



Lesson Plans

Year 7 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 3 Lessons (10 weeks)

Chapter 11	Number 3	Number & Algebra - Number & Place	2 weeks
Chapter 12	Linear Equations	Number & Algebra - Linear & Non	2 weeks
Chapter 13	Geometry	Measurement & Geometry - Reasoning	2 weeks
Chapter 14	Data 1	Statistics & Probability - Data	2 weeks
Chapter 15	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
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Year 7 Content Description

Chapter 11 Number 3 (Number & Algebra → Number & Place Value)

- ★ Investigate index notation.
- ★ Represent whole numbers as products of powers of prime numbers.
- ★ Define and compare prime and composite numbers.
- ★ Express whole numbers as products of powers of prime factors (factor trees).
- ★ Solve problems involving lowest common multiples and greatest common divisors (highest common factors).
- ★ Investigate square numbers such as 25 and 36 and developing square-root notation.
- ★ Investigate between which two whole numbers a square root lies.

Chapter 12 Linear Equations (Number & Algebra → Linear & Non-linear Relationships)

- ★ Solve equations (use the balance model and explain the need to do the same thing to each side of the equation).
- ★ Use strategies such as backtracking and guess, check and improve to solve equations.
- ★ Use substitution to check solutions.
- ★ Solve real life problems.
- ★ Create linear relationships to represent realistic situations.

Chapter 13 Geometry (Measurement & Geometry → Geometric Reasoning)

- ★ Define and classifying angles such as acute, right, obtuse, straight, reflex and revolution, and pairs of angles such as complementary, supplementary, adjacent and vertically opposite.
- ★ Construct parallel and perpendicular lines.
- ★ Define and identify alternate, corresponding and allied angles and the relationships between them for a pair of parallel lines.
- ★ Identify side and angle properties of scalene, isosceles, right-angled and obtuse-angled triangles.
- ★ Describe squares, rectangles, rhombuses, parallelograms, kites and trapeziums.
- ★ Use concrete materials and digital technologies to investigate the angle sum of a triangle and quadrilateral.

Chapter 14 Data 1 (Statistics & Probability → Data)

- ★ Calculate mean, median, mode and range for sets of data.
- ★ Use ordered stem-and-leaf plots to record and display numerical data.
- ★ Use mean and median to compare data sets and explain how outliers may affect the comparison.
- ★ Locate mean, median and range on graphs and connect them to real life.

Chapter 15 Review

- ★ Review of all of above.

Chapter 11 Number 3 (Number & Algebra → Number & Place Value)

- ★ Investigate index notation.
- ★ Represent whole numbers as products of powers of prime numbers.
- ★ Define and compare prime and composite numbers.
- ★ Express whole numbers as products of powers of prime factors (factor trees).
- ★ Solve problems involving lowest common multiples and greatest common divisors (highest common factors).
- ★ Investigate square numbers such as 25 and 36 and developing square-root notation.
- ★ Investigate between which two whole numbers a square root lies.

