

Aide-Memoire: 2017 NCEA Level 1 Mathematics and Statistics examination and the Mathematics Common Assessment Task (MCAT)

To:	Hon Chris Hipkins, Minister of Education
From:	Dr Karen Poutasi, NZQA Chief Executive
Date:	13 April 2018
Reference:	CR17238

Purpose

1. This aide memoire provides you with an update on NZQA's actions following the finalisation of the results for the 2017 Level 1 Mathematics and Statistics examination and the Level 1 Mathematics Common Assessment Task (MCAT).

Background

2. NZQA received a letter from some members of the mathematics community after the 2017 examination round, expressing their concerns about the Level 1 Mathematics examinations. Although these concerns related to all three standards in the Level 1 Mathematics and Statistics examination, the overall rate of achievement in standards 91031¹ and 91037² was consistent with previous years.
3. NZQA did not receive any concerns about the MCAT, although the provisional results were lower than in 2016. The MCAT is marked by teachers and verified by NZQA, and there is more variation in results across the years.
4. NZQA provided you with information on the provisional results of standard 91028 (*Investigate relationships between tables, equations and graphs*) and the MCAT on 11 January 2018 (CR16988 Aide-Memoire: 2017 NCEA Level 1 Mathematics and Statistics examination and MCAT, 11 January 2018 refers). We undertook to provide you with more analysis of results for these two standards and report back on our discussions with Mathematics teachers.

Comment

Final results

5. The review and reconsideration processes for the two Mathematics examinations are now completed. NZQA manages the review and reconsideration process for standard 91028, as it

¹ 91031 - Apply geometric reasoning in solving problems

² 91037 - Demonstrate understanding of chance and data

is marked by us. Schools manage the process for the MCAT as it is marked by the school and verified by NZQA. The distribution of results for the two standards has not changed since we advised you of the provisional results in our earlier briefing. The final confirmed results for standard 91028 and the MCAT are outlined in the table below.

Standard number	Standard Title	Grade*	Achievement range over previous 5 years (%)	2017 results (%)	2016 results (%)
91028	Investigate relationships between tables, equations and graphs	Overall achievement**	78.1 - 84.0	71.2	80.5
		N	16.0 – 21.9	28.8	19.5
		A	38.0 – 43.9	34.5	43.2
		M	26.6 – 28.5	24.2	26.6
		E	8.5 – 14.4	12.5	10.7
91027	Mathematics Common Assessment Task (MCAT)	Overall achievement**	72.2 – 82.0	72.3	82.0
		N	18.0 – 27.8	27.7	18.0
		A	28.4 – 41.8	39.0	37.4
		M	22.9 – 34.2	20.5	32.1
		E	9.6 – 16.3	12.8	12.6

* Grades: N = Not Achieved, A = Achieved, M = Merit, E = Excellence

** This is the combined achievement rates for Achieved, Merit, and Excellence

6. As noted above, the distribution of results for standard 91028 has not changed since we advised you of the provisional results in January 2018. The standard has a lower overall achievement rate of 71.2 per cent compared to the range over the previous five years.
7. Similarly, there has been no change to the distribution of results for the MCAT (standard 91027), which has a lower overall achievement rate of 72.3 per cent compared to 2016 but it is within the range over the previous five years.
8. NZQA published the final achievement data for the 2017 results on 11 April 2018.

Listening to mathematics teachers

9. NZQA is meeting with five of the regional mathematics associations and the national body to discuss the concerns raised in the letter to NZQA after the 2017 examinations. To date, we have met with the regional mathematics associations in Christchurch, Wellington (which the Ministry of Education also attended), Waikato and Dunedin. Over 100 teachers have attended these meetings which have been well received by the sector. We will meet with the Auckland Mathematics Association and the national body later this month. We will also follow up with a number of other regional mathematics associations by teleconference.
10. The teachers at the meetings to date generally agree that the Level 1 Mathematics examinations reflected the content and requirements of the standards and level six of the curriculum. These require the student to demonstrate problem solving skills. However, there is concern that some 'achieved' level students are finding the problem-solving nature of the questions particularly challenging. This may be due to the additional literacy requirements.

11. The teachers also thought that the changes in the assessment of standard 91028 were well-signalled to the sector. Teachers worked hard to prepare their students for the changes in assessment. Nevertheless, changes in assessment can take some time to bed in, particularly as students may refer to previously published papers which would not have reflected the changes.
12. NZQA will be publishing the Assessment Reports for all the 2017 examinations³ shortly. The Assessment Reports are used to inform the development of subsequent examinations. The Assessment Report for the 2017 Level 1 Mathematics and Statistics standards identifies similar issues to those identified by mathematics teachers.
13. Teachers at the meetings have provided useful insights and perspectives on making the Level 1 Mathematics examinations more accessible to 'achieved' level students. We are considering their feedback, and the above Assessment Report, as we finalise the 2018 examinations. We are focussing on improving the accessibility of the Level 1 Mathematics examination papers for 'achieved' level students, whilst ensuring that we maintain consistency with the requirements of the standard and the curriculum level.
14. We are also considering how we can reduce the variation in the MCAT results and will undertake further work on this in 2018.
15. The Ministry of Education is also updating the Mathematics Teaching and Learning Guide. The intent of the update is to ensure that the Guide is up to date and relevant to the standard. The revised Guide will be available by the end of 2018.
16. NZQA will release this advice in full at the end of May 2018.



Karen Poutasi (Dr)
Chief Executive, NZQA

13/04/18

Noted / Agreed

Chris Hipkins
Minister of Education

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³ MCAT is not included in the Assessment Report as it is marked by teachers (not NZQA).

