NEW ZEALAND QUALIFICATIONS AUTHORITY
MANA TOHU MĀTAURANGA O AOTEAROA

Level 2, 2003

Mathematics: Solve straightforward problems involving sequences (90290)

National Statistics

Assessment Report

Assessment Schedule

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National Statistics

Number of Results	Percentage achieved			
	Not Achieved	Achieved	Merit	Excellence
20,020	33.3%	48.9%	15.1%	2.6%

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

Candidates should be encouraged to answer all questions carefully and not just pick out the numbers, as it is common to use evidence from higher-level questions when awarding achievement.

As all standards require all questions to be in context, it is important that candidates read each question. It is often useful to list the first few terms in each question to ensure that the correct approach to solving the problem is used.

Students need more experience in the different ways that questions can be asked, looking for key words as they go (eg extra, less, shorter, longer, etc for Aps; and times, percentage increase, ratio, etc for GPs).

A fair number of candidates did not gain credits for this standard because of poor calculator skills. This can often be avoided by candidates checking the reasonableness of their answers. A common problem was not using brackets to gain the correct order of operations.

Candidates need to be reminded that they cannot expect to get an Achievement with Excellence grade for this standard simply by listing terms.

Assessment Schedule

Mathematics: Solve straightforward problems involving sequences (90290)

	Achievement Criteria	No.	Evidence	Code	Judgement	Sufficiency
Achievement	Solve straight-forward problems involving sequences.	One	$a = 3.6 \quad d = 0.12$ $t_{24} = 6.36.$	**A**	Or equivalent.	**Achievement:** *two of code A.*
		Two	$a = 15 \quad d = 0.5$ $S_{31} = 697.5.$	**A**	Or equivalent.	
		Three	$a = 24 \quad r = 1.05$ $t_{12} = 41.048.$	**A**	Or equivalent.	
Achievement with Merit	Solve problems involving sequences.	Four	$a = 60 \quad r = 0.9$ $S_\infty = 600$ or 6.	**A M**	No alternative.	**Achievement with Merit:** achievement **plus** **two** of code **M** **OR** **three** of code **M.**
		Five	$a = 2.42 \quad r^3 = 3.71074$ $r = 1.54818$ $t_2 = 3.7466.$	**A** **M**	Or equivalent.	
		Six	$S_8 = 6000 \quad d = -80$ $a = 1030$ or 1.03.	**A M**	No alternative.	
Achievement with Excellence	Explore situations and interpret the results of problems involving sequences.	Seven	*Hotspa*: Total = $10n^2 + 110n + 1510$. *Springspa*: Total = $-5n^2 + 505n + 3160$. Solve: $10n^2 + 110n + 1510$ $= -5n^2 + 505n + 3160$ $15n^2 - 395n - 1650 = 0$ $5(3n^2 - 79n - 330) = 0$ $5(3n + 11)(n - 30) = 0$ $n = 30, -\frac{11}{3}$ ie after 30 months.	**A M** **E**	For excellence: – evidence of use of equations is required – allow one minor arithmetic error. Any method. No alternative.	**Achievement with Excellence:** merit **plus** code **E**

General Notes

- All answers can be given as fractions or decimals.
- Units are not required with any answers.
- Do not penalise incorrect rounding.
- Questions can be solved by listing terms.
- Accept correct answer only for all questions, except Q7.

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 straightforward problems involving sequences **(A)** 2 × **A**	*Solve problems involving sequences* **(M)** Achievement ***plus*** 2 × **M** *or* 3 × **M**	*Explore situations and interpret the results of problems involving sequences* **(E)** Merit ***plus*** **E**

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