



Year 12, Mathematics Advanced

Task 1: Open Book Test

Due Date: Monday 9th December 2024 (Week 9)

Task Distributed: 25th Nov 2024	Units: Logarithmic Laws, Exponential and Logarithmic Calculus, Probability and Introduction to Calculus
Task Type Open Book Test	Task Weighting: 20%
Outcomes: MA11-5, MA11-6, MA11-7, MA12-3, MA12-8, MA12-10	

Task Description

You will have **45 minutes** to complete this exam. A HSC Reference Sheet will also be provided. This exam consists of two sections.

- **Section 1:** 5 multiple choice questions worth one mark each covering a range of the units listed below.
- **Section 2:** A mixture of short and long response questions worth one mark or more.

This is an open-book task, meaning that you are permitted to bring into the exam a double sided A4 summary notes. Your notes must be handwritten only. **You will submit your summary notes with your exam paper. These summary notes are worth approximately 5% of your total exam mark.**

Your knowledge, skills and understanding in the following areas can be assessed in this examination:

<p>Logarithmic Laws</p> <ul style="list-style-type: none"> • Simplify and evaluate logarithmic expressions • Consider logarithmic expressions of different bases • Apply the change of base laws • Solve problems involving logarithmic laws, including logarithmic scales 	<p>Probability</p> <ul style="list-style-type: none"> • Set notation and Venn diagrams • Relative frequency • Theoretical probability • Tree diagrams and two-way tables • Addition rule of probability • Product rule of probability • Conditional probability
<p>Exponential and Logarithmic Calculus</p> <ul style="list-style-type: none"> • Differentiation of exponential functions • Work with natural logarithms in a variety of contexts • Solve equations involving indices using logarithms • Graph exponential and logarithmic functions and their transformations 	<p>Introduction to Calculus</p> <ul style="list-style-type: none"> • Application of limits of functions • Distinguishing between continuous and discontinuous functions • Differentiation by first principles

NESA Glossary of Key Words

Understand the verb associated with the task. The verb will provide an understanding of the detail needed to successfully answer the question.

- **Calculate** - Provide a numerical answer
- **Derive** - Use working to obtain a formula or equation
- **Identify** - Recognise and name
- **Prove / Show** - Provide all algebraic steps and working in a logical sequence
- **Simplify** - Write an expression in its simplest form
- **Sketch** - Neatly draw a function on a number plane, clearly showing key features

- **Solve** - Use algebraic techniques to find a solution

Check the NESAs Glossary of Key Words for further guidance.

<https://educationstandards.nsw.edu.au/wps/portal/nesa/11-12/hsc/hsc-student-guide/glossary-keywords>

Details of Submission

For successful completion of this examination you must bring the following equipment.

- NESAs-approved calculator
- Pencils and eraser for graphs
- **One A4 paper double sided summary note with handwriting only**
- Blue or black pen
- A ruler

Students are NOT permitted to bring an electronic device into the exam.

If you are away on the date of the task you need to call the school and file for misadventure with a doctor's certificate. You will then be required to attempt the task on the day of return to school.

Teacher Feedback and Student Self-Reflection

The task will typically be returned to students within **14 days** of the due date.

At this time feedback including information on how to improve will be provided through worked solutions and a literacy marking rubric.

Students can clarify or seek further feedback by speaking with their teacher or the assessment marker.

Upon return of the task, students will also be expected to complete a self-reflection in class when the tests are returned.

How does this link to my learning?

- This task will be used by you and your teachers to assess your knowledge and understanding of course outcomes and allow you to refine your skills as you prepare for the HSC examination.
- The marks achieved in this exam will go towards your HSC assessment marks.
- This task will draw together the above outcomes and assess your ability to apply a range of mathematical skills and techniques that you have covered in class.

Assessment Procedures

All students should be fully aware of the School Assessment Procedures for their year group. These were provided at the beginning of the school year and are available off the school website under the Learning Tab for each year group.