		3.1 Direct Observation/Demonstration with Oral Questioning
		3.2 Written Examination
4.	Context of Assessment	Competency may be assessed individually in the actual workplace or through accredited institution
5.	Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended.

DEMONSTRATE NUMERACY SKILLS

UNIT CODE: BUS/OS/SC/BC/02/6/A

UNIT DESCRIPTION

This unit describes the competencies required by a worker in order to apply a wide range of mathematical calculations for work; apply ratios, rates and proportions to solve problems; estimate, measure and calculate measurement for work; Use detailed maps to plan travel routes for work; Use geometry to draw and construct 2D and 3D shapes for work; Collect, organize and interpret statistical data; Use routine formula and algebraic expressions for work and use common functions of a scientific calculator

ELEMENTS AND PERFORMANCE CRITERIA

ELEMENT These describe the key outcomes which make up workplace function.	PERFORMANCE CRITERIA These are assessable statements which specify the required level of performance for each of the elements. *Bold and italicized terms are elaborated in the Range.*
1. Apply a wide range of mathematical calculations for work	1. Mathematical information embedded in a range of workplace tasks and texts is extracted 2. Mathematical information is interpreted and comprehended 3. A range of mathematical and problem solving processes are select and used 4. Different forms of fractions, decimals and percentages are flexibly used 5. Calculation performed with positive and negative numbers 6. Numbers are expressed as powers and roots and are used in calculations 7. Calculations done using routine formulas 8. Estimation and assessment processes are used to check outcome 9. Mathematical language is used to discuss and explain the processes, results and implications of the task
2. Use and apply ratios, rates and proportions for work	1. Information regarding ratios, rates and proportions extracted from a range of workplace tasks and texts 2. Mathematical information related to ratios, rate and proportions is analyzed

	3 Problem solving processes are used to undertake the task
	4 Equivalent ratios and rates are simplified
	5 Quantities are calculated using ratios, rates and proportions
	6 Graphs, charts or tables are constructed to represent ratios, rates and proportions
	6 The outcomes reviewed and checked
	7 Information is record using mathematical language and symbols
3. Estimate, measure and calculate measurement for work	3.1 Measurement information embedded in workplace texts and tasks are extracted and interpreted
	3.2 Appropriate workplace measuring equipment are identified and selected
	3.3 Accurate measurements are estimate and made
	3.4 The area of 2D shapes including compound shapes are calculated
	3.5 The volume of 3D shapes is calculated using relevant formulas
	3.6 Sides of right angled triangles are calculated using Pythagoras' theorem
	3.7 conversions are perform between units of measurement
	3.8 Problem solving processes are used to undertake the task
	3.9 The measurement outcomes are reviewed and checked

	3.10 Information is recorded using mathematical language and symbols appropriate for the task
4. Use detailed maps to plan travel routes for work	1. Different types of maps are identified and interpreted
	2. Key features of maps are identified
	3. Scales are identified and interpreted
	4. Scales are applied to calculate actual distances
	5. Positions or locations are determined using directional information
	6. Routes are planned by determining directions and calculating distances, speeds and times
	7. Information is gathered and identified and relevant factors related to planning a route checked
	8. Relevant equipment is select and checked for accuracy and operational effectiveness
	9. Task is planned and recorded using specialized mathematical language and symbols appropriate for the task
5. Use geometry to draw 2D shapes and construct 3D shapes for work	1. A range of 2D shapes and 3D shapes and their uses in work contexts is identified
	2. Features of 2D and 3D shapes are named and described
	3. Types of angles in 2D and 3D shapes are identified
	4. Angles are drawn, estimated and measured using geometric instruments

		5 Angle properties of 2D shapes are named and identified
		6 Angle properties are used to evaluate unknown angles in shapes
		7 Properties of perpendicular and parallel lines are applied to shapes
		8 Understanding and use of symmetry is demonstrated
		9 Understanding and use of similarity is demonstrated
		10 The workplace tasks and mathematical processes required are identified
		11 2D shapes is drawn for work
		12 3D shapes is constructed for work
		13 The outcomes are reviewed and checked
		14 Specialized mathematical language and symbols appropriate for the task are used
6.	Collect, organize, and interpret statistical data for work	1 Workplace issue requiring investigation are identified
		2 Audience / population / sample unit is determined
		3 Data to be collected is identified
		4 Data collection method is selected
		5 Appropriate statistical data is collected and organized
		6 Data is illustrated in appropriate formats
		7 The effectiveness of different types of graphs are compared

