Lesson Plans

Year 10 Mathematics TERM 3

Some general points about the following lesson plans:

- ★ The lesson plans outline only one way of sequencing the learning material in each chapter of the textbook.
- ★ The content and sequence will obviously vary from class to class (The following guide is ambitious in many instances).
- ★ All activities and investigations in each chapter have been deliberately designed to support the National Curriculum content whilst keeping in mind the development and reinforcement of skills required in the study of mathematics in Year 11/12.
- ★ The length of lessons vary from school to school and even within schools. The following guide is based on 35/40 min lessons because it was reasoned that adjustment to 60/75/90 mins lessons would be easier than reducing lesson plans.
- ★ Students may be challenged further by completing each chapter Task, Competition Questions, and by finding and entering any of the many competitions, challenges, projects etc that may be found on the Internet. Such students may benefit by doing an Internet search early in the year and planning entries before they close.

Assessment

A task	7th week of Term
Mental computation	Last week of Term
End of Term Test	Last week of Term

Summary of Term 1 Lessons (10 weeks)

Chapter 11	Finance	Number & Algebra - Money & Finance	3 weeks
Chapter 12	Trigonometry1	Measurement & Geom - Pythagoras & Trig	3 weeks
Chapter 13	Statistics 1	Statistics & Probability - Data Rep. & Inter.	2 weeks
Chapter 15	Review	All of above	2 weeks

Note: The workprogram contains a detailed mapping of curriculum content.

Year 10 Level Description

The proficiency strands Understanding, Fluency, Problem Solving and Reasoning are an integral part of mathematics content across the three content strands: Number and Algebra, Measurement and Geometry, and Statistics and Probability. The proficiencies reinforce the significance of working mathematically within the content and describe how the content is explored or developed. They provide the language to build in the developmental aspects of the learning of mathematics.

At this year level:

- **Understanding** includes applying the four operations to algebraic fractions, finding unknowns in formulas after substitution, making the connection between equations of relations and their graphs, comparing simple and compound interest in financial contexts and determining probabilities of two and three step experiments
- **Fluency** includes factorising and expanding algebraic expressions, using a range of strategies to solve equations and using calculations to investigate ing the shape of data sets
- **Problem Solving** includes calculating the surface area and volume of a diverse range of prisms to solve practical problems, finding unknown lengths and angles using applications of trigonometry, using algebraic and graphical techniques to find solutions to simultaneous equations and inequalities, and investigating independence of events
- **Reasoning** includes formulating geometric proofs involving congruence and similarity, interpreting and evaluating media statements and interpreting and comparing data sets

Year10A Content Description

Chapter 11 Finance (Number & Algebra ➡ Money & Financial Mathematics)

★ Connect the compound interest formula to repeated applications of simple interest using appropriate digital technologies.

Chapter 12 Trigonometry 1 (Measurement & Geometry ➡ Pythagoras & Trigonometry)

★ Solve right-angled triangle problems including those involving direction and angles of elevation and depression.

Chapter 13 Statistics 1 (Statistics & Probability ➡ Data Representation & Interpretion)

★ Determine quartiles and interquartile range.

★ Construct and interpret box plots and use them to compare data sets.

★ Compare shapes of box plots to corresponding histograms and dot plots.

Chapter 15 Review

★ Review of all of above.

Chapter 11 Finance (Number & Algebra ➡ Money & Financial mathematics)

★ Connect the compound interest formula to repeated applications of simple interest using appropriate digital technologies.

