

## CERTIFICATE IV IN ADULT TERTIARY PREPARATION (10765NAT)

### GENERAL MATHEMATICS (MATHS A)

The General Mathematics Specialisation applies to those who require foundation General Mathematic knowledge and skills for entrance to tertiary study in a relevant discipline or field.

*There are two units of study within the General Mathematics Specialisation.*

#### **ATPGMA001 - Unit 1:**

*Apply general mathematics in real world contexts.*

This unit describes the performance outcomes, skills and knowledge required to solve general mathematical problems embedded in real world contexts. It requires the ability to apply mathematical concepts and techniques to perform calculations involving numbers, measurement and finance. Communication using mathematical, statistical and everyday language and conventions is required.

#### **ATPGMA001 - Performance Criteria:**

<b>1. Apply mathematics to solve problems</b>	<p>1.1 Identify relevant mathematical facts, rules, definitions and procedures to formulate a mathematical model for a problem.</p> <p>1.2 Apply mathematical procedures, concepts and/or techniques to calculate and prove a solution.</p> <p>1.3 Interpret the solution in the context of the problem.</p>
<b>2. Organise and communicate results</b>	<p>2.1 Articulate ideas and information using mathematical terminology, symbols, conventions and everyday language.</p> <p>2.2 Use mathematical language, conventions and technology to organise and present information.</p> <p>2.3 Use mathematical reasoning to explain solutions and results.</p>

### **ATPGMA001 – Performance Evidence:**

- Applied mathematics to solve problems related to each of the following contexts on at least one occasion:
  - Practical applications involving mathematical inequalities
  - Measurement and properties of physical objects and materials
  - Comparative cost analysis of financial products and services
- Performed calculations using a scientific calculator including use of special function keys
- Reported on modelling and solutions for problems using correct mathematical terminology, language, conventions.

### **ATPGMA001 – Knowledge Evidence:**

- Number systems including whole numbers, directed numbers, rational numbers, decimals numbers in scientific form, percentages, fractions
- Operations including order convention, brackets, powers, roots, multiplication, division, addition, subtraction
- Relations including equality, inequality
- Approximating to the nearest, rounding, truncating
- Metric system
  - conversion between a variety of units
  - application to distance, area, and volume
- Rates and ratio including
  - conversion of metric rates
  - use of ratio in solving problems
  - direct proportionality
  - comparisons using rate depreciation
- Measurement including
  - basic geometry
  - Pythagoras' Theorem,
  - linear and area measures
  - volume, capacity and mass
- Financial applications
  - principles, rules and rates of Income Tax
  - principles of buying and selling in financial transactions,
  - simple interest/compound interest,
  - depreciation, appreciation and inflation,
  - loans and investment
- Mathematical problem solving process
- Scientific calculator skills including use of special function keys
- Mathematical terminology, language, conventions relevant to numbers, measurement and finance
- Mathematical report formats and contents

**ATPGMA002 - Unit 2:**

*Apply statistical and algebraic theory in real world contexts.*

This unit describes the outcomes required to apply the knowledge and skills of statistical and algebraic theory to solve general mathematical problems in real world contexts. It requires the ability to apply the problem solving process to solve mathematical problems relating to algebra, probability and statistics. Communication using mathematical, statistical and everyday language and conventions is required.

**ATPGMA002 - Performance Criteria:**

<b>1. Apply mathematical reasoning and process</b>	1.1 Identify and select the mathematical procedures and technology required to make progress with the identified problem. 1.2 Apply mathematical reasoning to the problem solving process to represent the problem mathematically and calculate a solution. 1.3 Prove and interpret the solution in the context of the problem situation.
<b>2. Organise and communicate results</b>	2.1 Organise and present statistical and algebraic information using mathematical language, conventions and technology appropriate to the audience and purpose. 2.2 Explain mathematical reasoning and results using logical and sequenced ideas and information.

**ATPGMA002 – Performance Evidence:**

- Applied mathematics in real world contexts to solve problems involving algebra, statistics and probability
  - Selected, substituted and transposed formulae
  - used sequential steps in solving problems
- Presented solutions using correct mathematical terminology, language, conventions and technology

**ATPGMA002 – Knowledge Evidence:**

- Basic algebra
  - solving simple linear equations
  - translation of verbal statements into mathematical relationships
- Linear graphs
- Basic probability
- Binomial probability
- Normal distribution
- Statistics including
  - data collection and representation,
  - measures of central tendency and dispersion
- • Mathematical report formats and contents