Achievement Standard

Subject Reference	Mathematics 2.1				
Title	Manipulate algebraic expressions and solve equations				
Level	2	**Credits**	4	**Assessment**	External
Subfield	Mathematics				
Domain	Algebra				
Status	Expiring			**Status date**	17 November 2011

This achievement standard is expiring. Assessment against the standard must take place before the expiry date set out below.

Expiry date	31 December 2011	**Date version published**	17 November 2011

This achievement standard requires the manipulation of algebraic expressions and the solution of equations.

Achievement Criteria

	Achievement Criteria	Explanatory Notes
Achievement	• Manipulate algebraic expressions.	• Assessment of manipulation will be based on a selection from: – expanding brackets up to 3 factors – factorising expressions including quadratics – using fractional and negative indices – using elementary properties of logarithms – simplifying rational expressions.
	• Solve equations.	• Assessment of solving equations will be based on a selection from: – multi-step linear equations or inequations eg $3(2x-5)=5x+7$ – quadratics that can be factorised eg $2x^2-11x=21$ – simple logarithmic equations eg $\log_x 25=2,\ 3^x=25$ – forming and solving linear/linear simultaneous equations.

	Achievement Criteria	Explanatory Notes
Achievement with Merit	• Solve problems involving equations.	• Assessment will be based on a selection from: – quadratics requiring the use of the quadratic formula – linear/non-linear simultaneous equations – exponential eg $13^{4x-5} = 6$. • Non-linear equations may be given as appropriate to the complexity of the problem. • Students will be expected to solve problems in context.
Achievement with Excellence	• Choose algebraic techniques and strategies to solve problem(s).	• When solving a problem the student may be required to: – interpret the solution – explore the nature of the roots of a quadratic – complete a multi-step algebraic manipulation – complete an algebraic proof.

General Explanatory Notes

1 This achievement standard is derived from *Mathematics in the New Zealand Curriculum*, Learning Media, Ministry of Education, 1992:
- achievement objectives p. 158
- suggested learning experiences p. 159
- sample assessment activities pp. 160-161
- mathematical processes p. 26.

2 The use of the Factor/Remainder Theorem will not be assessed.

3 An algebraic proof will involve a multi-step manipulation of a given algebraic statement to generate another given expression.

4 For this standard the problems may be set in a mathematical context.

Replacement Information
This achievement standard, AS90806, AS90809, and unit standard 5246 have been replaced by AS91261 and AS91269.

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 0226