Lesson	Method	Resources
1	<input type="checkbox"/> Purpose of chapter <input type="checkbox"/> Exercise 11.1 p144 <input type="checkbox"/> HW: Read and practice the Sweet Trick on p155	
2	<input type="checkbox"/> Exercise 11.2, 11.3, 11.4 p145 <input type="checkbox"/> Exercise 11.5, 11.6 p146 <input type="checkbox"/> Some students demonstrate the Sweet Trick p155 <input type="checkbox"/> HW: Complete Exercises and demonstrate Sweet Trick at home/lodgings	
3	<input type="checkbox"/> Discussion about Sweet Trick - how to improve presentation <input type="checkbox"/> Exercise 11.7, 11.8 p147 <input type="checkbox"/> HW: Complete Exercises	
4	<input type="checkbox"/> Exercise 11.9, 11.10 p148 <input type="checkbox"/> Exercise 11.11 p149 <input type="checkbox"/> HW: Complete exercise	
5	<input type="checkbox"/> Discussion of why employers are adamant that employees have adequate mental computation skills - also very useful revision technique <input type="checkbox"/> Mental computation Exercise 11.13 p151 <input type="checkbox"/> Exercise 11.12 p150 (Model solutions) <input type="checkbox"/> HW: Complete Exercise	
6	<input type="checkbox"/> Mental computation Exercise 11.14 p151 Group work working on a directed/choice/combination of: <ul style="list-style-type: none"> <input type="checkbox"/> Investigation 11.1, 11.2, 11.3, 11.4 p154 <input type="checkbox"/> A game p155 <input type="checkbox"/> Technology 11.1, 11.2, 11.3, 11.4 p156 <input type="checkbox"/> HW: A couple of puzzles p155 	calculators Internet computers
7	<input type="checkbox"/> Mental computation Exercise 11.15 p151 Group work working on a directed/choice/combination of: <ul style="list-style-type: none"> <input type="checkbox"/> Investigation 6.1, 6.2, 6.3 p82 <input type="checkbox"/> A game p83 <input type="checkbox"/> Technology 6.1, 6.2, 6.3, 6.4 p84 <input type="checkbox"/> HW: Competition Questions 1-5 p81 	calculators Internet computers
8	<input type="checkbox"/> NAPLAN Questions p152 (Model solutions) <input type="checkbox"/> Competition Questions p153 (Model solutions) <input type="checkbox"/> HW: Complete NAPLAN Questions	
9	<input type="checkbox"/> Chapter Review 1 p157 <input type="checkbox"/> HW: Complete Chapter Review	
10	<input type="checkbox"/> Chapter Review 2 p158 <input type="checkbox"/> HW: Complete Chapter Review	

Chapter 12 Linear Equations (Number & Algebra → Linear & Non-linear Relationships)

- ★ Solve equations (use the balance model and explain the need to do the same thing to each side of the equation).
- ★ Use strategies such as backtracking and guess, check and improve to solve equations.
- ★ Use substitution to check solutions.
- ★ Solve real life problems.
- ★ Create linear relationships to represent realistic situations.

Lesson	Method	Resources
1	<input type="checkbox"/> Purpose of chapter. Importance of algebra for solving millions of problems <input type="checkbox"/> Exercise 12.1 p160 <input type="checkbox"/> Exercise 12.2 p160 (Model solutions for students) <input type="checkbox"/> HW: Read and practice the Sweet Trick on p170	
2	<input type="checkbox"/> Exercise 12.3 p162 <input type="checkbox"/> Exercise 12.4 p163 <input type="checkbox"/> Some students demonstrate the Sweet Trick p170 <input type="checkbox"/> HW: Complete Exercises and demonstrate Sweet Trick at home/lodgings	
3	<input type="checkbox"/> Discussion about Sweet Trick - how to improve presentation <input type="checkbox"/> Exercise 12.5 p164 (Model solutions) <input type="checkbox"/> Exercise 12.6 p165 (Model solutions) <input type="checkbox"/> HW: Complete Exercises	
4	<input type="checkbox"/> Exercise 12.7 p166 (Model solutions) <input type="checkbox"/> HW: Complete exercise	
5	<input type="checkbox"/> Mental computation Exercise 12.8 p167 <input type="checkbox"/> NAPLAN Questions p168 (Model solutions) <input type="checkbox"/> HW: Complete NAPLAN Questions p96	
6	<input type="checkbox"/> Mental computation Exercise 12.9 p167 Group work working on directed/choice/combination of: <ul style="list-style-type: none"> <input type="checkbox"/> Investigations 12.1, 12.2, 12.3 p171 <input type="checkbox"/> A game p9170 <input type="checkbox"/> Technology 12.1, 12.2, 12.3 p172 <input type="checkbox"/> HW: A couple of puzzles p170 	Internet computers
7	<input type="checkbox"/> Mental computation Exercise 12.10 p167 Group work working on directed/choice/combination of: <ul style="list-style-type: none"> <input type="checkbox"/> Investigations 12.1, 12.2, 12.3 p171 <input type="checkbox"/> A game p9170 <input type="checkbox"/> Technology 12.1, 12.2, 12.3 p172 	Internet computers
8	<input type="checkbox"/> Competition Questions p169 <input type="checkbox"/> HW: Competition Questions	
9	<input type="checkbox"/> Chapter Review 1 p173 <input type="checkbox"/> HW: Complete Chapter Review	
10	<input type="checkbox"/> Chapter Review 2 p174 <input type="checkbox"/> HW: Complete Chapter Review	

