

## Achievement Standard

**Subject Reference** Science 2.9

**Title** Use physics concepts and principles to describe the behaviour of light

**Level** 2      **Credits** 4      **Assessment** External

**Subfield** Science

**Domain** Science – Core

**Registration date** 20 October 2004      **Date version published** 20 October 2004

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This achievement standard involves the use of physics concepts and principles to describe light and its behaviour.

### Achievement Criteria

Achievement	Achievement with Merit	Achievement with Excellence
<ul style="list-style-type: none"><li>Use physics concepts and principles to describe the behaviour of light.</li></ul>	<ul style="list-style-type: none"><li>Use physics concepts and principles to explain the behaviour of light.</li></ul>	<ul style="list-style-type: none"><li>Use physics concepts and principles to discuss the behaviour of light.</li></ul>

### Explanatory Notes

- 1 This achievement standard is derived from *Science in the New Zealand Curriculum*, Learning Media, Ministry of Education, 1993, Making Sense of the Physical World, pp. 84-85.  
This achievement standard is also related to *Pūtaiao i roto i te Marautanga o Aotearoa*, Learning Media, Ministry of Education, 1996, Ō Ahupūngao: Te Kune, pp. 48-49.

- 2 *Physics concepts and principles of light* will be limited to the following:
- the way light travels in straight lines
  - reflection from plane and spherical mirrors,  $\theta_i = \theta_r$
  - refraction, where one medium is air, at straight boundaries and spherical lenses
  - total internal reflection
  - critical angle (qualitative)
  - visible spectrum as part of electromagnetic radiation,  $v = f\lambda$
  - refraction of light through a prism to form a spectrum
  - absorption, reflection, and transmission of colour
  - primary colours and colour mixing.
- 3 Contexts could include mirrors, cameras, microscopes, optical glasses, binoculars, telescopes, and the eye.
- 4 An ability to use ray diagrams to determine the nature, position, and size of images is expected.
- 5 Terms:
- *Describe* requires the student to draw and label diagrams or give characteristics of or an account of.
  - *Explain* requires the student to use diagrams or provide reasons for how or why.
  - *Discuss* requires the student to link scientific ideas to justify, relate, evaluate, compare and contrast, or analyse.
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## Quality Assurance

- 1 Providers and Industry Training Organisations must be accredited by the Qualifications Authority 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.