



**Australian Government**

# **Assessment Requirements for MARL001 Carry out engineering calculations**

**Release: 1**

# Assessment Requirements for MARL001 Carry out engineering calculations

## Modification History

Release 1. New unit of competency.

## Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least one occasion and include:

- calculating:
  - area and circumference of a circle
  - consumption of fuel and lubricating oil for a particular voyage, using quantity in litres and mass in tonnes and specified regular shaped tanks
  - distances covered
  - hourly fuel consumption
  - mechanical advantage, load, effort moments
  - pumping capacities for tank filling and emptying
  - remaining steaming times
  - requirements for replenishing lubricating oil in oil tank
  - specific fuel consumption, power, speed and range
  - stress, strain and safe working load
  - tank capacities and pumping capacities for tank filling and emptying
  - theoretical steaming times
  - velocity ratio and efficiency of simple machines
  - volume and capacity of regular shaped tanks
- converting:
  - fractions to decimals
  - units to multiples of base units
- performing accurate and reliable calculations
- using calibration tables to measure quantities in tanks
- using relative density/specific gravity to convert quantity in litres and volume.

## Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- area and circumference of a circle
- calibration tables

- common SI units such as kilogram, tonne, Newton, Newton metre, Pascal, joule, watt and metre
- relationship between theoretical vessel speed, propeller pitch and revolutions per minute (RPM)
- terminology of:
  - simple levers
  - material technology
- volumes of regular shaped tanks
- work health and safety (WHS)/occupational health and safety (OHS) requirements and work practices.

## Assessment Conditions

Assessors must satisfy National Vocational Education and Training Regulator (NVR)/Australian Quality Training Framework (AQTF) assessor requirements.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that reflect workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- tools, equipment, machinery, materials and personal protective equipment currently used in industry
- applicable documentation such as legislation, regulations, codes of practice, workplace procedures and operational manuals
- range of relevant exercises, case studies and/or simulations.

## Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=772efb7b-4cce-47fe-9bbd-ee3b1d1eb4c2>