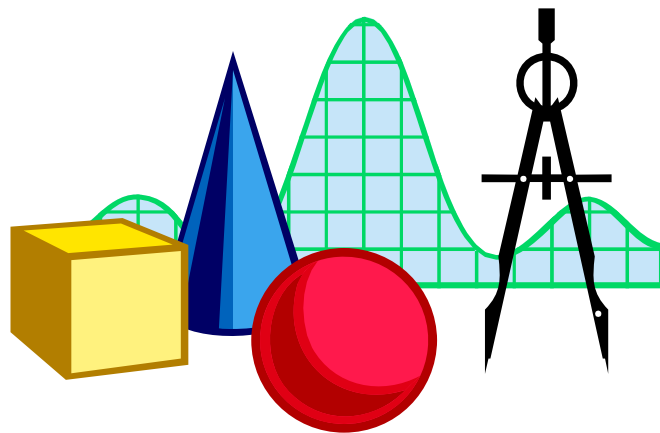


ST STEPHEN'S SCHOOL
CARRAMAR

FOUNDATIONS OF MATHEMATICS
2008



COURSE OUTLINE

Course Outline – Foundations of Mathematics

SEMESTER 1 2008

St Stephen's School Carramar

Topic	Syllabus Objectives	Weeks	Assessment Items
Use of Formulae Chapter 1	3.12	<u>Term 1</u> Week 1, 2 (1½ weeks)	
Using Algebra to Solve Problems Chapter 2	1.1 – 1.4, 3.12	Week 2, 3, 4 (2 weeks)	Test 1 Wk 4 (5%) CS Chapters 1 & 2
Data Analysis I Chapter 3	4.1, 4.5 – 4.8	Week 4, 5, 6, (2½ weeks)	EPW 1 Wk 7 (7%) JR
Right Angled Triangles Chapter 4	2.2, 2.4, 2.11	Week 7, 8, 9 (3 weeks)	Test 2 Wk 9 (6%) WB Chapters 3 & 4
Linear Relationships Chapter 5	1.1, 2.5 – 2.11, 3.1, 3.2, 3.10, 3.12	<u>Term 2</u> Week 1 – 5 (5 weeks) <i>Staff Retreat – Week 5</i>	EPW 2 Wk 3 (7%) CS Assignment 1 Wk 4 (2%) JR Test 3 Wk 5 (6%) JR
Exams		Week 6, 7 (2 weeks)	Semester 1 Exam (15%) JR (JR,CS,WB)
Data Analysis II Chapter 6	4.1, 4.3, 4.4	Week 8, 9, 10	Test 4 Wk 10 (6%) WB

Course Outline – Foundations of Mathematics SEMESTER 2 2008 St Stephen's School Carramar

Topic	Objectives	Weeks	Assessment Items
Quadratics Chapter 7	3.1 - 3.4, 3.6 – 3.8, 3.11, 3.12	<u>Term 3</u> Week 1, 2, 3, 4 (4 weeks)	EPW 3 Wk 3 (7%) JR
Non Right Triangles Chapter 8	2.1 – 2.3, 2.11	Week 5, 6, 7 (3 weeks)	Test 5 Wk 7 (6%) CS
Data Analysis III Chapter 9	4.1, 4.2	Week 8, 9, 10 (3 weeks)	
Other Relationships Chapter 10	3.1 – 3.3, 3.5 – 3.7, 3.0 – 3.12	<u>Term 4</u> <i>Year 11 Retreat – Week 1</i> Week 2, 3, 4 (3 weeks)	Test 6 Wk 3 (6%) WB Assignment 2 Wk 4 (2%) JR
Exams		Week 5, 6 (2 weeks)	Semester 2 Exam (25%) JR (JR,CS,WB)

Student Text: Foundations of Mathematics Second Edition by A.J. Sadler

Term 1

Use of Formulae

Ch 1

- 3.12 Solving Equations of the form
 $f(x) = c$ and
 $f(x) = g(x)$ using algebraic methods.

