



Australian Government

MEM12025 Use graphical techniques and perform simple statistical computations

Release: 1

MEM12025 Use graphical techniques and perform simple statistical computations

Modification History

Release 1. Supersedes and is equivalent to MEM12025A Use graphical techniques and perform simple statistical computations

Application

This unit of competency defines the skills and knowledge required to interpret and construct graphs and charts from given or determined data, and perform basic statistical calculations.

Graphs and charts apply to information from various work contexts, quality processes, production and market trends and other engineering applications and a range of devices are used to assist with calculations.

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

Band:

This unit has dual status and is to be regarded as both a Specialisation Band A unit and Specialisation Band B unit for progression to C5 (AQF level V).

Unit Weight: 2

Pre-requisite Unit

MEM12024	Perform computations
MEM13015	Work safely and effectively in manufacturing and engineering
MEM16006	Organise and communicate information

Competency Field

Measurement

Elements and Performance Criteria

Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
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1	Determine job	1.1	Follow standard operating procedures (SOPs)
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Elements describe the essential outcomes.

Performance criteria describe the performance needed to demonstrate achievement of the element.

	requirements	1.2	Comply with work health and safety (WHS) requirements at all times
		1.3	Identify job requirements from specifications, drawings, job sheets or work instructions
2	Read and construct graphs from given or determined data	2.1	Extract complex information from graphical representation
		2.2	Analyse data with respect to emerging trends
		2.3	Construct graphs as required from data and draw with respect to scale and accepted method
		2.4	Interpret significant features of graphical representation
3	Perform basic statistical calculations	3.1	Calculate mean, median and mode from given data
		3.2	Calculate standard deviation
		3.3	Apply application of standard deviation and limits to process improvement techniques

Foundation Skills

This section describes those required skills (reading, writing, oral communication and numeracy) that are essential to workplace performance in this unit of competency.

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

This field allows for different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included.

Features of graphical representations include one (1) or more of the	• limit lines • gradients (straight line graphs) • intercepts
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This field allows for different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included.

following:

- maximum and minimum values

Graphs include one (1) or more of the following:

- histograms
- control charts
- straight line graphs
- parabolic graphs

Process improvement techniques include the following:

- techniques in which error rates are mathematically calculated and recorded, including three sigma and six sigma

NOTE: This unit gives the underpinning calculation skill for these techniques and does not cover the implementation or use of three or six sigma systems

Unit Mapping Information

Release 1. Supersedes and is equivalent to MEM12025A Use graphical techniques and perform simple statistical computations

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b7050d37-5fd0-4740-8f7d-3b7a49c10bb2>

Assessment Requirements for MEM12025 Use graphical techniques and perform simple statistical computations

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Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy the requirements of the elements and performance criteria on at least two (2) occasions and include:

- following work instructions, standard operating procedures (SOPs) and safe work practices
- obtaining and interpreting data presented in graphical form and analysing the emerging trends indicated by the data
- constructing graphs to scale for which the graph is intended and labelling the axis appropriately
- constructing graphs to suit the job requirements
- performing basic statistical calculations, including mean, median and mode and determining from that data the standard deviation
- undertaking numerical operations, geometry, calculations and formula for using graphical techniques and performing simple statistical computations
- applying standard deviation to process improvement techniques in which error rates are mathematically calculated and recorded
- checking performance to specifications.

Knowledge Evidence

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

- safe work practices and procedures
- characteristics of straight line, parabolic and hyperbolic curves
- procedures for determining the slope/rate of change of a curve
- trends indicated by changes in gradient of a graph
- procedures for drawing the line of best fit for the coordinates plotted
- standard form of equations relating to straight lines and parabolic curves
- gradient, intercepts, maximum and minimum values and limit lines for straight line and parabolic curves
- function of control charts
- meaning of the terms mean, median and mode
- meaning of the term standard deviation

- significance of 1, 2 and 3 sigma limits.

Assessment Conditions

- Assessors must:
 - have vocational competency in using graphical techniques and performing simple statistical computations at least to the level being assessed with relevant industry knowledge and experience
 - satisfy the assessor requirements in the *Standards for Registered Training Organisations 2015* or its replacement and comply with the *National Vocational Education and Training Regulator Act 2011*, its replacement or equivalent legislation covering VET regulation in a non-referring state/territory as the case requires
- Where possible assessment must occur in operational workplace situations. Where this is not possible or where personal safety or environmental damage are limiting factors, assessment must occur in a sufficiently rigorous simulated environment that reflects realistic operational workplace conditions. This must cover all aspects of workplace performance, including environment, task skills, task management skills, contingency management skills and job role environment skills
- Conditions for assessment must include access to all tools, equipment, materials and documentation required, including relevant workplace procedures, product and manufacturing specifications
- 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.

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