Lesson	Method	Resources
1	☐ General (covering book, ruling pages, paste study guide etc.) ☐ Purpose of chapter ☐ Exercise 11.1 p144 (Model solutions for students) ☐ Exercise 11.2 p144 (Model solutions) ☐ HW: Complete Exercises. Read and practice the Sweet Trick on p153	
2	☐ Some students demonstrate the Sweet Trick p153 ☐ Exercise 11.3 p145 (Model solutions) ☐ HW: Complete Exercise	
3	☐ Discussion about Sweet Trick - how to improve presentation ☐ Exercise 11.4 p146 (Model solutions) ☐ HW: Complete Exercises and demonstrate Sweet Trick at home/lodgings	
4	☐ Exercise 11.5 p147 (Model solutions) ☐ HW: Complete Exercises	
5	☐ Exercise 11.6 p148 (Model solutions) ☐ HW: Complete Exercises	
6	☐ Exercise 11.7 p149 (Model solutions) ☐ HW: Complete exercise	
7	☐ Discussion of why employers are adamant that employees have adequate mental computation skills - also very useful revision technique ☐ Mental computation Exercise 11.8 p150 ☐ Technology 11.1, 11.2, 11.3 p154 (Model solutions) ☐ HW: Complete Exercises	Spreadsheets
8	☐ Mental computation Exercise 11.9 p150 ☐ Technology 11.1, 11.2, 11.3 p154 (Model solutions) ☐ HW: Complete Exercises	
9	☐ Mental computation Exercise 11.10 p150 Group work working on a directed/choice/combination of: ☐ A couple of puzzles p153 ☐ Investigations 11.1, 11.2, 11.3, 11.4 p152 ☐ A game p153	Internet
10	Group work working on a directed/choice/combination of: ☐ A couple of puzzles p153 ☐ Investigations 11.1, 11.2, 11.3, 11.4 p152 ☐ A game p153 ☐ HW: Complete activities	Internet
11	☐ Competition Questions p151 (Model solutions) ☐ HW: Complete Competition Questions	
12	☐ Chapter Review 1 p155 Questions 1 to 4 ☐ HW: Complete Chapter Review	
13	☐ Chapter Review 1 p155 Questions 5 to 8 ☐ HW: Complete Chapter Review	
14	☐ Chapter Review 2 p156 Questions 1 to 4 ☐ HW:	
15	☐ Chapter Review 2 p156 Questions 5 to 8 ☐ HW: Complete Chapter Review	

Chapter 12 Trigonometry 1 (Measurement & Geometry ➡ Pythagoras & Trigonometry)

★ Solve right-angled triangle problems including those involving direction and angles of elevation and depression.

Lesson	Method	Resources
1	☐ Purpose of chapter. Importance of Trig for solving millions of problems ☐ Exercise 12.1 p158 (Model solutions for students) ☐ HW: Read and practice the Sweet Trick on p168	
2	☐ Exercise 12.2 p159 (Model solutions) ☐ Some students demonstrate the Sweet Trick p98 ☐ HW: Complete Exercises and demonstrate Sweet Trick at home/lodgings	
3	☐ Discussion about Sweet Trick - how to improve presentation ☐ Exercise 12.3 p160 (Model solutions) ☐ HW: Complete Exercises	
4	☐ Exercise 12.4 p161 (Model solutions) ☐ HW: Complete Exercises	
5	☐ Exercise 12.5 p162 (Model solutions) ☐ HW: Complete exercise	
6	☐ Exercise 12.6 p163 (Model solutions) ☐ HW: Complete exercise	
7	☐ Exercise 12.7 p164 (Model solutions) ☐ HW: Complete exercise	
8	☐ Mental computation Exercise 12.8 p166 ☐ Revisit discussion of why employers are adamant that employees have adequate mental computation skills - also very useful revision technique ☐ Competition Questions 1-5 p167 ☐ HW: Complete exercises	
9	☐ Mental computation Exercise 12.9 p166 ☐ Competition Question 6-10 p167 ☐ HW: Complete Exercises	
10	☐ Mental computation Exercise 12.10 p166 Group work working on directed/choice/combination of: ☐ A couple of puzzles p168 ☐ A game p168 ☐ Investigations 12.1, 12.2, 12.3 p169 ☐ Technology 12.1, 12.2 p170	
11	Group work working on directed/choice/combination of: ☐ A couple of puzzles p168 ☐ A game p168 ☐ Investigations 12.1, 12.2, 12.3 p169 ☐ Technology 12.1, 12.2 p170	Internet Spreadsheet
12	☐ Chapter Review 1 p171 Questions 1 to 3 ☐ HW: Complete Chapter Review	
13	☐ Chapter Review 1 p171 Questions 4 to 6 ☐ HW: Complete Chapter Review	
14	☐ Chapter Review 2 p172 Questions 1 to 3 ☐ HW: Complete Chapter Review	
15	☐ Chapter Review 2 p172 Questions 4 to 6 ☐ HW: Complete Chapter Review	

