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Rangahau Mātauranga o Aotearoa

TE TĀHUHU O TE MĀTAURANGA
MINISTRY OF EDUCATION

Feedback on the draft Years 9–13 Mathematics and Statistics learning area

May 2025

Rachel Bolstad, Mengnan Li, and Melissa Denzler

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Rangahau Mātauranga o Aotearoa | New Zealand Council for Educational Research
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Level 4, 10 Brandon St
Wellington
New Zealand

www.nzcer.org.nz

https://doi.org/10.18296/rep.0076

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Summary

Feedback on the draft Mathematics and Statistics learning area content for Years 9–13 was gathered from 27 January to 28 April 2025, primarily through an online feedback form comprising closed demographic questions, and 12 open-ended feedback questions. The resulting sample was self-selected.

Feedback form responses and submissions

There were 85 responses to the 2025 feedback form, from schools (76%) or from other people and groups (24%) most of whom had education-related roles. Fifty schools were identified as having provided feedback. Eight additional submissions or emails received by the Ministry of Education were read and included in the analysis of feedback.

Purpose statement

Around a third of comments expressed positive views of the purpose statement, saying it is “clear”, “valued”, and “aspirational which we like”. However, some respondents said it was “wordy”, and they were “not sure it will ever be used in practice”. Improvement suggestions included providing more detail about how to link teaching to the purpose statement aspirations, making “specific references to Aotearoa’s unique culture, language, and knowledge systems”, and reference to “issues facing our students and communities, such as climate change”.

Understand–Know–Do overview

Around a fifth of comments were overall positive about the Understand–Know–Do (UKD) overview. Critiques of the UKD overview included some complaints that it was “wordy” or “waffly”. Some specific suggestions were made about aspects within the “Understand”, “Know”, and “Do” content. Some people commented on the relationship between these three constructs.

Learning area structure

Over a quarter of comments were generally positive about the learning area structure pages, described as “presented very clearly”, “well organised”. However, there were also critical and improvement-focused suggestions. Some respondents expressed concern about the “prescriptive” nature of the curriculum, arguing that schools “need the freedom to create/design courses that best suit the needs of their students”. There were queries about why the strands did not progress across all levels, why measurement and geometry were merged at Year 11, why Years 12 and 13 were divided into mathematics and statistics, and whether it was appropriate to include Year 11 in phase 5. There were also requests for more clarity about alignment with the National Certificate of Educational Achievement (NCEA).

Teaching guidance

More than a third of comments on this section were generally positive; for example, suggesting that the teaching guidance was "supportive for new teachers with clear structure and expectations" and "seems to be fairly commonsense and what you would expect a good teacher of maths to do". However, critical feedback on this section included questions about what effect these pages would have in practice. Some respondents highlighted cultural embeddedness within the context of Aotearoa New Zealand as a "missing" aspect.

Phase 4 progress outcome

Feedback on the phase 4 progress outcome was largely positive, with respondents generally agreeing that the outcome clearly communicates what students need to be able to know, understand, and do by the end of phase 4. Three main themes were evident in critical and improvement-focused feedback on the phase 4 progress outcome: specific content suggestions; a desire to see more detail and specificity for teaching towards these outcomes; and other feedback about wording and layout.

Phase 4 teaching sequence (Years 9–10)

There was positive feedback about these pages, particularly from page 32 onwards, seen by some as "the most practical and useful part of the document". The most common suggestions for improvement were requests for "more detail" and "more examples" to give teachers more clarity of what is expected at Years 9 and 10. Some respondents also suggested a different layout to make it easier to see progressions across all phases and year levels. Some concerns were expressed about the levels of difficulty at Years 9 and 10, as well as the amount of content to cover at either or both year levels. There was also specific detailed feedback about each strand within the teaching sequence.

Phase 5 progress outcome

Many respondents affirmed that the phase 5 statement "clearly communicates what students should know, understand, and be able to do by the end of this phase". Critical and improvement-focused comments included language and layout suggestions, and providing more clarity about what learning progression looks like for each year level, "especially in the statistics strand". Some people had concerns about "Years 11–13 being in one phase".

