

Achievement Standard

Subject Reference	Construction and Mechanical Technologies 1.24		
Title	Demonstrate understanding of basic concepts related to structures		
Level	1	Credits	3
		Assessment	Internal
Subfield	Technology		
Domain	Construction and Mechanical Technologies		
Status	Registered	Status date	20 January 2011
Planned review date	31 December 2019	Date version published	17 November 2016

This achievement standard involves demonstrating understanding of basic concepts related to structures.

Achievement Criteria

Achievement	Achievement with Merit	Achievement with Excellence
<ul style="list-style-type: none"> Demonstrate understanding of basic concepts related to structures. 	<ul style="list-style-type: none"> Demonstrate in-depth understanding of basic concepts related to structures. 	<ul style="list-style-type: none"> Demonstrate comprehensive understanding of basic concepts related to structures.

Explanatory Notes

- 1 This achievement standard is derived from Level 6 of the Technology learning area in *The New Zealand Curriculum*, Learning Media, Ministry of Education, 2007; and is related to the material in the *Teaching and Learning Guide for Technology*, Ministry of Education at <http://seniorsecondary.tki.org.nz>.

Further information can be found at <http://www.technology.tki.org.nz/>.

Appropriate reference information is available in *Safety and Technology Education: A Guidance Manual for New Zealand Schools*, Ministry of Education at <http://technology.tki.org.nz/Curriculum-support/Safety-and-Technology-Education>, and the Health and Safety at Work Act 2015.

This standard is also derived from *Te Marautanga o Aotearoa*. For details of *Te Marautanga o Aotearoa* achievement objectives to which this standard relates, see the [Papa Whakaako](#) for the relevant learning area.

- 2 *Demonstrate understanding of basic concepts related to structures* involves:
- describing safety factors as applied to structures
 - explaining what is meant by tension, compression, shear and torsion
 - identifying the types of structural members and joints used in structures
 - describing how types of structural members resist loads.

Demonstrate in-depth understanding of basic concepts related to structures involves:

- explaining the safety factors applied to a structure
- explaining how structural members and pin joints transfer forces in a structure.

Demonstrate comprehensive understanding of basic concepts related to structures involves:

- discussing how the integrity of a structure is established.

- 3 *Structures* for this achievement standard are limited to pin jointed columns and beams. Examples of structures may include but are not limited to – furniture, ladders, scaffolding and bridges.
- 4 Forces for this achievement standard are limited to – tension, compression, shear and torsion.
- 5 Loads for this achievement standard are limited to static point loads.
- 6 Safety factors for this achievement standard are limited to considerations of the internal loads acting on structural members.
- 7 The integrity of a structure is reliant on but is not limited to – the strength, weight, material and profile of structural members; the combination and means of joining structural members; and safety factors applied to the structure.
- 8 Conditions of Assessment related to this achievement standard can be found at <http://ncea.tki.org.nz/Resources-for-Internally-Assessed-Achievement-Standards>.

Replacement Information

This achievement standard and AS91060 replaced unit standard 7545, unit standard 7548 and unit standard 7550.

This achievement standard replaced unit standard 7546 and unit standard 7547.

Quality Assurance

- 1 Providers and Industry Training Organisations must have been granted consent to assess by NZQA before they can register credits from assessment against achievement standards.
- 2 Organisations with consent to assess and Industry Training Organisations assessing against achievement standards must engage with the moderation system that applies to those achievement standards.

Consent and Moderation Requirements (CMR) reference

0233