

Domain	PLUMBING	Unit ID: 439
Title:	Perform basic estimations, measurements and calculations as part of plumbing operations	
Level: 1		Credits: 2

Purpose

This unit standard specifies the competencies required to carry out basic estimations, measurements and simple calculations to determine task and material requirements for plumbing tasks. It includes planning and preparing for work, performing estimations related to plumbing work tasks, obtaining basic measurements and performing basic calculations related to plumbing work tasks.

This unit standard is intended for those who work as plumbers.

Special Notes

1. Entry information:
 - Prerequisite
 - 434 - *Apply safety rules and regulations in plumbing operations or demonstrated equivalent knowledge and skills.*
2. To demonstrate competence, at a minimum, evidence is required of the completion of estimations, measurements and calculations relevant to at least three different plumbing tasks. These tasks should be performed ensuring correct identification of requirements and finishing of the task, correct selection and use of appropriate processes, tools and equipment and completing all work to specification.
3. Assessment evidence may be collected from a real workplace, a simulated real workplace or an appropriate simulated realistic environment in which plumbing operations are carried out.
4. Glossary of terms:
 - *'estimation'* means an approximate calculation of quantity, extent, weight, size or degree
 - *'calculation'* means determining the dimensions, quantity, or capacity of an object by applying mathematical methods
 - *'measurement'* means to ascertain the dimensions, quantity or capacity of an object using a measuring device.
5. Performance of all elements in this unit standard must comply with workplace requirements and/or manufacturers' specifications.
6. Regulations and legislation relevant to this unit standard include the following:
 - Labour Act, No. 6, 1992
 - Occupational Health and Safety Regulations No. 18, 1997
 and all subsequent amendments.

Quality Assurance Requirements

This unit standard and others within this subfield may be awarded by institutions which meet the accreditation requirements set by the Namibia Qualifications Authority and the Namibia Training Authority and which comply with the national assessment and moderation requirements. Details of specific accreditation requirements and the national assessment arrangements are available from the Namibia Qualifications Authority and the Namibia Training Authority on www.nta.com.na.

Elements and Performance Criteria

Element 1: Plan and prepare for work

Range

Measuring and calculating equipment may include but is not limited to rulers, tape measures, trundle wheels, calculators.

Performance Criteria

- 1.1 Work instructions, including plans, specifications, quality requirements and operational details are estimated, measured, confirmed and applied.
- 1.2 Safety requirements are followed in line with workplace safety plans and policies.
- 1.3 Measuring and calculating equipment selected to carry out tasks are consistent with the requirements of the job, checked for serviceability and any faults are rectified or reported.

Element 2: Obtain basic measurements

Performance criteria

- 2.1 Method of estimating the measurement is selected and applied.
- 2.2 Measurements are obtained, accurate to 1 mm, using a rule or tape.
- 2.3 Measurements are confirmed and recorded.

Element 3: Perform basic calculations

Range

Calculations include but are not limited to length, area, weight, height, width, depth, volume, mass, perimeter, quantity, percentages, addition, subtraction, multiplication and division.

Areas and volumes include but are not limited to calculating of regular and irregular shapes such as rectangles, squares, circles, triangles and cubes that represent calculations taken in plumbing operations.

Performance criteria

- 3.1 The standard metric units of the measurement of length and surface area are identified and used.
- 3.2 The conversions of different units of measurement of length and area are carried out.
- 3.3 The surface area of different shapes and objects are calculated using standard formulae.
- 3.4 Material size, weight, volume and quantity for plumbing work task are correctly calculated
- 3.5 The results of the calculations are recorded, validated and confirmed.

Registration Data

Subfield:	General Construction
Date first registered:	15 November 2007
Date this version registered:	15 November 2007
Anticipated review:	2010
Body responsible for review:	Namibia Training Authority