



**Australian Government**

**Department of Education, Employment and Workplace Relations**

# **MEM09216A Interpret and produce curved 3-D shapes and patterns**

**Release: 1**

## **MEM09216A Interpret and produce curved 3-D shapes and patterns**

### **Modification History**

Release 1 - New unit of competency

### **Unit Descriptor**

This unit of competency covers producing and interpreting lines and plan drawings using manual or computer-aided design (CAD) or drafting techniques.

### **Application of the Unit**

This unit applies to drawing and lofting principles relevant to procedures used to produce lines, plan drawings and loftings. Common applications of this unit are in marine vessel construction.

In a marine setting, tasks may be related to a variety of hull designs; section development, such as curved and raking transom; conical development and camber development methods. General arrangement plans may also be addressed to provide a greater drawing diversity. All drawings/data should comply with industry requirements.

Straightforward take-offs from lofted drawings is covered by MEM12007D Mark off/out structural fabrications and shapes. Also, where transfer of lines to lofting floor or other surface is carried out, MEM12007D Mark off/out structural fabrications and shapes, should be selected in addition to this unit.

If a CAD system is used, the unit MEM30031A Operate computer-aided design (CAD) system to produce basic drawing elements, should also be selected.

### **Licensing/Regulatory Information**

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

### **Pre-Requisites**

Not applicable.

### **Employability Skills Information**

This unit contains employability skills.

## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

## Elements and Performance Criteria

1	Determine drawing/lofting requirements	1.1	Check purpose, scope and information requirements for task
		1.2	Interpret available information relevant to project and work requirements, and identify and address further information needs
		1.3	Identify and prepare equipment required to complete work
		1.4	Identify and apply relevant codes, standards and symbols relevant to work
		1.5	Consult appropriate personnel to ensure the work is coordinated effectively with others involved in the project
		1.6	Obtain and apply workplace occupational health and safety (OHS) and environmental procedures for work
2	Apply drawing/lofting procedures	2.1	Apply workplace procedures to retrieve and apply required information
		2.2	Set up drawing equipment and accessories to suit job requirements
		2.3	Identify and apply drafting/lofting procedures to suit specified drawing requirements
		2.4	Record alterations required to offset measurements, as applicable
		2.5	Produce drawings/loftings that are consistent with work and industry requirements

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|---|--------------------------------|-----|--|
| 3 | Submit lines and plan drawings | 3.1 | Ensure work meets specifications and submit drawings according to workplace procedures           |
|   |                                | 3.2 | Where applicable, supply altered offset measurements and relevant information related to drawing |

## Required Skills and Knowledge

### Required skills

Required skills include:

- reading, interpreting and following information on written job instructions, specifications, client briefings, standard operating procedures, charts, lists, drawings and other applicable reference documents
- analysing and organising information, and planning and sequencing operations
- checking and clarifying task-related information
- checking for conformance to specifications
- measuring and performing computations, including geometric and numerical calculations/formulae within the scope of this unit
- drawing and sketching skills to create 3-D drawings
- applying spatial principles to achieve scale and proportion
- using and maintaining drawing equipment
- applying symbols, schedules and legends to the drawing
- presenting drawing according to industry standard, complete with all required information
- handling and storing drawings according to workplace practice

### Required knowledge

Required knowledge includes:

- hazards and control measures associated with interpreting and producing curved 3-D shapes, including housekeeping
- safe work practices and procedures
- vessel design characteristics, including performance, stability and construction methods
- spatial concepts
- procedures used to produce lines, plan drawings and loftings
- drawing principles and conventions
- section development, such as curved and raking transom, conical development and camber development methods
- presentation requirements for completed work

## Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria required skills and knowledge range statement and the Assessment Guidelines for the Training Package.

### Overview of assessment

A person who demonstrates competency in this unit must be able to interpret and produce curved 3-D shapes.

### Critical aspects for assessment and evidence required to demonstrate competency in this unit

Assessors must be satisfied that the candidate can competently and consistently perform all elements of the unit as specified by the criteria, including required knowledge, and be capable of applying the competency in new and different situations and contexts.

Specifically the candidate must be able to:

- work within typical site/teamwork structures and methods
- apply worksite communication procedures
- comply with organisational policies and procedures, including quality requirements
- participate in and supervise work meetings
- monitor and supervise progress of detail drafting work and provide support to team members as required
- comply with quality requirements
- use industry terminology
- apply appropriate safety procedures
- interpret and produce curved 3-D shapes and patterns.

### Context of and specific resources for assessment

This unit may be assessed on the job, off the job or a combination of both on and off the job. Where assessment occurs off the job, that is the candidate is not in productive work, then an appropriate simulation must be used where the range of conditions reflects realistic workplace situations. The competencies covered by this unit would be demonstrated by an individual working alone or as part of a team. The assessment environment should not disadvantage the candidate.

This unit could be assessed in conjunction with any other units addressing the safety, quality, communication, materials handling, recording and reporting associated with interpreting and producing curved 3-D shapes or other units requiring the

exercise of the skills and knowledge covered by this unit.

**Method of assessment**

Assessors should gather a range of evidence that is valid, sufficient, current and authentic. Evidence can be gathered through a variety of ways, including direct observation, supervisor's reports, project work, samples and questioning. Questioning techniques should not require language, literacy and numeracy skills beyond those required in this unit of competency. The candidate must have access to all tools, equipment, materials and documentation required. The candidate must be permitted to refer to any relevant workplace procedures, product and manufacturing specifications, codes, standards, manuals and reference materials.

**Range Statement**

Not applicable.

**Unit Sector(s)**

Drawing, drafting and design

**Custom Content Section**

Not applicable.