrived at the restaurant. Stay in character for ten turns and correct my mistakes at the end."

Pronunciation matters

If your AI tool supports voice, use it. Ask it to read sentences aloud and have it listen back to you. Even without voice, ask for phonetic transcriptions. They will transform your accent.

15. When the AI is wrong

Fact checking, hallucinations, and pushing back

Every AI tool sometimes produces confident nonsense. The polite technical term for this is "hallucination." The key skill is not to avoid AI, but to catch it. Here is how.

Three situations that need a sceptical eye

Watch out for	Why it is risky	What to do
Direct quotations from a named text or person	AI often invents plausible sounding quotes.	Cross check against the book, poem, or source.
Statistics, dates, numbers	AI tools can be confidently wrong about specifics.	Verify against textbook or BBC Bitesize.
Exam board specific claims ("AQA wants you to...")	AI may confuse exam boards or outdated specifications.	Check your exam board's own website.

The "are you sure?" prompt

If something feels off, push back. The best AI tools will often correct themselves, and even the less cautious ones will flag uncertainty if you ask.

CHALLENGE Push back

You said [repeat the claim]. I am not sure that is correct. Please:

- Double check that fact.
- Tell me how confident you are on a scale of 1 to 10.
- If you are below 8, rewrite your answer without that claim.
- Tell me where I could verify it for myself (a textbook chapter, a reliable website, or a person I could ask).

Golden rule of verification

Never write something in your GCSE exam that you first learned from AI and never checked against another source. If there is a single sentence in this booklet to remember, it is that one.

16. Weekly revision planner

Print this page, or copy it into your planner

Each week, plan seven sessions, one per day. Vary the subject, vary the step of the framework, and keep each session to around 30 to 45 minutes. Space out your topics. Return to old weaknesses at least once a week.

Day	Subject and topic	Step (1 to 5)	Time	Outcome / score
Monday				
Tuesday				
Wednesday				
Thursday				
Friday				
Saturday				
Sunday				

How to use it

Fill in the Subject and topic and Step columns in advance. That is your plan. Fill in Outcome / score after each session. That is your evidence.

At the end of the week, see which subjects or steps you avoided. Those are the ones to schedule first next week.

18. Golden rules for your AI tutor

Pin this to your wall

- Set up your tutor before every long session. Subject, exam board, tier, target grade, topic. Every time.
- Use the five steps. Create, Learn, Test, Practise, Improve. Skipping one weakens the whole session.
- Testing is the point, not the side dish. If you have not retrieved it, you have not learned it.
- Always verify quotes, names, dates and numbers. AI hallucinates confidently. You are the fact checker.
- Finish every session with three weaknesses and three next actions. Write them down.
- Treat the AI as your tutor, not your ghostwriter. If you could not write it from memory, you do not own it.
- Protect your privacy. No personal details, no photos of yourself, nothing from school systems.
- Tell a teacher or parent if anything ever feels wrong. You will not be in trouble for asking.
- Revise little, often, and honestly. Thirty minutes a day beats five hours on a Sunday.
- Remember: honesty, curiosity, discipline. Your GCSEs are a milestone. The habits you build now matter more.



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