

## Achievement Standard

<b>Subject Reference</b>	Physics 1.4		
<b>Title</b>	Demonstrate understanding of aspects of wave behaviour		
<b>Level</b>	1	<b>Credits</b>	4
		<b>Assessment</b>	External
<b>Subfield</b>	Science		
<b>Domain</b>	Physics		
<b>Status</b>	Registered	<b>Status date</b>	30 November 2010
<b>Planned review date</b>	31 December 2019	<b>Date version published</b>	20 November 2014

This achievement standard involves demonstrating understanding of aspects of wave behaviour and may include using methods when solving related problems.

***Mutual exclusion exists between this standard and AS90942.***

### Achievement Criteria

Achievement	Achievement with Merit	Achievement with Excellence
<ul style="list-style-type: none"> <li>Demonstrate understanding of aspects of wave behaviour.</li> </ul>	<ul style="list-style-type: none"> <li>Demonstrate in-depth understanding of aspects of wave behaviour.</li> </ul>	<ul style="list-style-type: none"> <li>Demonstrate comprehensive understanding of aspects of wave behaviour.</li> </ul>

### Explanatory Notes

- This achievement standard is derived from *The New Zealand Curriculum*, Learning Media, Ministry of Education, 2007, Level 6. It is aligned with the Physical Inquiry and Physics Concepts achievement objectives in the Physical World strand and the Communicating in Science achievement objectives in the Nature of Science strand, and is related to the material in the *Teaching and Learning Guide for Physics*, Ministry of Education, 2010 at <http://seniorsecondary.tki.org.nz>.

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](#).

- Demonstrate understanding of aspects of wave behaviour* typically involves providing evidence that shows awareness of how simple facets of phenomena, concepts or principles relate to given situations. This may include using methods for solving problems involving aspects of waves.

- 3 *Demonstrate in-depth understanding of aspects of wave behaviour* typically involves providing evidence that shows how or why phenomena, concepts or principles relate to given situations.
- 4 *Demonstrate comprehensive understanding of aspects of wave behaviour* typically involves providing evidence that shows how or why phenomena, concepts or principles are connected in the context of given situations. Statements must demonstrate understanding of connections between concepts.
- 5 Evidence may be written, mathematical, graphical or diagrammatic.
- 6 *Aspects of wave behaviour* will be limited to a selection from the following:
- Light: reflection at a plane surface, reflection and refraction at a straight boundary, dispersion of white light through a triangular prism, total internal reflection, speed of light in different media.
- Waves: longitudinal waves, transverse waves, period, wavelength, frequency, amplitude, speed. Diffraction around a barrier, the relationships  $v = \frac{d}{t}$   $v = f\lambda$   
 $f = \frac{1}{T}$ .
- 7 Assessment Specifications for this achievement standard can be accessed through the Physics Resources page found at [www.nzqa.govt.nz/ncea/resources](http://www.nzqa.govt.nz/ncea/resources).
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### 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