Chapter 13 Statistics 1 **(Statistics & Probability ➞ Data Representation & Interpretation)**

★ Determine quartiles and interquartile range.

★ Construct and interpret box plots and use them to compare data sets.

★ Compare shapes of box plots to corresponding histograms and dot plots.

Lesson	Method	Resources
1	□ Purpose of chapter. □ Exercise 13.1 p174 (Model solutions for students) □ Exercise 13.2, 13.3 p175 (Model solutions) □ HW: Complete exercises & read and practice the Sweet Trick on p185	
2	□ Exercise 13.4, 13.5 p176 (Model solutions) □ Some students demonstrate the Sweet Trick p185 □ HW: Complete exercises and demonstrate Sweet Trick at home/lodgings	
3	□ Discussion about Sweet Trick - how to improve presentation □ Exercise 13.6 p177 (Model solutions) □ HW: Complete exercises	
4	□ Exercise 13.7 p178 (Model solutions) □ HW: Complete exercises	Computers
5	□ Mental computation Exercise 13.11 p182 □ Exercise 13.8, 13.9 p180 (Model solutions) □ HW: Complete exercises	
6	□ Mental computation Exercise 13.12 p182 Group work working on a directed/choice/combination of: □ Competition Questions p183 □ Investigations 13.1, 13.2, 13.3, 13.4, 13.5 p184 □ Technology 13.3 p186 □ A Game p185 □ A couple of puzzles p185	
7	□ Mental computation Exercise 13.13 p182 Group work working on a directed/choice/combination of: □ Competition Questions p183 □ Investigations 13.1, 13.2, 13.3, 13.4, 13.5 p184 □ Technology 13.3 p186 □ A Game p185 □ A couple of puzzles p185	Spreadsheets Graphics Calculators
8	Group work working on a directed/choice/combination of: □ Competition Questions p183 □ Investigations 13.1, 13.2, 13.3, 13.4, 13.5 p184 □ Technology 13.3 p186 □ A Game p185 □ A couple of puzzles p185 □ HW: Complete activities	Spreadsheets Graphics Calculators
9	□ Chapter Review 1 p187 □ HW: Complete Chapter Review	
10	□ Chapter Review 2 p188 □ HW: Complete Chapter Review	

A Task

Work on one of the four tasks at the beginning of each chapter.
(Page 143, page 157, page 173, page 189)

Lesson	Method	Resources
1-5	□ Setup □ Decide whether tasks completed individually, groups of two, three, or four □ Decide which tasks are assigned to individuals/groups □ Decide how tasks are to be presented: Oral presentation, poster presentation (on classroom wall), power point presentation etc. □ If the presentation will take class time then decide when. □ Each lesson may be started with a mental computation or a summary of what is expected from the work on the tasks.	Textbook Assesssment instruments

Chapter 15 Review

Chapter 11 Finance (Number & Algebra ➞ Money & Financial Mathematics)

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Chapter 12 Trigonometry 1 (Measurement & Geometry ➞ Pythagoras & Trigonometry)

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Chapter 13 Statistics 1 (Statistics & Probability ➞ Data Representation & Interpretion)

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★ Compare shapes of box plots to corresponding histograms and dot plots.

Chapter 15 Review

★ Review of all of above.

Lesson	Method	Resources
1-10	□ Purpose of Review □ Review 1 p206 □ Review 2 p209 □ Repetition of above until mastery? □ Sample end of term papers (www.drdwyer.com.au) □ Assessment	Textbook Assesssment instruments