Chapter 13 Geometry (Measurement & Geometry → Geometric Reasoning)

- ★ Define and classifying angles such as acute, right, obtuse, straight, reflex and revolution, and pairs of angles such as complementary, supplementary, adjacent and vertically opposite.
- ★ Construct parallel and perpendicular lines.
- ★ Define and identify alternate, corresponding and allied angles and the relationships between them for a pair of parallel lines.
- ★ Identify side and angle properties of scalene, isosceles, right-angled and obtuse-angled triangles.
- ★ Describe squares, rectangles, rhombuses, parallelograms, kites and trapeziums.
- ★ Use concrete materials and digital technologies to investigate the angle sum of a triangle and quadrilateral.

Lesson	Method	Resources
1	<input type="checkbox"/> Purpose of chapter. <input type="checkbox"/> Exercise 13.1 p176 <input type="checkbox"/> Exercise 13.2, 13.3 p177 <input type="checkbox"/> HW: Read and practice the Sweet Trick on p184 and complete exercises	protractor rulers
2	<input type="checkbox"/> Exercises 13.4 p178 <input type="checkbox"/> Exercises 13.5 p179 <input type="checkbox"/> Some students demonstrate the Sweet Trick p184 <input type="checkbox"/> HW: Complete Exercise and demonstrate Sweet Trick at home/lodgings	
3	<input type="checkbox"/> Discussion about Sweet Trick - how to improve presentation <input type="checkbox"/> Exercise 13.6 p180 <input type="checkbox"/> Exercise 13.7 p181 <input type="checkbox"/> HW: A couple of puzzles p184	
4	<input type="checkbox"/> Exercise 13.8 p182 <input type="checkbox"/> Exercise 13.9 p183 <input type="checkbox"/> HW: Complete exercises	
5	<input type="checkbox"/> Mental computation Exercise 13.11 p185 <input type="checkbox"/> NAPLAN Questions p186 (Model solutions) <input type="checkbox"/> HW: Complete NAPLAN Questions	
6	<input type="checkbox"/> Mental computation Exercise 13.12 p185 <input type="checkbox"/> Competition Questions p187 (Model solutions) <input type="checkbox"/> HW: Complete Competition Questions	
7	<input type="checkbox"/> Mental computation Exercise 13.13 p185 Group work working on a directed/choice/combination of: <ul style="list-style-type: none"> <input type="checkbox"/> Investigations 13.1, 13.2, 13.3, 13.4 p188 <input type="checkbox"/> Technology 13.1, 13.2, 13.3 p112 <input type="checkbox"/> A Game p184 	protractors compasses rulers Internet
8	Group work working on a directed/choice/combination of: <ul style="list-style-type: none"> <input type="checkbox"/> Investigations 13.1, 13.2, 13.3, 13.4 p188 <input type="checkbox"/> Technology 13.1, 13.2, 13.3 p189 <input type="checkbox"/> A Game p184 	protractors compasses rulers Internet
9	Group work working on a directed/choice/combination of: <ul style="list-style-type: none"> <input type="checkbox"/> Investigations 13.1, 13.2, 13.3, 13.4 p188 <input type="checkbox"/> Technology 13.1, 13.2, 13.3 p112 <input type="checkbox"/> A Game p184 	protractors compasses rulers Internet
10	<input type="checkbox"/> Chapter Review 1 p190 <input type="checkbox"/> HW: Complete Chapter Review	

Chapter 14 Data 1

(Statistics & Probability → Data)

- ★ Calculate mean, median, mode and range for sets of data.
- ★ Use ordered stem-and-leaf plots to record and display numerical data.
- ★ Use mean and median to compare data sets and explain how outliers may affect the comparison.
- ★ Locate mean, median and range on graphs and connect them to real life.

