APPLY BASIC MATHEMATICS

UNIT CODE: ENG/OS/AUT/CC/2/4/A

UNIT DESCRIPTION:

This unit describes the competencies required in order to apply basic mathematics. It also invove applying basic arithmetic, rational arithmetic, manipulative skills, mensuration, algebra and geometrical calculations.

ELEMENTS AND PERFORMANCE CRITERIA

ELEMENT	PERFORMANCE CRITERIA
These describe the key outcomes which make up workplace function.	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 Basic arithmetic	1.1 Various ***types of numbers*** are identified as per concept 1.2 Arithmetic ***operations*** are carried out as per concept 1.3 Calculations of finding squares and square roots of numbers are carried ot as per the 3-figure tables 1.4 Calculations using ***indices*** in multiplication and division are carried out as per concept
2. Apply Rational arithmetic	2.1 Calculations on converting fractions to percentage are carried out as concept 2.2 Calculations on solving simple problems involving direct and inverse proportion are performed as per concept
3. Apply Manipulative skills	3.1 Calculations expressing figures to correct decimal places are performed as per the concept 3.2 Calculations distinguishing between significant and non-significant figures are carried out as per the concept 3.3 Simple estimation of quantities are made and carried out as per concept 3.4 Calculations expressing decimals into fractions and vice versa are performed as per concept 3.5 Calculations expressing numbers in standard form are performed as per the concept
4. Apply Mensuration	4.1 Various units of measurements are identified as per the ***BSI*** 4.2 Calculations on ***converting units*** from one form to another as per BSI 4.3 Calculations of areas, volumes and perimeters are performed as per the concept 4.4 Calculations expressing dimensions of regular figures using sketches are carried out as per concept

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5. Apply Algebra	5.1 Calculations solving simple algebraic equations are performed as per the concept 5.2 Simple algebraic equations are formed as per concept 5.3 Calculations on representing linear equations are carried out as per concept 5.4 Simple formulae are formed as per concept 5.5 Calculations on transposing given formulae are performed as per concept 5.6 Calculations on solving simple *simultaneous equqtions* are carried out as per concept
6. Apply geometrical calculations	6.1 Calculations to find areas of quadrilaterals are performed as per pythagoras' theorem 6.2 Calculations to find areas of triangles are performed as per Pythagoras' theorem 6.3 Calculations to find areas of circles are performed as per Pythagoras theorem

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. Operations may include but not limited to:	• Addition • Subtraction
2. Types of numbers may include but not limited to:	• Counting • Positive • Negative • Rational and irrational • Real numbers • Absolute values
3. Indices may include but not limited to:	• Positive • Negative • Fractional • Reciprocals
4. BSI may include but not limited to:	• British standard intitution

5. Converting units may include but not limited to:	• mm to m • m to km • g to kg
6. Simultaneous equations may include but not limited to:	• Substitution • Elimination

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 and applying mathematical formulas
- Logical thinking
- Problem solving
- Applying statistics
- Drawing graphs
- Using different measuring tools

Required knowledge

The individual needs to demonstrate knowledge of:

- Fundamental operations (addition, subtraction, division, multiplication)
- Calculating area and volume
- Types and purpose of measuring instruments
- Units of measurement and abbreviations
- Rounding techniques
- Types of fractions
- Types of tables and graphs
- Presentation of data in tables and graphs
- Vector operations

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 Identified types of numbers correctly 1.2 Carried out arithmetic operations correctly

		1.3 Solved simple problems involving direct and inverse proportion correctly
		1.4 Calculated areas, volumes and diameters correctly
		1.5 Calculated simple algebraicequations correctly
		1.6 Calculated areas using Pythagoras theorem correctly
2.	Resource Implications	The following resources should be provided: 2.1 Access to relevant workplace or appropriately simulated environment where assessment can take place 2.2 Measuring equipment 2.3 Materials relevant to the proposed activity or tasks
3.	Methods of Assessment	Competency in this unit may be assessed through: 1.1 Direct Observation 1.2 Demonstration with Oral Questioning 1.3 Written tests
4.	Context of Assessment	Competency may be assessed individually in the actual workplace or through accredited institution or during Industrial Attachment.
5.	Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended.