



This course is developed using the WA Curriculum as a guide. The order of the content and the time in which they are covered are only a guide. Circumstances may result in changes during the year. Kambalda West District High School reserves the right to alter the order the objectives are taught and time over which they are taught.

- 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. The achievement standards reflect the content and encompass the proficiencies.

### Vocabulary & Grammar

Below is a list of words and phrases that students should know: the meaning of; and be able to spell; by the end of term:

|  |   |   |  |
|--|---|---|--|
| Compound interest<br>Simple interest<br>Quotient<br>Index laws<br>Binomial products<br>Linear equations<br>Linear inequalities | Exponentials<br>Volume<br>Surface area<br>Proofs<br>Congruent triangles<br>Similarity<br>Pythagoras theorem<br>Trigonometry | Box plots<br>Histograms<br>Dot plots<br>Scatter plots<br>Bivariate numerical data<br>Independent variable | Two step chance experiment<br>Three step chance experiment<br>Simultaneous equations<br>Quadratics |
|--|---|---|--|

There is an expectation that students will make every effort to correctly use capitals, full stops, commas, semi colons, apostrophes, question marks and exclamation marks.

# Topics

## Number and Algebra

- Connect the compound interest formula to repeated applications of simple interest using appropriate digital technologies (ACMNA229)
- Factorise algebraic expressions by taking out a common algebraic factor (ACMNA230)
- Simplify algebraic products and quotients using index laws (ACMNA231)
  
- Apply the four operations to simple algebraic fractions with numerical denominators (ACMNA232)
- Expand binomial products and factorise monic quadratic expressions using a variety of strategies (ACMNA233)
- Substitute values into formulas to determine an unknown (ACMNA234)
- Solve problems involving linear equations, including those derived from formulas (ACMNA235)
- Solve linear inequalities and graph their solutions on a number line (ACMNA236)
- Solve problems involving parallel and perpendicular lines (ACMNA238)
- Explore the connection between algebraic and graphical representations of relations such as simple quadratics, circles and exponentials using digital technology as appropriate (ACMNA239)
- Solve linear equations involving simple algebraic fractions (ACMNA240)
- Solve simple quadratic equations using a range of strategies (ACMNA241)

## Measurement and Geometry

- Solve problems involving surface area and volume for a range of prisms, cylinders and composite solids (ACMMG242)
- Formulate proofs involving congruent triangles and angle properties (ACMMG243)
- Apply logical reasoning, including the use of congruence and similarity, to proofs and numerical exercises involving plane shapes (ACMMG244)
- Solve right-angled triangle problems including those involving direction and angles of elevation and depression (ACMMG245)

## Statistics and Probability

- 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 (ACMSP246)
- Use the language of 'if ...then', 'given', 'of', 'knowing that' to investigate conditional statements and identify common mistakes in interpreting such language (ACMSP247)
- Determine quartiles and interquartile range (ACMSP248)
- Construct and interpret box plots and use them to compare data sets (ACMSP249)
- Compare shapes of box plots to corresponding histograms and dot plots (ACMSP250)
- Use scatter plots to investigate and comment on relationships between two numerical variables (ACMSP251)
- Investigate and describe bivariate numerical data where the independent variable is time (ACMSP252)
- Evaluate statistical reports in the media and other places by linking claims to displays, statistics and representative data (ACMSP253)



Semester 1

| Week                     | Topics/Syllabus   | Assessment                                  | Resources |
|--------------------------|---|---|-----------|
| <b>Term 1</b>            |   |   |           |
| 1                        | <b>Introduction</b><br><b>Number and algebra - Patterns and algebra</b> <ul style="list-style-type: none"> <li>Substitute values into formulas to determine an unknown</li> </ul>   |   |           |
| 2-3                      | <b>Number and algebra - Patterns and algebra</b> <ul style="list-style-type: none"> <li>Factorise algebraic expressions by taking out a common algebraic factor</li> <li>Simplify algebraic products and quotients using index laws</li> </ul>  |   |           |
| 4                        | <b>Number and algebra - Patterns and algebra</b> <ul style="list-style-type: none"> <li>Apply the four operations to simple algebraic fractions with numerical denominators</li> </ul>  |   |           |
| 5-6                      | <b>Number and algebra - Patterns and algebra</b> <ul style="list-style-type: none"> <li>Expand binomial products and factorise monic quadratic expressions using a variety of strategies</li> </ul>   | <b>Task 1:</b><br>Investigation 1<br>Week 5 |           |
| 7-8                      | <b>Number and algebra - Money and financial mathematics</b> <ul style="list-style-type: none"> <li>Connect the compound interest formula to repeated applications of simple interest using appropriate digital technologies</li> </ul>  |   |           |
| 9-10                     | <b>Number and algebra - Linear and non-linear relationships</b> <ul style="list-style-type: none"> <li>Solve problems involving linear equations, including those derived from formulas</li> </ul>  | <b>Task 2:</b><br>Test 1<br>Week 9          |           |
| <b>Term 2</b>            |   |   |           |
| 1-2                      | <b>Number and algebra - Linear and non-linear relationships</b> <ul style="list-style-type: none"> <li>Solve linear inequalities and graph their solutions on a number line</li> </ul>  |   |           |
| 3-4                      | <b>Number and algebra - Linear and non-linear relationships</b> <ul style="list-style-type: none"> <li>Explore the connection between algebraic and graphical representations of relations such as simple quadratics, circles and exponentials using digital technology as appropriate</li> </ul> | <b>Task 3:</b><br>Investigation 2<br>Week 4 |           |
| 5-6                      | <b>Number and algebra - Linear and non-linear relationships</b> <ul style="list-style-type: none"> <li>Solve linear equations involving simple algebraic fractions</li> <li>Solve simple quadratic equations using a range of strategies</li> </ul>   |   |           |
| 7-8                      | <b>Measurement and geometry - Units of measurement</b> <ul style="list-style-type: none"> <li>Solve problems involving surface area and volume for a range of prisms, cylinders and composite solids</li> </ul>   | <b>Task 4:</b><br>Test 2<br>Week 7          |           |
| 9-10                     | Measurement and Geometry - Pythagoras and trigonometry<br>Revise Pythagoras' Theorem from Year 9 <ul style="list-style-type: none"> <li>Solve right-angled triangle problems including those involving direction and angles of elevation and depression</li> </ul>                                |   |           |
| <b>END OF SEMESTER 1</b> |   |   |           |

## Semester 2

| Week                     | Topics/Syllabus   | Assessment                                  | Resources |
|--------------------------|---|---|-----------|
| <b>Term 3</b>            |   |   |           |
| 1-2                      | <b>Introduction</b><br><b>Statistics and probability - Chance</b> <ul style="list-style-type: none"> <li>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</li> </ul>                     |   |           |
| 3-4                      | <b>Statistics and probability - Chance</b> <ul style="list-style-type: none"> <li>Use the language of 'if ... then', 'given', 'of', 'knowing that' to investigate conditional statements and identify common mistakes in interpreting such language</li> </ul>  |   |           |
| 5                        | <b>Statistics and probability - Data representation and interpretation</b> <ul style="list-style-type: none"> <li>Construct back-to-back stem-and-leaf plots and histograms and describe data, using terms including 'skewed', 'symmetric' and 'bi modal'</li> </ul>  | <b>Task 5:</b><br>Investigation 3<br>Week 5 |           |
| 6-7                      | <b>Statistics and probability - Data representation and interpretation</b> <ul style="list-style-type: none"> <li>Determine quartiles and interquartile range</li> </ul>  |   |           |
| 8-10                     | <b>Statistics and probability - Data representation and interpretation</b> <ul style="list-style-type: none"> <li>Construct and interpret box plots and use them to compare data sets</li> </ul>  | <b>Task 6:</b><br>Test 3<br>Week 8          |           |
| <b>Term 4</b>            |   |   |           |
| 1-2                      | <b>Statistics and probability - Data representation and interpretation</b> <ul style="list-style-type: none"> <li>Compare shapes of box plots to corresponding histograms and dot plots</li> <li>Use scatter plots to investigate and comment on relationships between two numerical variables</li> </ul>   |   |           |
| 3-6                      | <b>Statistics and probability - Data representation and interpretation</b> <ul style="list-style-type: none"> <li>Investigate and describe bivariate numerical data where the independent variable is time</li> <li>Evaluate statistical reports in the media and other places by linking claims to displays, statistics and representative data</li> </ul> | <b>Task 7:</b><br>Investigation 4<br>Week 4 |           |
| 7-10                     | <b>Statistics and probability - Data representation and interpretation</b> <ul style="list-style-type: none"> <li>Formulate proofs involving congruent triangles and angle properties</li> <li>Apply logical reasoning, including the use of congruence and similarity, to proofs and numerical exercises involving plane shapes</li> </ul>                 | <b>Task 8:</b><br>Test 4<br>Week 7          |           |
| <b>END OF SEMESTER 2</b> |   |   |           |



**ASSESSMENT OUTLINE 2022**  
**MATHEMATICS YEAR 10**

A number of assessments will be used throughout the term to identify the students understanding in the course and be used to determine a grade. Student achievement will be reported using the following descriptors.

**Semester 1**

| Assessment Type   | Task Description   | KWDHS Weighting | Due Date                            |
|-------------------|--|-----------------|-------------------------------------|
| Diagnostic Test   | <b>Paul Swan Basic Number Facts</b> (Fluency Test - One Minute)<br><b>PAT Maths Assessment</b>     |                 | <i>Term 1,<br/>Week 2<br/>and 3</i> |
| Investigation     | <b>Task 1:</b><br>Investigation 1. <b>Number and algebra - Patterns and algebra</b>                | 15%             | <i>Term 1,<br/>Week 5</i>           |
| Test              | <b>Task 2:</b><br>Test 1. <b>Number and algebra - Linear and non-linear relationships</b>          | 10%             | <i>Term 1,<br/>Week 9</i>           |
| Standardised Test | <b>NAPLAN</b>  |                 | <i>Term 2,<br/>Week 3<br/>and 4</i> |
| Diagnostic Test   | <b>PAT Maths Assessment</b>  |                 | <i>Term 2,<br/>Week 4<br/>and 5</i> |
| Investigation     | <b>Task 3:</b><br>Investigation 2. <b>Number and algebra - Linear and non-linear relationships</b> | 15%             | <i>Term 2,<br/>Week 4</i>           |
| Test              | <b>Task 4:</b><br>Test 2. <b>Measurement and Geometry - Units of measurement</b>                   | 10%             | <i>Term 2,<br/>Week 7</i>           |

**Semester 2**

| Assessment Type | Task Description  | KWDHS Weighting | Due Date                            |
|-----------------|---|-----------------|-------------------------------------|
| Diagnostic Test | <b>Paul Swan Basic Number Facts</b> (Fluency Test - One Minute)   |                 | <i>Term 3,<br/>Week 2<br/>and 3</i> |
| Investigation   | <b>Task 5:</b><br>Investigation 3. <b>Measurement and geometry – Pythagoras and trigonometry</b>              | 15%             | <i>Term 3,<br/>Week 5</i>           |
| Test            | <b>Task 6:</b><br>Test 3. <b>Statistics and probability - Chance</b>  | 10%             | <i>Term 3,<br/>Week 8</i>           |
| Diagnostic Test | <b>Paul Swan Basic Number Facts</b> (Fluency Test - One Minute)<br><b>PAT Maths Assessment</b>                |                 | <i>Term 4,<br/>Week 2<br/>and 3</i> |
| Investigation   | <b>Task 7:</b><br>Investigation 4. <b>Statistics and probability - Data representation and interpretation</b> | 15%             | <i>Term 4,<br/>Week 4</i>           |
| Test            | <b>Task 8:</b><br>Test 4. <b>Statistics and probability - Data representation and interpretation</b>          | 10%             | <i>Term 4,<br/>Week 7</i>           |

It is expected that all assessments will be completed to the best of your ability and be submitted by the deadlines set. Please make yourself aware of the Assessment Policy as failure to meet deadlines has severe consequences.

| Grade    | Description  | The student demonstrates achievement that:  |
|----------|--------------|---|
| <b>A</b> | Excellent    | has greatly exceeded the expected standard. Achievement is well beyond what is expected at this year level. |
| <b>B</b> | Good         | exceeds the expected standard.  |
| <b>C</b> | Satisfactory | at the expected standard.   |
| <b>D</b> | Limited      | is below the expected standard.   |
| <b>E</b> | Very Low     | is below the minimum acceptable for this year level.  |

Student Signature: \_\_\_\_\_

Parent/Guardian Signature: \_\_\_\_\_