Lesson Plans

Year 10 Mathematics TERM 2

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 6	Quadratics	Number & Algebra - Patterns & Algebra	3 weeks
Chapter 7	Solving Eqns	Number & Algebra - Linear & Non-linear	3 weeks
Chapter 8	Chance	Statistics & Probability - Chance	2 weeks
Chapter 10	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
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Year10A Content Description

Chapter 6 Quadratics (Number & Algebra ➡ Patterns and Algebra)

★ Expand binomial products and factorise monic quadratic expressions using a variety of strategies.

Chapter 7 Solving Equations (Number & Algebra ➡ Linear & Non-linear)

★ Solve linear equations involving simple algebraic fractions.

★ Solve simple quadratic equations using a range of strategies.

Chapter 8 Chance (Statistics & Probability ➡ Chance)

★ Describe the results of two- and three-step chance experiments, both with and without replacements, assign probabilities to outcomes and determine probabilities of events. Investigate the concept of independence.

★ Use the language of ‘if ....then, ‘given’, ‘of’, ‘knowing that’ to investigate conditional statements and identify common mistakes in interpreting such language.

Chapter 10 Review

★ Review of all of above.

Chapter 6 Quadratics (Number & Algebra ➡ Patterns & Algebra)

★ Expand binomial products and factorise monic quadratic expressions using a variety of strategies.

Lesson	Method	Resources
1	□ General (covering book, ruling pages, paste study guide etc.) □ Purpose of chapter □ Exercise 6.1 p72 (Model solutions for students) □ HW: Complete Exercise. Read and practice the Sweet Trick on p83	
2	□ Exercise 6.2 p73 (Model solutions) □ Some students demonstrate the Sweet Trick p83 □ HW: Complete Exercise and demonstrate Sweet Trick at home/lodgings	
3	□ Discussion about Sweet Trick - how to improve presentation □ Exercise 6.3 p74 (Model solutions) □ HW: Complete Exercise	
4	□ Exercise 6.4 p75 (Model solutions) □ HW: Complete Exercise	
5	□ Exercise 6.5, 6.6, 6.7 p76 (Model solutions) □ HW: Complete Exercises	
6	□ Exercise 6.8, 6.9 p77 (Model solutions) □ HW: Complete Exercises	
7	□ Exercise 6.10 p78 (Model solutions) □ HW: Complete exercise	
8	□ Discussion of why employers are adamant that employees have adequate mental computation skills - also very useful revision technique □ Mental computation Exercise 6.12 p80 □ Exercise 6.11 p79 (Model solutions) □ HW: Complete Exercise	
9	□ Mental computation Exercise 6.13 p80 Group work working on a directed/choice/combination of: □ A couple of puzzles p83 □ Technology 6.1, 6.2, 6.3, 6.4 p84 □ Investigations 6.1, 6.2 p82 □ A game p83	Internet
10	□ Mental computation Exercise 6.14 p80 Group work working on a directed/choice/combination of: □ A couple of puzzles p83 □ Technology 6.1, 6.2, 6.3, 6.4 p84 □ Investigations 6.1, 6.2 p82 □ A game p83	Internet
11	□ Competition Questions p81 (Model solutions) □ HW: Complete Competition Questions	
12	□ Chapter Review 1 p85 □ HW: Complete Chapter Review	
13	□ Chapter Review 1 p85 □ HW: Complete Chapter Review	
14	□ Chapter Review 2 p86 □ HW: Complete Chapter Review	
15	□ Chapter Review 2 p86 □ HW: Complete Chapter Review	

Chapter 7 Linear Equations (Number & Algebra ➡ Linear & Non-linear)

★ Solve linear equations involving simple algebraic fractions.

★ Solve simple quadratic equations using a range of strategies.

