

NUMERACY SKILLS

UNIT CODE: LSM/CU/LM/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 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

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	<ul style="list-style-type: none"><input type="checkbox"/> Fundamentals of mathematics<ul style="list-style-type: none">• Addition, subtraction, multiplication and division of positive and negative numbers• Algebraic expressions manipulation<input type="checkbox"/> Forms of fractions, decimals and percentages<input type="checkbox"/> Expression of numbers as powers and roots	<ul style="list-style-type: none"><input type="checkbox"/> Written tests<input type="checkbox"/> Assignments<input type="checkbox"/> Supervised exercises

<p>2. Apply ratios, rates and proportions to solve problems</p>	<p><input type="checkbox"/> Rates, ratios and proportions</p> <ul style="list-style-type: none"> • Meaning • Conversions into percentages • Direct and inverse proportions determination • Performing calculations • Construction of graphs, charts and tables • Recording of information 	<ul style="list-style-type: none"> <input type="checkbox"/> Written tests <input type="checkbox"/> Oral questioning <input type="checkbox"/> Assignments <input type="checkbox"/> Supervised exercises
<p>3. Estimate, measure and calculate measurement for work</p>	<ul style="list-style-type: none"> <input type="checkbox"/> Units of measurements and their symbols <input type="checkbox"/> Identification and selection of measuring equipment <input type="checkbox"/> Conversion of units of measurement <input type="checkbox"/> Perimeters of regular figures <input type="checkbox"/> Areas of regular figures <input type="checkbox"/> Volumes of regular figures <input type="checkbox"/> Carrying out measurements <input type="checkbox"/> Recording of information 	<ul style="list-style-type: none"> <input type="checkbox"/> Assignments <input type="checkbox"/> Supervised exercises <input type="checkbox"/> Written tests
<p>4. Use detailed maps to plan travel routes for work</p>	<ul style="list-style-type: none"> ▪ 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 ▪ Planning of routes ▪ Calculation of distance, speed and time 	<ul style="list-style-type: none"> <input type="checkbox"/> Oral <input type="checkbox"/> Written <input type="checkbox"/> Practical test <input type="checkbox"/> Observation

<p>5. Use geometry to draw and construct 2D and 3D shapes for work</p>	<ul style="list-style-type: none"> ▪ 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 	
<p>6. Collect, organize and interpret statistical data</p>	<ul style="list-style-type: none"> <input type="checkbox"/> Classification of data <ul style="list-style-type: none"> • Grouped data • Ungrouped data <input type="checkbox"/> Data collection <ul style="list-style-type: none"> • Observation • Recording <input type="checkbox"/> Distinguishing between sampling and census <input type="checkbox"/> Importance of sampling <input type="checkbox"/> Errors in sampling 	<ul style="list-style-type: none"> <input type="checkbox"/> Assignments <input type="checkbox"/> Supervised exercises <input type="checkbox"/> Written tests

	<input type="checkbox"/> Types of sampling and their limitations e.g. <ul style="list-style-type: none"> • Stratified random • Cluster • Judgmental <input type="checkbox"/> Tabulation of data <ul style="list-style-type: none"> • Class intervals • Class boundaries • Frequency tables • Cumulative frequency <input type="checkbox"/> Diagrammatic and graphical presentation of data e.g. <ul style="list-style-type: none"> • Histograms • Frequency polygons • Bar charts • Pie charts • Cumulative frequency curves <input type="checkbox"/> Interpretation of data	
7. Use routine formula and algebraic expressions for work	<input type="checkbox"/> Solving linear equations <input type="checkbox"/> Linear graphs <ul style="list-style-type: none"> • Plotting • Interpretation <input type="checkbox"/> Applications of linear graphs <input type="checkbox"/> Curves of first and second degree <ul style="list-style-type: none"> • Plotting • Interpretation 	<input type="checkbox"/> Assignments <input type="checkbox"/> Supervised exercises <input type="checkbox"/> Written tests
8. Use common functions of a scientific calculator	<ul style="list-style-type: none"> ▪ 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 	<input type="checkbox"/> Oral <input type="checkbox"/> Written <input type="checkbox"/> Practical test <input type="checkbox"/> Observation

	▪ Interpret display and record result	
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Suggested Delivery Methods

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

Recommended Resources

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

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