NUMERACY SKILLS

UNIT CODE: MATH/CU/AS/BC/02/6/A

Relationship to Occupational Standards
This unit addresses the Unit of Competency: Demonstrate Numeracy Skills.

Duration of Unit: 60 hours

Unit Description
This unit describes the competencies required to demonstrate numeracy skills. It involves applying a wide range of mathematical calculations for work; applying ratios, rates and proportions to solve problems; estimating, measuring and calculating measurement for work; using detailed maps to plan travel routes for work; using geometry to draw and construct 2D and 3D shapes for work; collecting, organizing and interpreting statistical data; using routine formula and algebraic expressions for work and using common functions of a scientific calculator.

Summary of Learning Outcomes

1. Apply a wide range of mathematical calculations for work
2. Apply ratios, rates and proportions to solve problems
3. Estimate, measure and calculate measurement for work
4. Use detailed maps to plan travel routes for work
5. Use geometry to draw and construct 2D and 3D shapes for work
6. Collect, organize and interpret statistical data
7. Use routine formula and algebraic expressions for work
8. Use common functions of a scientific calculator

Learning Outcomes, Content and Suggested Assessment Methods

Learning Outcome	Content	Suggested Assessment Methods

1. Apply a wide range of mathematical calculations for work	• Fundamentals of mathematics
	  • Addition, subtraction, multiplication and division of positive and negative numbers
	  • Algebraic expressions manipulation
	• Forms of fractions, decimals and percentages
	• Expression of numbers as
		• Written tests
		• Assignments
		• Supervised exercises

	powers and roots	

2. Apply ratios, rates and proportions to solve problems	• Rates, ratios and proportions
	  • Meaning
	  • Conversions into percentages
	  • Direct and inverse proportions determination
	  • Performing calculations
	  • Construction of graphs, charts and tables
	  • Recording of information
		• Written tests
		• Assignments
		• Supervised exercises

3. Estimate, measure and calculate measurement for work	• Units of measurements and their symbols • Identification and selection of measuring equipment • Conversion of units of measurement • Perimeters of regular figures • Areas of regular figures • Volumes of regular figures • Carrying out measurements • Recording of information	• Assignments • Supervised exercises • Written tests
4. Use detailed maps to plan travel routes for work	• Identification of features in routine maps and plans • Symbols and keys used in routine maps and plans • Identification and interpretation of orientation of map to North • Demonstrate understanding of direction and location • Apply simple scale to estimate length of objects, or distance to location or object • Give and receive directions using both formal and informal language	• Written • Practical test

	• Planning of routes • Calculation of distance, speed and time	
5. Use geometry to draw and construct 2D and 3D shapes for work	• Identify two dimensional shapes and routine three dimensional shapes in everyday objects and in different orientations • Explain the use and application of shapes • Use formal and informal mathematical language and symbols to describe and compare the features of two dimensional shapes and routine three dimensional shapes • Identify common angles • Estimate common angles in everyday objects • Evaluation of unknown angles • Use formal and informal mathematical language to describe and compare common angles • Symmetry and similarity • Use common geometric instruments to draw two dimensional shapes • Construct routine three dimensional objects from given nets	•

6. Collect, organize and interpret statistical data	• Classification of data
	  • Grouped data
	  • Ungrouped data
	• Data collection
	  • Observation
	  • Recording
	• Distinguishing between sampling and census
	• Importance of sampling
		• Assignments
		• Supervised exercises
		• Written tests

	• Errors in sampling
	• Types of sampling and their limitations e.g.
	  • Stratified random
	  • Cluster
	  • Judgmental
	• Tabulation of data
	  • Class intervals
	  • Class boundaries
	  • Frequency tables
	  • Cumulative frequency
	• Diagrammatic and graphical presentation of data e.g.
	  • Histograms
	  • Frequency polygons
	  • Bar charts
	  • Pie charts
	  • Cumulative frequency curves
	• Interpretation of data	

7. Use routine formula and algebraic expressions for work	• Solving linear equations
	• Linear graphs
	  • Plotting
	  • Interpretation
	• Applications of linear graphs
	• Curves of first and second degree
	  • Plotting
	  • Interpretation
		• Assignments
		• Supervised exercises
		• Written tests

8. Use common functions of a scientific calculator	• Identify and use keys for common functions on a calculator • Calculate using whole numbers, money and routine decimals and percentages • Calculate with routine fractions and percentages • Apply order of operations to solve multi-step calculations	• • Written • Practical test

	• Interpret display and record result	

Suggested Methods of Instruction

- Group discussions
- Demonstration by trainer
- Practical work by trainee
- Exercises

Recommended Resources

- Calculators
- Rulers, pencils, erasers
- Charts with presentations of data
- Graph books
- Dice