

Unit ID: 237

Domain

METAL FABRICATION-CORE

Title:

**Perform basic estimations,
measurements and calculations for metal
fabrication operations**

Level: 2

Credits: 4

Purpose

This unit standard specifies the competencies required to carry out basic estimations, measurements and simple calculations to determine task and material requirements for metal fabrication operations. This unit standard is intended for those who work as welders and boilermakers.

Special Notes

1. To demonstrate competence, at a minimum, evidence is required of completion of estimations, measurements, calculations and determination of quantities for three welding projects of varying complexity. These must involve calculation and estimation of length, perimeter, circumference, area, ratios, proportion, volume, number, percentage. The task must also involve the conversion of units of measurement.
2. Assessment evidence may be collected from a real workplace or a simulated real workplace or an appropriate simulated realistic environment in which welding and boilermaker operations are carried out.
3. Glossary of terms:
Estimation - means an appropriate 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, or capacity of an object using a measuring device.
4. Performance of all elements in this unit standard must comply with manufacturers' specifications and workplace specific requirements.
5. '*Specifications*' refers to any or all of the following: manufacturers' specifications and recommendations, site and workplace specific requirements.
6. Regulations and legislations relevant to this unit standard include the following:
 - Labour Act 6 of 1992
 - Occupational Health and safety Regulations No. 18, 1997 and all subsequent and 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 who comply with the national assessment and moderation requirements. Details of specific accreditation requirement 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 include but is not limited to rulers, tape measures, calculators and protractors.

Performance Criteria

- 1.1 Work instructions, including plans, specifications, quality requirements and operational details are obtained, confirmed and applied.
- 1.2 Safety requirements are followed in accordance with 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.
- 1.4 Quantities of material required for given tasks are correctly determined.

Element 2: Perform estimations related to metal fabrication tasks

Range

Routine estimates to include estimates of time, consumables and labour

Performance Criteria

- 2.1 Estimates of routine workplace measures are made within workplace related tolerances.

Element 3: Obtain basic measurements used in metal fabrication tasks

Range

Measurements are to be in metric scale and cover all necessary calculations.

Performance Criteria

- 3.1 Method of obtaining required measurements is selected and applied.
- 3.2 Measurement obtained using appropriate measuring equipment and is accurate to 1mm.
- 3.3 Measurements are confirmed and recorded.

Element 4: Perform basic calculations used in metal fabrication tasks

Range

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

Areas and volumes are to include but are not limited to calculating regular and irregular shapes such as rectangles, squares, circles, triangles and cubes.

Performance Criteria

- 4.1 Appropriate calculation method is selected.
- 4.2. Material dimensions, including size, weight and volume are correctly calculated.
- 4.3 Scales are converted as required.
- 4.4 Results are confirmed and recorded.

Registration Data

Subfield:	Mechanical Engineering
Date first registered:	29 March 2007
Date this version registered:	29 March 2007
Anticipated review:	2012
Body responsible for review:	Namibia Training Authority