Phase 5 components of a comprehensive teaching and learning programme

The feedback on these pages was largely positive, though some questioned "why they were necessary". Some feedback suggested additional ideas to include or make more visible; for example, using mathematics and statistics learning to take action, or pathways to future employment across different industries. Some feedback noted the absence of references to mātauranga Māori, Pasifika knowledge, as well the absence of assessment and planning guidance.

Year 11 teaching sequence—mathematics and statistics

Regarding the Year 11 teaching sequence, there were questions about the relationship between the curriculum and NCEA achievement standards, with some saying it was "difficult to comment" until teachers could see how the curriculum would link with standards, and how these would be moderated. Some respondents expressed uncertainty about the level of difficulty of Year 11,

with some commenting on a shift of content into Years 9–10, and some suggesting there was too much to cover at Year 11. Regarding the strands, the most feedback was given for the statistics strand, followed by algebra, and measurement and geometry. Some respondents commented on statements in the teaching sequence which they felt lacked sufficient clarity and guidance "to avoid unnecessary repetition and to ensure meaningful progression".

Years 12–13 teaching sequence—mathematics

Feedback included some generally positive feedback. However, much of the feedback centred around three high-level themes: course design and learner pathway concerns; questions about the relationship to achievement standards; and "missing" content, such as networks and critical path analysis. Additional themes included comments about the amount of content to cover, teachers needing more clarity, resources, support materials, and time for implementation.

Years 12–13 teaching sequence—statistics

Some feedback was generally positive. However, much of the feedback raised questions or concerns, and made suggestions for improvement. The main themes in the feedback were: more clarity around learning progressions; examples, guidance, and resources for teachers; queries about the relationship to achievement standards; feedback about distributions; and other content that respondents felt was missing and/or they could not understand.

Overall feedback and support materials

Positive feedback concerned the clarity and specificity of what to teach. However, a major theme in the critical feedback was a concern that the curriculum is not inclusive of all learners, that it was not culturally responsive, and was inadequate for supporting learners who aspired to learning pathways other than university. Many respondents expressed concerns about the expectation for the curriculum to be implemented in 2026, citing uncertainty about what is happening with NCEA achievement standards and assessment at Years 9–10, concerns about teachers' workloads, and frustration about the time frames and process for curriculum update. Some respondents called for implementation to be phased.

Most respondents indicated that schools require significantly more time, clarity, and resources to effectively implement the mathematics and statistics curriculum. Some specific types of support and resources were mentioned, including support for accelerating learning, guidance around planning, and professional learning and development (PLD) about how to interpret and work with the curriculum. Other messages included the need for equity in providing supports, especially for small and rural schools, and clear and timely communication about key changes and supports.

1. Introduction and methods

This report summarises feedback on the draft Mathematics and Statistics learning area content for Years 9–13, released in January 2025. Feedback was gathered from 27 January to 28 April 2025.[1]

A Ministry of Education online feedback form was the main method for collecting feedback. The form was accessible alongside the draft content on Tāhūrangi and was promoted through Ministry of Education channels. The resulting sample was self-selected. School-based respondents were encouraged to complete the feedback in groups, but respondents could choose to answer individually. The feedback form was primarily aimed at schools, but other people and groups could also respond. Additional feedback was received by the Ministry of Education by email and sent to NZCER to include in this analysis.

Feedback form structure

Respondents answered an introductory set of demographic questions. The remaining content of the survey was divided into sections. Unlike previous cycles of curriculum feedback, only open-ended questions were used. In the first section, respondents were asked to provide feedback on the purpose statement and Understand–Know–Do overview, learning area structure, and the teaching guidance. In the second and third sections, participants could choose whether to give feedback on the progress outcome and teaching sequence for phase 4 and phase 5 respectively. In the fourth, fifth, and sixth sections, respondents were asked if they would like to provide feedback on the teaching sequences for Year 11 mathematics and statistics, Years 12 and 13 mathematics, and Years 12 and 13 statistics. Respondents could complete or skip each of these sections. The final sections of the survey asked for overall feedback and comments on support materials for implementing the learning area.

Feedback form responses

There were 85 responses that provided feedback on the curriculum draft.[2] For comparison, the draft Years 0–8 Mathematics and Statistics learning area content in 2024 received 975 survey responses. Two possible explanations for the lesser amount of feedback in 2025 include:

- the 2024 draft portion of the learning area covered three phases and eight year levels, while the 2025 draft portion covered two phases and five year levels
- the change of format to only open questions, which adds a greater response burden.

