Achievement Standard

Subject Reference	Physics 2.5				
Title	Demonstrate understanding of atoms and radioactivity				
Level	2	**Credits**	2	**Assessment**	External
Subfield	Science				
Domain	Physics				
Registration date	20 October 2004	**Date version published**	20 October 2004		

This achievement standard involves knowledge and understanding of phenomena, concepts, and principles related to atoms and radioactivity.

Achievement Criteria

Achievement	Achievement with Merit	Achievement with Excellence
• Identify or describe aspects of phenomena, concepts or principles.	• Give descriptions or explanations in terms of phenomena, concepts, and/or principles.	• Give concise explanations that show clear understanding in terms of phenomena, concepts, and/or principles.

Explanatory Notes

1 This achievement standard is derived from *Physics in the New Zealand Curriculum,* Learning Media, Ministry of Education, 1994; Level 7 achievement objectives, p. 24.

2 Assessment will be limited to a selection from the following:

Phenomena, Concepts and Principles:

Models of the atom (Dalton, Thomson and Rutherford), gold foil experiment, radioactive decay, half life, conservation of atomic and mass number in alpha, beta and gamma emission reactions, ionising ability, penetration ability and behaviour in a magnetic field.

3 Real life contexts will be used whenever possible. Requisite information about the context used will be supplied.

4 The following descriptions provide guidance on the typical level of performance for achievement, achievement with merit, and achievement with excellence. Both the complexity of the situation and problem-solving process will determine the grade. Statements, descriptions and explanations can be written, diagrammatic, graphical or numerical. The descriptions or explanations could include quantitative discussions.

- Achievement will typically involve single aspects related to phenomena, concepts or principles.
- Achievement with merit will typically involve reasons.
- Achievement with excellence will typically have minimal irrelevancies.

5 Minor computational or transcription errors will not be penalised if the process used to calculate the solution is clearly indicated and is valid.

6 Both negative index (eg ms^{-2}) and slash notation (eg m/s^2) will be acceptable when writing units. Negative index notation will be used when supplying data.

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.

Accreditation and Moderation Action Plan (AMAP) reference 0226