Lesson Plans

Year 7 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 2 Lessons (10 weeks)

Chapter 6	Number 2	Number & Algebra - Real Numbers	2 weeks
Chapter 7	Algebra	Number & Algebra - Patterns & Algebra	2 weeks
Chapter 8	Volume	Measurement & Geometry - Units	2 weeks
Chapter 9	Coordinates	Number and Algebra - Number	2 weeks
Chapter 10	Review		2 weeks

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

Year 7 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 describing patterns in uses of indices with whole numbers, recognising commonalities between fractions, decimals, percentages and ratios, plotting points on the Cartesian plane, identifying angles formed by a transversal crossing a pair of parallel lines, and connecting the laws and properties of numbers to algebraic terms and expressions

- **Fluency** includes calculating accurately with integers, representing fractions and decimals in various ways, investigating best buys, evaluating measures of central tendency and calculating areas of shapes and volumes of prisms

- **Problem Solving** includes formulating and solving authentic problems using numbers and measurements, creating transformations and identifying symmetry, calculating angles and interpreting sets of data collected through chance experiments

- **Reasoning** includes applying the number laws to calculations, applying known geometric facts to draw conclusions about shapes, applying an understanding of ratio and interpreting data displays

Year 7 Content Description

Chapter 6 Number 2 (Number & Algebra ➡ Real Numbers)

★ Compare fractions using equivalence (by using a fraction wall or a number line).
★ Solve problems involving addition and subtraction of fractions.
★ Multiply and divide fractions.

Chapter 7 Algebra (Number & Algebra ➡ Patterns & Algebra)

★ Introduce the concept of variables.
★ Move fluently between algebraic and word representations.
★ Create algebraic expressions and perform substitutions.
★ Identify order of operations.
★ Apply the commutative and associative laws to algebraic terms and expressions.

Chapter 8 Volume (Measurement & Geometry ➡ Units)

★ Calculate volumes of rectangular prisms.
★ Investigate volumes of cubes and rectangular prisms.
★ Establish and use the formula $V = l \times b \times h$.
★ Understand and use cubic units when finding volumes of cubes and rectangular prisms.

Chapter 9 Coordinates (Number and Algebra ➡ Number, Place Value, Linear & Non)

★ Compare, order, add and subtract integers.
★ Given coordinates, plot points on the Cartesian plane, and find coordinates for a given point.
★ Plot points from a table of integer values.
★ Recognise simple patterns, such as points that lie on a straight line.

Chapter 10 Review

★ Review of all of above.

Chapter 6 Number 2 (Number & Algebra ➡ Real Numbers)

★ Compare fractions using equivalence (by using a fraction wall or a number line).
★ Solve problems involving addition and subtraction of fractions.
★ Multiply and divide fractions.

Lesson	Method	Resources
1	☐ Purpose of chapter ☐ Exercise 6.1 p72 and p73 (Model solutions) ☐ HW: Read and practice the Sweet Trick on p83	
2	☐ Exercise 6.2 p74 ☐ Exercise 6.3 p75 (Model solutions) ☐ Some students demonstrate the Sweet Trick p83 ☐ HW: Complete Exercises and demonstrate Sweet Trick at home/lodgings	
3	☐ Discussion about Sweet Trick - how to improve presentation ☐ Exercise 6.4 p76 ☐ HW: Complete Exercises	
4	☐ Short mental test on fractions - repeat until efficient ☐ Exercise 6.5 p77 (Model solutions) ☐ HW: Complete exercise	
5	☐ Discussion of why employers are adamant that employees have adequate mental computation skills - also very useful revision technique ☐ Mental computation Exercise 6.7 p79 ☐ Exercise 6.6 p78 (Model solutions) ☐ HW: Complete Exercise	
6	☐ Mental computation Exercise 6.8 p79 Group work working on a directed/choice/combination of: ☐ Investigation 6.1, 6.2, 6.3 p82 ☐ A game p83 ☐ Technology 6.1, 6.2, 6.3, 6.4 p84 ☐ HW: A couple of puzzles p83	Calculators
7	☐ Mental computation Exercise 6.9 p79 Group work working on a directed/choice/combination of: ☐ Investigation 6.1, 6.2, 6.3 p82 ☐ A game p83 ☐ Technology 6.1, 6.2, 6.3, 6.4 p84 ☐ HW: Competition Questions 1-5 p81	Calculators
8	☐ NAPLAN Questions p80 (Model solutions) ☐ Competition Questions 6-14 p81 (Model solutions) ☐ HW: Complete NAPLAN Questions	
9	☐ Chapter Review 1 p85 ☐ HW: Complete Chapter Review	
10	☐ Chapter Review 2 p86 ☐ HW: Complete Chapter Review	

Chapter 7 Algebra (Number & Algebra ➡ Patterns & Algebra)

- ★ Introduce the concept of variables.
- ★ Move fluently between algebraic and word representations.
- ★ Create algebraic expressions and perform substitutions.
- ★ Identify order of operations.
- ★ Apply the commutative and associative laws to algebraic terms and expressions