Table 1 shows the number of responses by category. More than three-quarters of responses were from schools. Among the organisations and other people who gave feedback were university teacher

1 This was the second time the learning area was revised and shared for sector feedback. A previous version of the learning area was shared with the sector for feedback in September 2022, and a summary report from that cycle of feedback was prepared for the Ministry of Education. See Bolstad et al. (2022).

2 Responses that provided demographic information but no responses to the feedback questions were excluded from analysis.

educators, professional development providers, teacher professional associations (including four regional mathematics associations), and advisory groups.

TABLE 1 **Respondents by category (*n* = 85)**

Number of respondents	Count	Percentage
From a school	65	76
From another education organisation	11	13
Other	9	11

School survey respondents

Of the 65 school responses, 62 could be matched to a school name or school ID, resulting in 50 unique school IDs. There were eight schools from which two responses were received, and two schools from which three responses were received. The demographic characteristics of the schools that responded to the survey are summarised in Appendices A and B.

The roles held by respondents are shown in Table 2. Respondents could select more than one role, therefore percentages may not add to 100%. The most frequently selected roles were fully registered teacher (54%) and head of department/faculty (47%). Percentages in tables may not add to 100% due to rounding.

TABLE 2 **Roles held by school respondents (*n* = 85)**

Number of respondents	Count	Percentage
Fully registered teacher	46	54
Head of department/faculty	40	47
Deputy/assistant/associate principal	6	7
Provisionally registered teacher	6	7
Specialist teacher	3	4

Generalisability of the feedback

As the feedback sample is self-selected, the results cannot be considered generalisable to the wider population. The analysis is descriptive and reflects the views of those who chose to respond to the survey.

Submissions and emails

The Ministry of Education passed on eight additional submissions or emails that were received by the Ministry outside of the survey. The submissions received were from two individual mathematics teachers, one secondary school mathematics department, one individual academic, three subject matter people or groups (PLD provider, PLD advisory group, and statistics associations), and one curriculum advisor.

Analysis of comments and submissions

Comments were coded and analysed thematically using NVivo. Submissions were read and summarised to identify the extent and nature of feedback. Most of the email and submission feedback was brief and replicated themes and ideas that were also evident in the feedback form responses. A few submissions provided detailed feedback on multiple parts of the draft learning area content, including one submission that commented extensively on statistics content across all phases, and one submission that suggested strengthening financial concepts in the teaching considerations at each of the phases. These detailed submissions were identified to the Ministry of Education so that these could be read in full. In this report, we provide an overview of the most common themes that emerged across survey comments and submissions. Quotes have been selected to provide a general sense of the ideas expressed. We have selected examples from a range of different respondents. Where quotes are directly provided in the text, we have identified whether the response was from a school respondent, other education organisation, or other respondent.

2. Purpose statement and Understand–Know–Do overview

There were 61 comments about the purpose statement and Understand–Know–Do overview (44 from a school; 17 from other people or groups).

Positive feedback on the purpose statement

Around a third of comments expressed positive views of the purpose statement, saying it is "clear", "fine", "valued", "consistent with Y0–8", and "aspirational which we like". Some respondents commented favourably on specific phrasing within the purpose statement.

> I like the new Whakataukī. (School response)

> What we like: '... understand the value of mathematical and statistical investigation as a lens for collective local, national, and global challenges'. '... engage with important societal matters ... challenge misinformation and disinformation'. (Other education organisation response)

> I particularly appreciate the comments about opening pathways to various industries. The first paragraph mentions developing deep conceptual understanding and procedural fluency. These are two key weaknesses often identified in school leavers: being able to apply knowledge learned in one context to another, and being able to accurately apply a wide range of calculations and techniques. I agree that these both deserve pride of place in the opening paragraph. (Other education organisation response)

Improvement suggestions for the purpose statement

Less positive comments on the purpose statement included suggestions it was "wordy", "jargony", or "too long". Some respondents were "not sure it will ever be used in practice". Several respondents suggested that more detail about how to link teaching to the purpose statement aspirations would help.