Lesson	Method	Resources
1	<input type="checkbox"/> Purpose of chapter <input type="checkbox"/> Exercise 14.1 p192 <input type="checkbox"/> Exercise 14.3 p193 <input type="checkbox"/> HW: Read and practice the Sweet Trick on p204, complete exercises	
2	<input type="checkbox"/> Exercise 14.4 p193 <input type="checkbox"/> Exercise 14.5 p194 <input type="checkbox"/> Some students demonstrate the Sweet Trick p204 <input type="checkbox"/> HW: Complete exercises and demonstrate Sweet Trick at home/lodgings	
3	<input type="checkbox"/> Exercise 14.6 p195 <input type="checkbox"/> HW: Complete exercise	
4	<input type="checkbox"/> Exercise 14.7 p197 <input type="checkbox"/> HW: Complete above exercise	
5	<input type="checkbox"/> Mental computation Exercise 14.12 p199 <input type="checkbox"/> Exercise 14.8 p198 <input type="checkbox"/> HW: Complete above exercise	
6	<input type="checkbox"/> Mental computation Exercise 14.13 p199 <input type="checkbox"/> NAPLAN Questions p200 <input type="checkbox"/> Competition Questions p201 <input type="checkbox"/> HW: Complete NAPLAN Questions	
7	<input type="checkbox"/> Mental computation Exercise 14.14 p199 Group work working on a directed/choice/combination of: <ul style="list-style-type: none"> <input type="checkbox"/> Investigations 14.1, 14.2, 14.3 p202 <input type="checkbox"/> Technology 14.1, 14.2, 14.3 p203 <input type="checkbox"/> A Game p131 <input type="checkbox"/> HW: A couple of puzzles p204 	
8	Group work working on a directed/choice/combination of: <ul style="list-style-type: none"> <input type="checkbox"/> Investigations 14.1, 14.2, 14.3 p202 <input type="checkbox"/> Technology 14.1, 14.2, 14.3 p203 <input type="checkbox"/> A Game p131 	Internet calculators computers graphics calculators
9	<input type="checkbox"/> Chapter Review 1 p205 <input type="checkbox"/> HW: Complete Chapter Review	
10	<input type="checkbox"/> Chapter Review 2 p206 <input type="checkbox"/> HW: Complete Chapter Review	

A Task

Work on one of the four tasks at the beginning of each chapter (Page 143, page 159, page 175, page 191)

Lesson	Method	Resources
1-5	<ul style="list-style-type: none"> <input type="checkbox"/> Setup <input type="checkbox"/> Decide whether tasks completed individually, groups of two, three, or four <input type="checkbox"/> Decide which tasks are assigned to individuals/groups <input type="checkbox"/> Decide how tasks are to be presented: Oral presentation, poster presentation (on classroom wall), power point presentation etc. <input type="checkbox"/> If the presentation will take class time then decide when. <input type="checkbox"/> Each lesson may be started with a mental computation or a summary of what is expected from the work on the tasks. 	Textbook Assessment instruments

Chapter 15 Review

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Lesson	Method	Resources
1-10	<ul style="list-style-type: none"> <input type="checkbox"/> Purpose of Review <input type="checkbox"/> Review 1 p208 <input type="checkbox"/> Review 2 p211 <input type="checkbox"/> Repetition of above until mastery? <input type="checkbox"/> Sample end of term papers (www.drdwyer.com.au) <input type="checkbox"/> Assessment 	Textbook Assessment instruments