Lesson	Method	Resources
1	☐ Purpose of chapter. Importance of algebra for solving millions of problems ☐ Exercise 7.1 p88 ☐ Exercise 7.2 p89 (Model solutions for students) ☐ HW: Read and practice the Sweet Trick on p99	
2	☐ Exercise 7.3 p90 ☐ Exercise 7.4 p91 ☐ Some students demonstrate the Sweet Trick p99 ☐ HW: Complete Exercises and demonstrate Sweet Trick at home/lodgings	
3	☐ Discussion about Sweet Trick - how to improve presentation ☐ Investigation 7.1 p98 ☐ Exercise 7.5 p92 (Model solutions) ☐ HW: Complete Exercise	
4	☐ Exercise 7.6 p93 (Model solutions) ☐ Exercise 7.7, 7.8 p94 (Model solutions) ☐ HW: Complete exercises	
5	☐ Mental computation Exercise 7.9 p95 ☐ NAPLAN Questions p96 (Model solutions) ☐ HW: Complete NAPLAN Questions p96	
6	☐ Mental computation Exercise 7.10 p95 Group work working on directed/choice/combination of: ☐ Investigations 7.2, 7.3 p98 ☐ A game p99 ☐ Technology 7.1, 7.2 p100 ☐ HW: A couple of puzzles p99	Internet
7	☐ Mental computation Exercise 7.11 p95 Group work working on directed/choice/combination of: ☐ Investigations 7.2, 7.3 p98 ☐ A game p99 ☐ Technology 7.1, 7.2 p100	Internet
8	☐ Competition Questions p97 ☐ HW: Competition Questions	
9	☐ Chapter Review 1 p101 ☐ HW: Complete Chapter Review	
10	☐ Chapter Review 2 p102 ☐ HW: Complete Chapter Review	

Chapter 8 Volume (Measurement & Geometry ➞ Units)

★ Calculate volumes of rectangular prisms.
★ Investigate volumes of cubes and rectangular prisms.
★ Establish and use the formula V = l×b×h.
★ Understand and use cubic units when finding volumes of cubes and rectangular prisms.

Lesson	Method	Resources
1	□ Purpose of chapter. □ Exercise 8.1 p104 □ Exercise 8.2 p105 (Model solutions for students) □ HW: Read and practice the Sweet Trick on p114 and complete exercises	
2	□ Exercises 8.3 p106 □ Investigation 8.1 p113 □ Some students demonstrate the Sweet Trick p114 □ HW: Complete Exercise and demonstrate Sweet Trick at home/lodgings	
3	□ Discussion about Sweet Trick - how to improve presentation □ Exercise 8.4 p107 □ HW: A couple of puzzles p114	
4	□ Exercise 8.5 p108 □ Investigation 8.3 p113 □ HW: Complete exercise	
5	□ Mental computation Exercise 8.6 p109 □ NAPLAN Questions p110 (Model solutions) □ HW: Complete NAPLAN Questions	
6	□ Mental computation Exercise 8.7 p109 □ Competition Questions p110 (Model solutions) □ HW: Complete Competition Questions	
7	□ Mental computation Exercise 8.8 p109 Group work working on a directed/choice/combination of: □ Investigations 8.2, 8.4 p113 □ Technology 8.1, 8.2, 8.3 p112 □ A Game p46	variety of containers computers Internet
8	Group work working on a directed/choice/combination of: □ Investigations 8.2, 8.4 p113 □ Technology 8.1, 8.2, 8.3 p112 □ A Game p46	variety of containers computers Internet
9	□ Chapter Review 1 p115 □ HW: Complete Chapter Review and a couple of puzzles p48	
10	□ Chapter Review 2 p116 □ HW: Complete Chapter Review	

Chapter 9 Coordinates (Number and Algebra ➡ Number, Place Value, Linear & Non)

★ Compare, order, add and subtract integers.
★ Given coordinates, plot points on the Cartesian plane, and find coordinates for a given point.
★ Plot points from a table of integer values.
★ Recognise simple patterns, such as points that lie on a straight line.

Lesson	Method	Resources
1	☐ Purpose of chapter ☐ Exercise 9.1 p118 ☐ Exercise 9.2, 9.3 p119 ☐ HW: Read and practice the Sweet Trick on p131, complete exercise	
2	☐ Exercise 9.4, 9.5 p120 (Model solutions) ☐ Competition Questions 1 p129 ☐ Some students demonstrate the Sweet Trick p131 ☐ HW: Complete exercise and demonstrate Sweet Trick at home/lodgings	
3	☐ Exercise 9.6 p121 ☐ Exercise 9.7 p122 ☐ HW: Complete exercises	graph paper
4	☐ Exercise 9.8 p123 ☐ Exercise 9.9 p124 ☐ HW: Complete above exercises	graph paper
5	☐ Mental computation Exercise 9.12 p127 ☐ Exercise 9.10 p125 ☐ HW: Complete above exercise	graph paper
6	☐ Mental computation Exercise 9.13 p127 ☐ Exercise 9.11 p126 ☐ HW: Complete above exercise	
7	☐ Mental computation Exercise 9.14 p127 ☐ NAPLAN Questions p128 ☐ Competition Questions p129 ☐ HW: Complete NAPLAN Questions	
8	Group work working on a directed/choice/combination of: ☐ Investigations 9.1, 9.2 p130 ☐ Technology 9.1, 9.2, 9.3 p132 ☐ A Game p131 ☐ HW: A couple of puzzles p131	packet of biscuits
9	☐ Chapter Review 1 p133 ☐ HW: Complete Chapter Review	
10	☐ Chapter Review 2 p134 ☐ 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

Chapter 6 Number 2 (Number & Algebra ➡ Real Numbers)
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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