	8 The summary statistics for collected data is calculated
	9 The results / findings are interpreted
	10 Data is checked to ensure that it meets the expected results and content
	11 Information from the results including tables, graphs and summary statistics is extracted and interpreted
	12 Mathematical language and symbols are used to report results of investigation
7. Use routine formula and algebraic expressions for work	1 Understanding of informal and symbolic notation, representation and conventions of algebraic expressions is demonstrated
	2 Simple algebraic expressions and equations are developed
	3 Operate on algebraic expressions
	4 Algebraic expressions are simplified
	5 Substitution into simple routine equations is done
	6 Routine formulas used for work tasks are identified and comprehended
	7 Routine formulas are evaluate by substitution
	8 Routine formulas transposed
	9 Appropriate formulas are identified and used for work related tasks
	10 Outcomes are checked and result of calculation used
8. Use common	Required numerical information to perform

	tasks is located
functions of a scientific calculator for work	2. The order of operations and function keys necessary to solve mathematical calculation are determined
	3. Function keys on a scientific calculator are identified and used
	4. Estimations are referred to check reasonableness of problem solving process
	5. Appropriate mathematical language, symbols and conventions are used to report results

RANGE

This section provides work environments and conditions to which the performance criteria apply. It allows for different work environments and situations that will affect performance.

Variable	**Range**
1. Geometry	May include but not limited to:
	2.1 Scale drawing
	2.2 Triangles
	2.3 Simple solid
	2.4 Round
	2.5 Square
	2.6 Rectangular
	2.7 Triangle
	2.8 Sphere
	2.9 Cylinder
	2.10 Cube
	2.11 Polygons

	2.12 Cuboids

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit of competency.

Required Skills

The individual needs to demonstrate the following skills:

- Applying Fundamental operations (addition, subtraction, division, multiplication)
- Using calculator
- Using different measuring tools

Required knowledge

The individual needs to demonstrate knowledge of:

- Types of common shapes
- Differentiation between two dimensional shapes / objects
- Formulae for calculating area and volume
- Types and purpose of measuring instruments
- Units of measurement and abbreviations
- Fundamental operations (addition, subtraction, division, multiplication)
- Rounding techniques
- Types of fractions
- Different types of tables and graphs
- Meaning of graphs, such as increasing, decreasing, and constant value
- Preparation of basic data, tables & graphs

EVIDENCE GUIDE

This provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge and range.

1. Critical aspects of Competency	Assessment requires evidence that the candidate:
	1.1 Performed calculations with positive and negative numbers
	1.2 Used numbers expressed as powers and roots in calculations
	1.3 Simplified ratios and rates
	1.4 Constructed graphs, charts or tables to represent ratios, rates and proportions
	1.5 Calculate the volume of 3D shapes using relevant formulas
	1.6 Calculated sides of right-angle triangles using Pythagoras' theorem
	1.7 Applied scales in calculation of actual distances
	1.8 Planned routes by determining directions, distance calculation, speeds and time.
	1.9 Identified types of angles in 2D and 3D shapes
	1.10 Used angle properties in evaluating unknown angles
	1.11 Applied properties of perpendicular and parallel lines in shapes construction.
	1.12 Collected and organized appropriate statistical data
	1.13 Collected and organized appropriate statistical data

		1.14 Identified and used appropriate formulas for work related tasks 1.15 Identified and used function keys on a scientific calculator
2.	Resource Implications	The following resources should be provided: 2.2 Access to relevant workplace or appropriately simulated environment where assessment can take place 2.3 Materials relevant to the proposed activity or tasks
3.	Methods of Assessment	Competency in this unit may be assessed through: 3.3 Direct Observation 3.4 Demonstration with Oral Questioning 3.5 Written Examination