

Achievement Standard

Subject Reference Statistics and Modelling 3.7

Title Use a mathematical model involving curve fitting to solve a problem

Level 3 **Credits** 3 **Assessment** Internal

Subfield Mathematics

Domain Algebra

Status Registered **Status date** 20 November 2006

Planned review date 28 February 2009 **Date version published** 20 November 2006

This achievement standard involves using a mathematical model involving curve fitting to solve a problem.

	Achievement Criteria	Explanatory Notes
Achievement	<ul style="list-style-type: none"> Use a mathematical model involving curve fitting to solve a problem. 	<ul style="list-style-type: none"> Model will involve: <ul style="list-style-type: none"> $y = ax^n$ or $y = am^x$ or $y = Ae^{kt}$. Data will be provided and the form of the model will be given.
Achievement with Merit	<ul style="list-style-type: none"> Use curve fitting to determine an appropriate model and solve a practical problem. 	<ul style="list-style-type: none"> Data will be raw data generated by a practical situation. The choice of model will be either a power function or an exponential function or a piecewise function involving a combination of both, and will require: <ul style="list-style-type: none"> selecting a model to test constructing an appropriate graph determining the equation of the model. Candidates are to collect their own data and determine the form of the model.

	Achievement Criteria	Explanatory Notes
Achievement with Excellence	<ul style="list-style-type: none"> Justify the choice of mathematical model to solve a problem. 	<ul style="list-style-type: none"> Justification within the context will include some of the following: <ul style="list-style-type: none"> relating the solution to the problem considering the nature of the underlying variables considering the possibility of more than one model relating the theory to the model discussing limitations of the model.

General Explanatory Notes

- This achievement standard is derived from *Mathematics in the New Zealand Curriculum*, Learning Media, Ministry of Education, 1992:
 - achievement objectives pp. 158, 164
 - suggested learning experiences pp. 159, 165
 - sample assessment activities pp. 160–162, 166–167
 - mathematical processes pp. 23–29.
- The use of appropriate technology is expected.

Quality Assurance

- Providers and Industry Training Organisations must be accredited by the Qualifications Authority before they can register credits from assessment against achievement standards.
- 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