Using Algebra to Solve Problems

Ch 2

- 1.1 Explore patterns and derive simple formulas
- 1.2 Test conjectures empirically and understand the role
of counter examples
- 1.3 Carry out trial and error methods in a systematic way
- 1.4 Present results in an orderly and appropriate way
- 3.12 Solving Equations of the form
 $f(x) = c$
 $f(x) = g(x)$
 $y = f(x)$ and $y = g(x)$

Data Analysis I

Ch 3

- 4.1 Draw and interpret tables and graphs of univariate
data considering relative frequencies
- 4.5 Use techniques of sampling, including simple
random sampling and stratified random sampling.
- 4.6 Collect bivariate data, organize it into tables and
scatter graphs, and draw lines of best fit by sight
- 4.7 Make inferences from tables, scatter graphs and lines
of best fit.
- 4.8 Interpret two-way tables.

Right Angled Triangles

Ch 4

- 2.2 Solve triangles in two and three-dimensional contexts
- 2.4 Determine arc length on a circle and find distances along circles of constant latitude or constant longitude on the surface of the earth.
- 2.11 Solve problems which involve aspects of measurement and relate simple dimension analysis to formulas and units

Linear Relationships

Ch 5

- 1.1 Explore patterns and derive simple formulas.
- 2.5 Determine the distance between points in the plane.
- 2.6 Determine the midpoint of a line segment in the plane
- 2.7 Determine the gradient of a line in the plane
- 2.8 Determine conditions for parallelism or perpendicularity of pairs of lines in the plane.
- 2.9 Determine the equation of a line in the plane given one point and the gradient, or two points.
- 2.10 Apply methods and results from objectives 2.5 to 2.9 above to solve problems.
- 2.11 Solve problems which involve aspects of measurement and relate simple dimension analysis for formulas and units.
- 3.1 Model a situation by means of a Cartesian graph.
- 3.2 Describe situations displayed on a graph.
- 3.10 Determine the domain and range of a function from its graph.
- 3.12 Solve equations of the form $y = f(x)$ and $y = g(x)$ using algebraic, graphical and simple systematic numerical methods as appropriate.

Data Analysis II

Ch 6

- 4.1 Draw and interpret tables and graphs of univariate data considering relative frequencies, cumulative frequencies and percentage cumulative frequencies, using appropriate class intervals where required
- 4.3 Determine and use measures of central tendency (mean, mode, median) for ungrouped data, and examine the effect of changes of origin and scale on each.
- 4.4 Determine and use measures of dispersion (range, mean deviation, standard deviation, variance) Weighted means.

Term 3

Quadratics

Ch 7

- 3.1 Model a situation by means of a Cartesian graph.
- 3.2 Describe situations displayed on a graph.
- 3.3 Sketch graphs of standard functions defined by power $y = x^n$, $x = 2$
- 3.4 Investigate the effects of varying a , b , c and d on the graph of: $y = aF[b(x - c) + d]$ where F is a standard function.
- 3.6 Identify quadratic functions from graphs.
- 3.7 Determine the defining rule of a function from its graph.
- 3.8 Determine the line of symmetry and turning point of a quadratic function.
- 3.11 Solve applied problems involving functions and graphs.
- 3.12 Solve equations of the form
 $f(x) = g(x)$ and
 $y = f(x)$ and $y = g(x)$

Triangles that are not right angles

Ch 8

- 2.1 Use the sine and cosine rules
- 2.2 Solve triangles in two and three-dimensional contexts
- 2.3 Establish and use the formula for the area of a triangle.
- 2.11 Solve problems which involve aspects of measurement and relate simple dimension analysis to formulas and units

Data Analysis III

Ch 9

- 4.1 Draw and interpret tables and graphs of univariate data considering relative frequencies, cumulative frequencies and percentage cumulative frequencies, using appropriate class intervals where required.
- 4.2 Determine and interpret measures of location (median, quartiles, deciles, percentiles) from a percentage cumulative frequency polygon.
Box and whisker plots

Term 4

Other Relationships

Ch 10

- 3.1 Model a situation by means of a Cartesian graph.
- 3.2 Describe situations displayed on a graph
- 3.3 Sketch graphs of standard functions defined by:
power - $y = x^n$
reciprocal - $y = \frac{1}{x}$
trigonometric - $y = \sin x^\circ, y = \cos x^\circ, y = \tan x^\circ$
exponential - $y = a^x$, where a is a positive integer
- 3.5 Sketch piecewise defined functions.
- 3.6 Identify linear, quadratic, reciprocal, trigonometric and exponential functions from their graphs.
- 3.7 Determine the defining rule of a function from its graph.
- 3.9 Determine the amplitude and period of a trigonometric function from its equation or graph.
- 3.10 Determine the domain and range of a function from its graph.
- 3.11 Solve applied problems involving functions and graphs.
- 3.12 Solving Equations of the form
 $f(x) = c$
 $f(x) = g(x)$
 $y = f(x)$ and $y = g(x)$

