

## Achievement Standard

<b>Subject Reference</b>	Construction and Mechanical Technologies 1.24		
<b>Title</b>	Demonstrate understanding of basic concepts related to structures		
<b>Level</b>	1	<b>Credits</b>	3
		<b>Assessment</b>	Internal
<b>Subfield</b>	Technology		
<b>Domain</b>	Construction and Mechanical Technologies		
<b>Status</b>	Registered	<b>Status date</b>	20 January 2011
<b>Planned review date</b>	31 December 2014	<b>Date version published</b>	20 January 2011

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"> <li>Demonstrate understanding of basic concepts related to structures.</li> </ul>	<ul style="list-style-type: none"> <li>Demonstrate in-depth understanding of basic concepts related to structures.</li> </ul>	<ul style="list-style-type: none"> <li>Demonstrate comprehensive understanding of basic concepts related to structures.</li> </ul>

### Explanatory Notes

- 1 This achievement standard is derived from the Level 6 achievement objectives from 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, 2010 at <http://seniorsecondary.tki.org.nz>.

Appropriate reference information is available in *Safety and Technology Education: A Guidance Manual for New Zealand Schools*, Learning Media, Ministry of Education, 1998; and The Health and Safety in Employment Act 1992. Further details of definitions listed below can be found at <http://www.techlink.org.nz>.

- 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://www.tki.org.nz/e/community/ncea/conditions-assessment.php>.

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### 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.

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### Quality Assurance

- 1 Providers and Industry Training Organisations must be accredited by NZQA before they can register credits from assessment against achievement standards.
- 2 Accredited providers and Industry Training Organisations assessing against achievement standards must engage with the moderation system that applies to those achievement standards.

Accreditation and Moderation Action Plan (AMAP) reference

0233