



LC HL MATHS

PAPER 1 FOCUS PROGRAM

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1 Overview of 8-week Paper 1 Focus Program

LC HL Maths - Paper 1 Focus Program

Struggling with algebra or calculus? You’re not alone. This 8-week Paper 1 Focus Program is specifically designed to transform confusion into clarity and anxiety into confidence. This program will teach you how to think like a mathematician. Through a science-based metacognition approach, you’ll discover how to break down complex problems, spot patterns, and develop strategies that work for you. This isn’t about memorising formulas; it’s about building genuine understanding that lasts. In just 8 weeks, you’ll gain the skills, confidence, and exam techniques needed to excel in Paper 1. Join hundreds of students who have already unlocked their maths potential and are now achieving grades they never thought possible. Your transformation starts here.

Here are links to extra questions and resources on StudyClix for this 8-week program, should you wish to use them.

Links	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8
Topic	Induction	Functions	Indices and Logs	Sequences & Series	Financial Maths	Differ-entiation - Rules	Differ-entiation - Appli-cations	Integration

The program is strategically sequenced to build from the ground up, ensuring no foundational concept is left unmastered before tackling more advanced applications.

- **Block 1 (Weeks 1-4): The Language of Algebra & Analysis.** Establish absolute fluency in the rules, structures, and proofs that underpin all of algebra, functions, and advanced number systems.
- **Block 2 (Weeks 5-8): The Calculus Toolkit.** Master the powerful tools of differentiation and integration, applying them to solve complex problems in optimi-sation, motion, and area calculation, culminating in full paper synthesis.
- **Interleaved Revision:** From Week 2 onwards, every assessment intentionally inte-grates and revisits concepts from previous weeks. This is a deliberate design feature to combat the forgetting curve, strengthen neural connections, and build the flexible thinking required for the multi-topic questions on Paper 1.

2 Sample Study Plan

Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
Review Key Terms & LO's. Watch video (30 mins)	Start Ex. Worksheet (60 mins)	Finish Ex. Work Sheet, Correct Work sheet. (75 mins)	Online Lesson (60 mins)	Error Anal-ysis Exercise (40 mins)	Exam Q As-sessment (60 mins)	Self-Correct & Prep Day (30 mins)

3 Weekly Study Resources

1. **Key Terms:** Key vocabulary, definitions and formulae required for the worksheets (i.e., a cheat sheet/quick guide to this topic).
2. **Learning Objectives & Indicative Content (aligned LC HL Maths curriculum & specification):** Clear, quantifiable, achievable **goals** for the coming week.
3. **Exercise Worksheet:** Your main learning tool. It contains clear notes, worked examples, and key questions to solidify your understanding. This can be used for 1-4 study sessions in a given week (takes 90-120 minutes to complete).
4. ***Students have an online lesson after the exercise worksheet is completed***
5. **Error-Based Analysis Exercise:** A unique exercise where you'll find and fix common mistakes, training yourself to think like an examiner.
6. **Exam Question Assessment:** A short exam-style test to check your progress and get comfortable with the format of the real thing.
7. **Self-Correction & Progress Tracking Protocol:** see below.

4 Self-Correction & Progress Tracking Protocol

(This is the **MOST IMPORTANT task of the week** – complete this on Sunday, then immediately plan the following week's study to **guarantee consistency**).

1. **Mark your work.** Use a different colour pen.
2. **For each question, categorise your result:**
 - **Fluent:** I got it right and knew why.
 - **Lucky:** I got it right but was guessing/doubtful. I could not fully explain why this is the answer/how I got it.
 - **Error:** I got it wrong.
3. **For each Error, complete this sentence:**

"The root cause of this was: I _____."
(e.g., "I confused the formula for displacement with distance," or "I forgot to convert units.")
4. **For each Lucky answer, mark with a highlighter for later revision tests.**
5. **Action Plan:** Based on your analysis, what is **one specific thing** you will do before next week's lesson? (e.g., "Create a flashcards for function properties," "Redo the error-analysis exercise," "Watch a video on integration steps").
6. **Confidence Rating:** On a scale of 1-5, how confident do you now feel with this week's core concepts? (1 = Not at all, 5 = Rock Solid). Go through every Learning Objective and rank them. Continue this at the end of every week.

