Port Moresby International School

P.O. Box 276, Boroko, Papua New Guinea
Phone +675 325 3166, Fax +675 325 4439
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Unit 2 & Assessment Semester Outline for Students & Parents, Grades 11 – 12.

Year	2026	Semester	1	Grade	11	Unit Value	1.0
Curriculum		ACT/IB/PNG					
Subject Title/s		Specialist Mathematics					
Course Name		Specialist Mathematics IB/AC / Mathematics HL					
Unit Name		Unit 2: Specialist Mathematical IB/AC					
Course Code		1120		Unit Code		970S2Z	

Assessment Tasks

Week Due	Topic(s)	Type of Task	Weighting
1	Logarithmic Sequences Investigation	Assignment	25
2	Exponential and Logarithmic Functions	Test	25
8	Sequences and Series	Test	25
16	Calculus	Test	25

Learning outcomes against which the students will be reported

- Applies exponential and logarithmic functions to solve problems.
- Uses sequences and series to model patterns and growth.
- Applies differentiation techniques to analyse functions.
- Uses derivatives to investigate rates of change and optimise solutions.

Assessment Criteria

Technology, its selection and appropriate use, is an integral part of all the following criteria. Students will be assessed on the degree to which they demonstrate:

Knowledge – knowledge of mathematical facts, techniques and formulae presented in the unit

Application – appropriate selection and application of mathematical skills in mathematical modelling and problem solving

Reasoning – ability to use reasoning to support solutions and conclusions

Communication – interpretation and communication of mathematical ideas in a form appropriate for a given use or audience.

Regulations governing ACT Late Submission of Work, Non-Submission of Work, Attendance, Cheating/Plagiarism, Grade Descriptors, Moderation Procedures, Method of unit score calculation, meshing procedures, and Course information are available from the BSSS website.

www.bsss.act.edu.au/home

Summary of Content

Weeks	Content Outline	Curriculum Links
1	Review of Exponential and Logarithmic Functions Log Investigation	
2-3	Sequences. Arithmetic sequences: recursive and explicit form. (linear nature). Arithmetic Series. Exponential and Log Function Test	ACT Unit 2
4-6	Geometric Sequence: recursive and explicit definition. Geometric Series. Infinite geometric series. Compound Interest. Growth and Decay.	ACT Unit 2
7-8	Review Sequences and Series Sequences and Series Test	
9 - 10	Average rate of change and instantaneous Rates of change. Limit, continuity and differentiability. Derivatives: first principles and power rule. Applications Tangent and normal line. Chain rule	IB 5.1, 5.4, 5.12 ACT Unit 2
11-12	Product and Quotient rule. Implicit Differentiation, Higher Derivatives. Properties of Graphs: increasing and decreasing functions, stationary points and points of inflections. Graphing derivatives.	IB 5.2, 5.3, 5.5, 5.7, 5.8, 5.12. ACT Unit 2
13-14	Optimization. Kinematics. Linear approximation (Euler's method). Derivatives of Trigonometric Functions including $tanx, secx, cosecx, cotx$. Derivative of a^x and $log_a x$. Related rates problems.	IB 5.6, 5.9, 5.13, 5.18 ACT Unit 2
15 - 16	Calculus Review. Calculus Test	IB 5.13, ACT Unit 2
17 - 20	Year 12 Content: Integration: Area under curve, Power Rule, Trig Functions, Exponential and Log Functions, Substitution, Integration by Parts, Definite and Indefinite Integrals, Area under curve and between curves, Volume of Revolution, Kinematics, Inverse Trig Functions, Limits, L'Hôpital's Rule, Binomial Theorem, Differential Equations, Maclaurin Series,	IB 1.9, 1.10, 5.9 – 5.19 ACT Unit 3 / 8