



NEW ZEALAND QUALIFICATIONS AUTHORITY  
MANA TOHU MĀTAURANGA O AOTEAROA

# **National Qualifications Framework Levels 1–3, 2004**

## **Physics**

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

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

The purpose of external moderation is to provide reassurance that assessor judgements 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 student the opportunity to meet the requirements of the standard
- have an assessment schedule that gives evidence of appropriate student responses and clear judgements 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 student needs. They do not provide 'rules' but suggest different ways of assessing to the nationally registered standard.

### General Overall Comment

The majority of assessors of achievement standards used exemplars from the TKI website. Some assessors modified the tasks to suit their own teaching programmes. Many assessors did not provide examples of expected student evidence and did not customise the generic schedules provided on the website.

When detailed evidence statements were provided and judgement statements were particular to the evidence required, assessor judgements were accurate and consistent.

Assessor judgements were particularly inconsistent and inaccurate when judgement statements were generic and no evidence statements were provided.

It is important that assessors, when deciding which grade a student has achieved, ensure that all the requirements of the grade have been met.

The tasks on the TKI website provide very good guidance for assessors on the structure of the tasks and the assessment schedules clearly define the standard that is expected for each grade level.

### Level 2

#### ***90252: Take measurements of physical quantities and analyse data graphically to determine a relationship***

For Achievement, the measurements must be correct. It is essential that equipment for the measurement part of the task be chosen so that the assessor knows what the value of the measurement should be.

For Achievement with Merit, the evidence must show knowledge of rounding to the correct number of significant figures.

Achievement with Excellence, requires the justification of the accuracy techniques that were used when making measurements. General statements such as 'to increase accuracy' / 'to reduce random error' are not acceptable. For a technique to be validly justified, the explanation must state why the particular measurement needed this technique and how the technique increased accuracy in this particular measurement.

When developing or selecting tasks and schedules it is essential that assessors use the most up-to-date versions of the materials that are on the TKI website. This will be particularly important in 2005 as there have been modifications to the standard that will make the existing tasks invalid for assessing Version 2 of the standard.

**90258: *Demonstrate understanding of the integrated nature of physics***

Assessor judgements are accurate and consistent at all grades.

When developing or selecting tasks and schedules it is essential that assessors use the most up-to-date versions of the materials that are on the TKI website. This will be particularly important in 2005 as there have been modifications to the standard that will make the existing schedules invalid for assessing Version 2 of the standard.

**Level 3**

**90518: *Carry out a practical physics experiment that leads to a mathematical relationship***

Assessors must heed the requirements regarding uncertainties.

At the Achievement level, the conclusion is not valid unless it relates to a calculation from the straight line graph. This will normally be the gradient of the graph line.

For Achievement with Excellence, the discussion must be well reasoned and concise. This means that there must be evidence that critical thinking has taken place. It is not sufficient for students to **describe** limitations / unforeseen variables / difficulties / etc. They must make an attempt to **explain** how the results / conclusion have been affected by these factors. Critical thinking will always be specific to the actual experiment that is being carried out. It will not be evidenced by general statements that could relate to any experiment.

The assessment schedules on the TKI website indicate to assessors the standard that must be reached for each grade level. When assessors are grading student work, the guidelines given in these schedules must be adhered to.

**90519: *Process uncertainties in data and graphs***

For Achievement the uncertainty requires correct rounding. It is not valid to assess this aspect with a calculation that gives the correct uncertainty without any need to round.

It was clear that providers are using a variety of different methods for estimating uncertainties. For effective moderation, it is important that assessors provide detailed evidence and judgement statements.