5 Why This System Works

- **Smarter Learning, Not More Learning:** My materials are designed using proven learning science to help you understand and retain information more effectively.
- **Build Confidence Through Mastery:** Start with the absolute essentials, ensuring you have a rock-solid foundation before moving on. No gaps, no confusion. Ask as many questions as you can.
- **You Learn How to Learn:** This program will teach you how to review your work, spot your own mistakes, and identify what you need to focus on. This is a skill that helps you in every walk of life.
- **Focus on Weaknesses:** By directing most of your time to analysing mistakes and revising difficult topics, you are forcing your brain to grow rapidly.

6 Weekly Learning Objectives

Week 1: Algebraic Foundations & Proof

- **1.1:** Define, simplify, and evaluate algebraic expressions and fractions.
- **1.2:** Factorise and solve quadratic and cubic equations using suitable methods.
- **1.3:** Solve and evaluate linear, rational, and quadratic equations and inequalities.
- **1.4:** Apply the Factor and Remainder Theorems and long division for polynomials.
- **1.5:** Understand and apply the principles of proof by contradiction.

Week 2: Functions & Graphical Analysis

- **2.1:** Define, analyse, and evaluate polynomial functions (domain, range, graphical representation).
- **2.2:** Analyse, graph, and evaluate exponential functions, identifying key characteristics.
- **2.3:** Sketch and analyse functions, identifying intercepts, symmetry, and asymptotes.
- **2.4:** Derive, write, and graph the equation of a line and a circle.
- **2.5:** Solve simultaneous equations graphically and algebraically to find points of intersection.

Week 3: The Unit Circle & Complex Numbers

- **3.1:** Utilise the unit circle to define sine, cosine, and tangent for all angles.
- **3.2:** Perform addition, subtraction, multiplication, and division of complex numbers.
- **3.3:** Calculate and interpret square roots and complex roots of numbers.
- **3.4:** Convert complex numbers between rectangular form and polar form (modulus & argument).
- **3.5:** Apply DeMoivre's Theorem to compute powers and roots of complex numbers.

Week 4: Sequences, Series & Financial Maths

- **4.1:** Define, expand, and find the general term of arithmetic and quadratic progressions.
- **4.2:** Apply formulas to calculate the sum of arithmetic and quadratic progressions.
- **4.3:** Define, expand, and find the general term of geometric progressions.
- **4.4:** Apply formulas to calculate the sum of geometric progressions, including sum to infinity.
- **4.5:** Apply APs, GPs, and exponential functions to solve financial maths problems.

****Students will have a "Reading Week" between Weeks 4 and 5.****

Week 5: Logarithms, Indices & Limits

- **5.1:** Explain, apply, and simplify expressions using the laws of indices.
- **5.2:** Define, apply, and manipulate expressions using the laws of logarithms.
- **5.3:** Solve and interpret logarithmic equations.
- **5.4:** Define, evaluate, and analyse limits of functions as they approach specific points or infinity.

Week 6: Differential Calculus

- **6.1:** Apply differentiation rules (powers, constants, sums) to compute derivatives.
- **6.2:** Differentiate polynomial, trigonometric, logarithmic, and exponential functions.
- **6.3:** Calculate slopes and equations of tangent lines to curves.
- **6.4:** Compute second-order and higher-order derivatives.
- **6.5:** Identify and analyse minima, maxima, and points of inflection using derivative tests.
- **6.6:** Apply differentiation to optimisation problems and modelling motion.

Week 7: Integral Calculus

- **7.1:** Define integration as the inverse of differentiation and apply basic rules of integration.
- **7.2:** Integrate polynomial, trigonometric, and exponential functions.
- **7.3:** Calculate and interpret the area under a curve using definite integrals.
- **7.4:** Explain, apply, and interpret the Mean Value Theorem for integrals.

Week 8: Paper 1 Review

- **8.1:** Synthesise all algebraic, functional, and calculus concepts to solve complex, multi-step problems.
- **8.2:** Understand and apply the principles of proof by induction to sequences, series, and divisibility.
- **8.3:** Targeted practice on past exam questions, focusing on the structure of long questions.