



NEW ZEALAND QUALIFICATIONS AUTHORITY  
MANA TOHU MĀTAURANGA O AOTEAROA

# **National Qualifications Framework Levels 1–3, 2007**

## **Mathematics**

### **National Moderator's Report**

## **National Moderator's Report**

### **General Guidance for Assessors of Achievement and Unit Standards**

The purpose of external moderation is to provide reassurance that assessor judgments are at the national standard and are made on the basis of assessment materials that are fair and valid.

All assessment materials are expected to:

- give the learner the opportunity to meet the requirements of the standard
- have an assessment schedule that gives evidence of appropriate learner responses and clear judgments at all levels.

The Ministry of Education contracted subject experts to write assessment resources for achievement standards. These are not pre-moderated. The intention is that they are modified to suit teaching programmes and learner needs. They do not provide 'rules' but suggest different ways of assessing to the nationally registered standard.

### **General Overall Comment**

All comments made in previous reports are still valid and this report must be read in conjunction with the 2006 report.

Providers are advised to check all assessment tasks against the standard itself. Many commercial tasks do not meet the standard.

Teachers need to provide adequate examples of expected student evidence so they can make accurate and consistent judgments on the evidence learners produce. The generic schedules provided on the TKI website are too broad to ensure accurate and consistent judgments of learner evidence. Their purpose is to give guidance to teachers when they are developing their own, specific schedules for the task. Teachers need to carry out this customisation process.

When deciding which grade a student has achieved, it is important to refer to the achievement criteria, supported by explanatory notes, for that grade. It is clear that, when checking whether learners have provided the required evidence, teachers prefer to use a 'tick the box' method, however it is important that teachers using this method do not make sufficiency judgments on a minimum number of ticks. Sufficiency of evidence must be made from a holistic point of view.

When further evidence is collected, it is important learners are not given more guidance than they were given in the original task.

### **Statistics and Modelling**

Providers are struggling with the expected level of responses required for students to achieve with excellence in statistics. Frequently the expectations shown in the tasks submitted are much lower than should be expected at the curriculum level of the standard. Comments relating to this can be found in the 2006 report.

The concept of a simulation is poorly understood at all levels.

Where candidates are asked to interpret equations these must be done in terms of the context of the question.

Candidates struggle with making an inference about the population from their samples.

$R^2$  values are still being used almost exclusively as a measure of best fit for an equation. Outliers are often being discarded without reason or justification.

***AS 90647: Use a mathematical model involving curve fitting to solve a problem***

For merit and excellence the candidates must analyse and interpret the situation for their own data.

Assessment task for achievement is often not submitted for moderation even when candidates have failed to achieve merit. Where the starting value is known this must be used in determining the model.

For excellence log-linear translation is no longer acceptable.

***AS 90645: Select and analyse continuous bi-variate data***

Candidates must choose both variables to compare.

***AS 90637: Solve problems and equations involving trigonometric functions.***

Too many providers are accepting only one solution to equations. Multiple solutions are required for all levels of achievement.

***AS 90291: Solve trigonometry problems requiring modelling of practical situations***

Scale diagrams are not appropriate. Candidates must take measurements of real objects.

***AS 90288: Select a sample and use this to make an inference about the population***

A range is not an acceptable measure of spread at level 2.

***AS 90149: Solve problems involving measurement of everyday objects***

The use of scale drawings of objects is not appropriate. The concept of solving a measurement problem must be more than what is the area/volume of A?

***US 5228: Take measurements and use them in calculations to solve problems***

This standard requires more than reading times from clocks and determining the difference between them.

Time problems should involve calculations in minutes and hours or seconds and minutes i.e. calculations involving knowledge of the 60 unit relationship. Units must not be stated in the question – candidates must provide them as part of their answer. Candidates must use their own measurements in solving problems.

***US 5246: Manipulate algebraic expressions and use algebraic methods to solve problems***

Equations used are frequently not at the required curriculum level, i.e. level 7.