To see full syllabus go to:

http://www.curriculum.wa.edu.au/Senior_Secondary/Subjects/Mathematics/Foundations_of_Mathematics/

2008 ASSESSMENT POLICY - FOUNDATIONS OF MATHEMATICS

Assessment Weighting's:

EPW's	(x3)	21%
Tests	(x6)	35%
Exams	(x2)	40%
Assts	(x2)	04%

At the end of Year 11, each student will receive a mark out of 100 and a grade (A, B, C, D or E) based on the following:

1. The use of grade related descriptors for each level of achievement.
2. The final year score accumulated during the year.
3. Examination of student files by St Stephen's School staff or Curriculum Council moderators as may be necessary.

Every mathematics student is required to keep a "Student Assessment File" that must contain all assignment/project work, tests, extended pieces of work and Semester Exams.

That is, the file must contain every piece of work by the student that contributes towards the final mark.

Failure on part of a student to provide any given piece of assessment from the "Student Assessment File" may result in awarding a grade upon insufficient evidence.

St Stephen's School Assessment Policy

Refer to the Secondary School Assessment Policy contained within the Student Work Record. A Progressive Record of Assessments is contained at the rear of the Student Work Record. Students are encouraged to use this to help monitor their academic progress across all their subjects.

**Mathematics Learning Area
St Stephen's School Carramar
January 2008**

**Extended Pieces of Work (EPW) Assessment Policy.
Year 11 and 12 TEE Mathematics Courses.**

To the student.

An extended piece of work is any assignment, problem solving activity, project or investigation that you are required to complete out of class. After you hand up the completed EPW to your mathematics teacher he/she will give you a validation or test to verify that the EPW is your work. Consequently an EPW consists of two parts. A “take home” component and the “in class” assessment or validation.

The out of class or take home component will be given a weighting of no more than 20% of the total EPW weighting. On the same day that the out of class component is due you will be required to sit the in class validation. When your validation has been marked, your result is added to the mark that you received for the out of class component. The mark allocated to the out of class component is predominantly an effort mark. If you complete this component in a neat, clear and concise format then you can quite easily obtain a perfect mark. While the validation aims to check that the EPW is your own work, it also tests your level of understanding of the content and processes pertained within the EPW. The validation is likely to extend you beyond the mathematical requirements of the out of class component.

For Example: Betty received a mark of 4 out of 5 for the take home part of her investigation. On the day that this was due she sat the validation and she received a mark of 16 out of 20. So her final mark for this investigation is $4 + 16 = 20$ out of a possible 25.

Your mathematics teacher may decide to give you an EPW at a designated time that does not contain a take home component. In this case the assessment is 100% weighted towards the in class component and marked similarly to a test.

If you hand up the out of class component late without an acceptable reason marks will be *deducted* at the rate stated in the St Stephen's Assessment Policy contained within your Student Work record. If you do not satisfactorily complete the out of class component you will receive a zero score for the EPW. You must show that you have rigorously attempted all questions.

If you are absent for a significant assessment then a medical certificate is required. Failure to provide a medical certificate may result in a zero score for the relevant assessment piece.

These processes are in place to ensure the validity and fairness of student results for EPW in mathematics. If you have any questions please don't hesitate to ask myself or your mathematics teacher.

Stephen Corcoran
Head of Mathematics

Mathematics Learning Area
St Stephen's School Carramar
January 2008

**Student Notes for Assessments and Examination
Length.**

Year 11 and 12 TEE Mathematics Courses.

Student Notes

- Curriculum Council Approved Statistical Tables book allowed in all assessments.
- 2 A4 pages double sided, like the TEE for all assessments. At the teachers' discretion this can be changed to be 0 or 1 page but this must be stated in writing on the front page of the assessment and students given sufficient notice.

Exam Length

- 2.5 hours + 10 semester one exam
- 3 hours + 10 semester two exam

Stephen Corcoran
Head of Mathematics