NEW ZEALAND QUALIFICATIONS AUTHORITY
MANA TOHU MĀTAURANGA O AOTEAROA

Level 2, 2003

Mathematics: Solve problems using a coordinate geometry method (90287)

National Statistics

Assessment Report

Assessment Schedule

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National Statistics

Number of Results	Percentage achieved			
	Not Achieved	Achieved	Merit	Excellence
21,442	40.6%	44.5%	9.7%	5.2%

Assessment Report

Every candidate for a National Certificate of Educational Achievement examination paper is expected to:
- read the question and do what the question asks
- allow adequate time to complete answers
- be accurate: check and/or proofread
- use appropriate technical terms
- bring the correct equipment
- write and/or draw clearly
- use pen if work is to be eligible for reconsideration.

General Comments

Few candidates were able to apply combinations of those methods as required for the merit and excellence levels. More practice is required in multi-step problems. For example, in Question Four only a small proportion of candidates recognised the necessity of finding the intersection of the two given lines. Most candidates who did attempt the question were content to find the length of one of the three sides of the triangle. In Question Two a high proportion of candidates proceeded to find the equation of the line BD, ignoring or failing to understand the word ‘equidistant’. Those who used the grid provided often did so to good effect, and future candidates would benefit from emphasis on a diagram approach to multi-step problems.

Candidates appeared to have difficulty with some of the terminology (equidistant, median and altitude) as applied to geometry. It must be pointed out that the ‘equation of the median’ is referred to as an example in the Achievement Standard itself, and all three words are mentioned at Level 5 Geometry in ‘Mathematics in the New Zealand Curriculum’. Candidates must be prepared properly to meet and understand these terms.

There was little evidence that those students who had access to graphical calculators had been advantaged in this paper.

Assessment Schedule

Mathematics: Solve problems using a coordinate geometry method (90287)

	Achievement Criteria	No.	Evidence	Code	Judgement	Sufficiency
Achievement	Solve problems using a coordinate geometry method.	One (a) (b) (c)	D = $\sqrt{80}$ = 8.94 light years $m = 2$ through (4, 5) $2x - y - 3 = 0$ $m = -3$ through (4, 2) $3x + y - 14 = 0$	 **A** **A** **A**	Units are not required in this activity. Accept any rounding. Or equivalent. Or equivalent.	**Achievement:** two of Code **A.** Replacement evidence: no repeated skills.
Achievement with Merit	Solve problems involving a combination of at least two coordinate geometry methods.	Two Three Four	Midpoint (–3, –1.5) $m = 2$ through (–3, –1.5) $4x - 2y + 9 = 0$ Midpoint (2, 1) $M = \frac{1}{8}$ through (2, 1) $x - 8y + 6 = 0$ Point of intersection of two lines is (6, –1). Length of altitude is $\sqrt{40}$ = 6.32 light years.	**A** **A M** **A** **A M** **A** **A M**	 Or equivalent. Or equivalent. Or equivalent. Accept any rounding.	**Merit:** Achievement plus two of code M. **OR** all of code M. Replacement evidence: Two consecutive coordinate geometry techniques in Q5 can replace any of Two, Three or Four.
Achievement with Excellence	Choose and apply a variety of coordinate geometry methods to solve problems.	Five	Rona's gradient = $\frac{1}{2}$ Perpendicular gradient = –2. Equation of perpendicular through (4, 5): $2x + y - 13 = 0$ Point of intersection of Rona and perpendicular: (3.6, 5.8). Shortest distance = 0.894 light years.	 **A** **A** **A M E**	Accept a minor error in working. Solution should be logically set out and methods able to be followed. Accept any rounding.	**Excellence:** Merit plus code E.

Judgement Statement

Judgement statements (formerly referred to as sufficiency statements) help students understand how their overall results for each standard were arrived at.

Achievement	Achievement with Merit	Achievement with Excellence
Solve problems using a coordinate geometry method **(A)** 2 × **A**	*Solve problems involving a combination of at least two coordinate geometry methods* **(M)** Achievement ***plus*** 2 × **M** *or* 3 × **M**	*Choose and apply a variety of coordinate geometry methods to solve problems* **(E)** Merit ***plus*** **E**

Note: Insufficient evidence to support a judgement above **(X)**