

Year 9 Mathematics
Pathway C (9M3) Mr Woffenden's Class
Study Guide End of Year Examination 2010

NOTE: The examination will focus on work from Semester 2 this year but will include material from Semester 1 and Mathematics you have covered previously (in Years 7 and 8)

Semester 1

1. Index Laws
 - Adding, subtracting, multiplying and dividing algebraic terms involving powers
 - Power of zero
 - Negative and fractional indices

2. Scientific Notation
 - Converting into and out of scientific notation (e.g. 2.4×10^4 or 5.9×10^{-6})

3. Area & Perimeter
 - Area and perimeter of simple and composite shapes including triangles, rectangles, trapezium, rhombus, kite and parallelogram.
 - Area and perimeter of circles, semi-circles and sectors, as well as composite shapes including these.

4. Algebra:
 - Collecting like terms (including algebraic fractions)
 - Multiplying and dividing terms, including expanding brackets
 - Factorising algebraic expressions

5. Expanding binomial expressions
 - Know how to expand $(3 + g)(6 - 4g)$, $(8 + g)^2$ etc

6. Earning and spending money:
 - Ways of earning money (wages, salary, commission, hourly rate etc), converting earnings to different time periods (hourly, weekly, monthly or annual).
 - Calculating gross income, deductions, taxable income and net income.
 - Calculating tax payable from a taxation table and Medicare levy
 - Budgeting

7. Rates & Ratios
 - Writing and simplifying ratios
 - Applying the unitary method to ratio problems
 - Dividing a quantity in a given ratio
 - Solving speed, distance and time problems.
 - Converting rates from one set of units to another
 - Rounding numbers to a specified number of significant figures

Semester 2

8. Trigonometry of Right Angled Triangles

- Know the 3 trigonometric ratios (sin, cos and tan)
- Know how to use them to find the short side of a RAT.
- Know how to use them to find the length of the hypotenuse
- Be able to find an unknown angle in a RAT given the lengths of 2 sides
- Solve word problems involving RATs and trigonometry
- Problems involving angles of elevation and depression

9. Solving Linear & Quadratic Equations

- Solve linear equations involving multiplying, dividing, adding and subtracting of pronumerals. eg $3f + 4 = 12$, $6 - 3y = 4y + 1$, $\frac{2g + 3}{2} = 16$.
- Solve equations involving brackets eg $6(3y - 5) = 18$
- Solving word problems using equations.
- Solving linear inequations eg $8 - 5j > 18$
- Solving simple quadratic equations eg $k^2 + 4 = 13$

10. Coordinate Geometry

- What is a number plane and how do you plot points on it.
- Finding the midpoint & length of an interval on a number plane.
- How is the gradient of a line measured and what is the difference between a positive and a negative gradient?
- Establishing the gradient of a line on a number plane.
- Know what the x and y-intercepts of a line are.
- Creating a table of values from an equation and plotting the points and drawing in the line.

11. Data Representation & Analysis

- Constructing frequency and cumulative frequency tables for grouped and ungrouped data.
- Constructing frequency and cumulative frequency histograms and polygons.
- Grouping data in classes
- Finding the mean, mode and median, including using the class centre to find the mean, and using a cumulative frequency polygon to find the median.
- Creating a Box and Whisker plot from a five number summary (min, lower quartile, median, upper quartile and max value). Being able to interpret a box and whisker plot.

Study Tips:

Work through Topic Tests from earlier in the year to help revise the important concepts. Come to the Tuesday morning Mathematics Tutorial (Room 4, 8.00am) with questions or work you want help with.