Lesson	Method	Resources
1	☐ Purpose of chapter ☐ Exercise 7.1 Q1-46 p88 (Model solutions for students) ☐ HW: Complete Exercise. Read and practice the Sweet Trick on p98	
2	☐ Exercise 7.1 p89 Q47-86 (Model solutions for students) ☐ Some students demonstrate the Sweet Trick p98 ☐ HW: Complete Exercise	
3	☐ Discussion about Sweet Trick - how to improve presentation ☐ Exercise 7.2 p90 (Model solutions) ☐ HW: Complete Exercise	
4	☐ Exercise 7.3 p91 (Model solutions) ☐ HW: Complete Exercise	
5	☐ Exercise 7.4 p92 (Model solutions) ☐ HW: Complete Exercise	
6	☐ Exercise 7.5 p93 (Model solutions) ☐ HW: Complete Exercise	
7	☐ Mental computation Exercise 7.8 p96 ☐ Exercise 7.6 p94 (Model solutions) ☐ HW: Complete exercise	
8	☐ Mental computation Exercise 7.9 p96 ☐ Revisit discussion of why employers are adamant that employees have adequate mental computation skills - also very useful revision technique ☐ Exercise 7.7 p95 ☐ HW: Complete exercise	
9	☐ Mental computation Exercise 7.10 p96 ☐ Revisit discussion of why employers are adamant that employees have adequate mental computation skills - also very useful revision technique ☐ Exercise 7.7 p95 ☐ HW: Complete exercise	
10	Group work working on directed/choice/combination of: ☐ A couple of puzzles p98 ☐ Competition Questions p97 ☐ Investigations 7.1, 7.2 p99 ☐ A game p98 ☐ Technology 7.1, 7.2 p100	Internet
11	Group work working on directed/choice/combination of: ☐ A couple of puzzles p98 ☐ Competition Questions p97 ☐ Investigations 7.1, 7.2 p99 ☐ A game p98 ☐ Technology 7.1, 7.2 p100	Internet
12	☐ Chapter Review 1 p101 ☐ HW: Complete Chapter Review	
13	☐ Chapter Review 1 p101 ☐ HW: Complete Chapter Review	
14	☐ Chapter Review 2 p102 ☐ HW: Complete Chapter Review	
15	☐ Chapter Review 2 p102 ☐ HW: Complete Chapter Review	

Chapter 8 Chance (Statistics & Probability ➡ Chance)

★ Describe the results of two- and three-step chance experiments, both with and without replacements, assign probabilities to outcomes and determine probabilities of events. Investigate the concept of independence.

★ Use the language of 'if ....then, 'given', 'of', 'knowing that' to investigate conditional statements and identify common mistakes in interpreting such language.

Lesson	Method	Resources
1	Purpose of chapter. Importance of algebra for solving millions of problems Exercise 8.1 p104 (Model solutions for students) Exercise 8.2 p105 (Model solutions) HW: Complete exercises & read and practice the Sweet Trick on p115	
2	Exercise 8.3 p106 (Model solutions) Exercise 8.4 p107 (Model solutions) Some students demonstrate the Sweet Trick p115 HW: Complete exercises and demonstrate Sweet Trick at home/lodgings	
3	Discussion about Sweet Trick - how to improve presentation Exercise 8.5 p108 (Model solutions) Exercise 8.6 p109 (Model solutions) HW: Complete exercises	
4	Exercise 8.7 p110 (Model solutions) Technology 8.2 p116 HW: Complete exercise	Computers
5	Mental computation Exercise 8.9 p112 Exercise 8.8 p111 (Model solutions) HW: Complete exercise	
6	Mental computation Exercise 8.10 p112 Competition Questions 8.12 p113 HW: Complete exercise	
7	Mental computation Exercise 8.11 p112 Group work working on a directed/choice/combination of: Investigations 8.1, 8.2, 8.3, 8.4, 8.5 p114 Technology 8.3 p116 A Game p115 HW: A couple of puzzles p115	Internet
8	Group work working on a directed/choice/combination of: Investigations 8.1, 8.2, 8.3, 8.4, 8.5 p114 Technology 8.3 p116 A Game p115 HW: Complete activities	Internet
9	Chapter Review 1 p117 HW: Complete Chapter Review	
10	Chapter Review 2 p118 HW: Complete Chapter Review	

A Task

Work on one of the four tasks at the beginning of each chapter.
(Page 71, page 87, page 103, page 119)

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 10 Review

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Chapter 10 Review

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Lesson	Method	Resources
1-10	□ Purpose of Review □ Review 1 p136 □ Review 2 p139 □ Repetition of above until mastery? □ Sample end of term papers (www.drdwyer.com.au) □ Assessment	Textbook Assesssment instruments