Port Moresby International School

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Unit & Assessment Semester Outline for Students & Parents Grades 11 – 12.

Year	2026	Semester	2	Grade	12	Unit Value	0.5
Curriculum		ACT/ PNG					
Subject Title/s		Mathematics					
Course Name		Essential Mathematics/ General Mathematics					
Unit Name		Unit 4: Essential Mathematics					
Course Code		1445		Unit Code		14964	

Assessment Tasks

Week Due	Topic(s)	Type of Task	Weighting
2,4,6,8,10	All other topics preparatory Questions	5 Review Sheets	30
4	Linear, Quadratic & Cubic graphs	Test 1	35
10	Simultaneous equations & Bivariate data	Test 2	35

Learning outcomes against which the students will be reported

This unit should enable students to:

- Understand the key concepts of relations and functions, bivariate data, the correlation coefficient, interest and inflation, and congruent tests and circle geometry, including how they are represented and used.
- Apply mathematical techniques from relations and functions, analyse bivariate data using the correlation coefficient, solve problems involving interest and inflation, and use congruent triangle tests and circle geometry to find solutions.
- Communicate mathematical reasoning clearly using appropriate language, symbols, graphs, and diagrams when working with functions, bivariate data, financial mathematics, and geometric proofs and constructions.
- Interpret information and results from graphs of functions, bivariate data and correlation, interest and inflation scenarios, and congruence and circle geometry problems to make meaningful conclusions.

Assessment Criteria

Students will be assessed on the degree to which they demonstrate:

- Knowledge: - knowledge of mathematical facts, techniques and formulas presented in the unit.
- Application: - appropriate selection and application of mathematical skills in mathematical modelling and problem solving.
- Communication: - interpretation and communication of mathematical ideas in a form appropriate for a given use or audience
- Argument: - the development of logical arguments to support solutions
- Appropriate use of Technology

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, Course information - are available from the BSSS website;

www.bsss.act.edu.au/home

Summary of Content

Weeks	Content Outline	Curriculum Links
1-2	**Relations & Functions**: define functions & relations, vertical line test, substitution into functions, domain and range of functions; **Linear functions**: review slopes, y-intercepts, plotting, sketching, distance & midpoint between two points, equations of parallel, perpendicular line, thru origin, with slope and one point, domain & range of linear graphs, problem solving.	**11Ad**: 11.2 -T7 **12GM Save Buk** 12.4 -T3 **11Ad:** T9 - 11 11GM Save Buk
3-4	**Quadratic:** forms of equations, expand, factorize, solving quadratic equations, sketch and plot parabolas, properties of parabolas and writing equations of parabolas, domain & range, problem solving. **Cubic:** factorize & solve cubic equations, properties of graph, plotting.	12.4: T5 -T6 11Adv: T14 12.4: T7 & 11Adv: 11.2 T16
5-6	**Exponential**: plotting, properties of exponential graphs, sketching, writing equations, asymptote, regions of exponential inequalities. **Logarithmic**: relationship between exponential and logarithmic function, plotting, sketching, asymptote, writing equation, regions of logarithmic inequalities. **Trial Exam in week 6.**	12.4: T11 - 12 11GM Save Buk
7-8	**Hyperbola**: properties of graph, plotting graphs, asymptotes, **Simultaneous equations**: Linear and non-linear (covered) functions (solve algebraically –substitution) **Regions of Inequalities**: Solving regions of all the graphs covered	12GM: 12.4: T10 11Adv: 11.2 – T14 11Adv: 11 – T15 & 12.4: T4
9-10	**Bivariate Data**: types of relationships, describing scatter graph, linear & non-linear, equations of Regression line (line of best fit) with Least Square method, table and formula. **Correlation**: types of correlation, regression and Correlation Coefficient by formula and calculator;	**12GM** 12.3: T5 – T9
11-12	**Interest and Inflations**; interest, compound interest, appreciation, depreciation. **Consumer Credit**: loans, reduced balance loans, annuities formula, credit/debit cards, Hire purchase. **Geometry**: test and proof for congruent triangles, special and similar triangles, circle geometry properties.	12.2: T1 – T4 12.2: T5 11GM: 11.: T2 -T4
13-14	**12 External Examinations**	