

Title	Manually produce third angle orthographic drawings of simple engineering objects incorporating plane geometric shapes		
Level	3	Credits	3

Purpose	<p>This unit standard is for use in the training and assessment for mechanical engineering trades. This unit standard is one of a series of three unit standards with unit standards 29654 and 29655.</p> <p>People credited with this unit standard are able to, with the manual use of simple drawing instruments: construct plane geometric shapes, bisect angles and lines; and produce third angle orthographic drawings of simple engineering objects incorporating plane geometric shapes.</p>
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Classification	Mechanical Engineering > Engineering Drawing and Design
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Available grade	Achieved
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Entry information	
Recommended skills and knowledge	Unit 29654, <i>Demonstrate knowledge of and interpret mechanical engineering drawings and geometric tolerancing</i> , and Unit 29655, <i>Manually produce engineering sketches</i> , or demonstrate equivalent knowledge and skills.

Explanatory notes

- 1 References
SAA/SNZ HB1:1994. *Technical drawing for students*. Available from Standards New Zealand.
Boundy, A. W. 2011, *Engineering Drawing*, 8th ed., McGraw-Hill Inc. Australia.
- 2 Definitions
Orthographic refers to a projection representing a three-dimensional object in two dimensions with a number of plane views, each of which includes two of the object's three dimensions of length, breadth and depth.
Simple engineering objects refer to objects of an uncomplicated design that can be produced using mechanical engineering or fabrication equipment. Examples - mounting brackets, guards, jigs, pipe joints, simple turned components.
Simple drawing instruments refers to pencils, erasers, rules, set squares, compasses, protractors, and may include French curves and flexible curves; a

drawing table may be used but it is not the intention that one is required to produce drawings at this level.

3 Range

Plane geometric shapes for engineering - circle, ellipse, tangential arc, triangle, pentagon.

4 Assessment information

Examples/evidence given must be within the context of mechanical engineering or fabrication.

The purpose of this unit standard is to assess the ability to draw plane geometric shapes and third angle drawings accurately to convey all information required to produce the object drawn. Assessment should be based on the ability to produce the object drawn to the standards laid out in SAA/SNZ HB1:1994.

Outcomes and evidence requirements

Outcome 1

Manually construct plane geometric shapes for engineering and bisect angles and lines using simple drawing instruments.

Evidence requirements

1.1 Plane geometric shapes are drawn.

1.2 Angles and lines are bisected.

1.3 Pitch circle diameter's (PCD's) are drawn.

Range evidence is required of six and nine hole PCD's

Outcome 2

Manually produce third angle orthographic drawings of given simple engineering objects incorporating plane geometric shapes using simple drawing instruments.

Range evidence is required of drawings of a minimum of three different simple engineering objects incorporating circle, ellipse, tangential arc, triangle, and pentagon across the three drawings.

Evidence requirements

2.1 Third angle orthographic drawings are manually produced from given three dimensional simple engineering objects or graphical representations.

Range Evidence is required across all drawings of a minimum of – linear, angular, diameter, radii, external thread, and internal thread dimensions; tolerances, title block; positions and dimensions of holes.

Replacement information	This unit standard replaced unit standard 2432
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Planned review date	31 December 2021
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Status information and last date for assessment for superseded versions

Process	Version	Date	Last Date for Assessment
Registration	1	15 September 2016	N/A

Consent and Moderation Requirements (CMR) reference	0013
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This CMR can be accessed at <http://www.nzqa.govt.nz/framework/search/index.do>.

Please note

Providers must be granted consent to assess against standards (accredited) by NZQA, before they can report credits from assessment against unit standards or deliver courses of study leading to that assessment.

Industry Training Organisations must be granted consent to assess against standards by NZQA before they can register credits from assessment against unit standards.

Providers and Industry Training Organisations, which have been granted consent and which are assessing against unit standards must engage with the moderation system that applies to those standards.

Requirements for consent to assess and an outline of the moderation system that applies to this standard are outlined in the Consent and Moderation Requirements (CMR). The CMR also includes useful information about special requirements for organisations wishing to develop education and training programmes, such as minimum qualifications for tutors and assessors, and special resource requirements.

Comments on this unit standard

Please contact Competenz qualifications@competenz.org.nz if you wish to suggest changes to the content of this unit standard.