> Greater detail is needed to show how the purpose statement will be brought to life, along with clearer exemplification throughout the rest of the document. More specific cross curricula links could be added in the teaching considerations, so that teachers have support in identifying 'the everyday value of this learning in many areas. (Other response)

Additional suggestions for improving the purpose statement included making "specific references to Aotearoa's unique culture, language and knowledge systems—specifically mātauranga Māori" and "references to key environmental issues facing our students and communities, such as climate change".

> The Purpose Statement would be stronger if it explicitly acknowledged mathematics and statistics' roles in various cultural contexts, primarily how Māori and Pacific knowledge systems enrich mathematical understanding. (School response)

Positive feedback on the Understand–Know–Do overview

Around a fifth of comments were overall positive about the Understand–Know–Do overview, with some respondents commenting specifically about what they liked.

> Overall, we like the structure of Understand, Know, Do and the way that these three weave together. (Regional mathematics association)

> The sections of the UKD are distinctly laid out and use language that is easy to interpret. (School response)

> The UKD framework is a strength of the curriculum, and I'm pleased to see it carries through from Years 0–8 to Years 9–13. (Submission)

Some respondents made positive comments about the three components, Understand, Know, and Do, as in the examples below:

> I think the evolution to have 3 big ideas in Understand works well. (School response)

> Know—good to have geometry rather than space—good that stats is different from probability. (School response)

> The Do's look pretty good. I have been reading Eugenia Cheng's Book: *Is Maths Real?* She talks a bit about the practice of being unwilling just to accept certain 'facts', wanting to know why. That's the only thing I thought might be missing. (School response)

Improvement suggestions for the Understand–Know–Do overview

Critique of the UKD overview included some complaints that it was "wordy", "waffly", and "tries to encompass ideas from outside core mathematical reasoning and application which is unnecessary". A few responses commented about the "order" of UKD.

> UKD isn't always in that order in Maths and sometimes we ask students to Do before they attempt the knowing and understanding. (School response)

> I'm ok with the theoretical framework here, which seems sound. However, I wonder why it is renamed in some other ways; e.g., 'Know, Understand and Do'. Although the draft has mentioned that no certain sequence is applied, the current naming is still a bit confusing, at the best. Logically, knowing is the first step. All other things come from it, plus a bit self-motivation and curiosity. (Other education organisation response)

Some responses made specific suggestions about each of the three UKD components, such as the comments below:

> I still have no idea what Understand means. We could not visualise what this would look like in our classroom. (School response)

> Understand—Visualisation and application seems less clearly defined than the other two aspects. (School response)

> Know—A lot of reference to historical uses/development of this knowledge, rather than more recent applications. (School response)
>
> Do—I would like to see more reference to mathematical working in the 'Explaining and justifying findings' section—this is the key way that we demonstrate things are true mathematically. (School response)

A few responses requested more examples, particularly around the "investigate situations" component of the "Do" overview.

> 'Investigate situations' is very vague. Let's see some examples please. (Regional mathematics association)
>
> Do—We suggest adding to either one or both of 'Investigating Situations' and 'Connecting Situations' to include reference to using the findings of investigations/ maths learning to contribute to real actions in the school, community or regional/national/global level. (Other education organisation response)

3. Learning area structure

There were 53 comments about the learning area structure (pp. 18–19). Of these, 41 were from schools, and 12 were from other people and groups.

Positive feedback

Over a quarter of comments were generally positive about the learning area structure pages, with some describing them as “fine”, “presented very clearly”, “well organised”, and “not too long-winded”. Little was said about the subsection on progress outcomes (p. 18). There was positive feedback about the depiction of strands across the phases (p. 19), with suggestions they are “presented clearly and easy to follow”. A few positive comments were also made about the teaching sequence subsection (p. 19), such as that it “makes sense”.

Improvement suggestions

There were also many critical and improvement-focused suggestions for the learning area structure. Some respondents expressed concern about the “prescriptive” nature of the curriculum, seen as “at odds with the self-managing and self-governing schools and Kura established by Tomorrow’s Schools in 1989”.

> Schools need the freedom to create/design courses that best suit the needs of their students. (Regional mathematics association)

This theme recurred in feedback across the Years 11, 12, and 13 teaching sequences. There were also requests for more clarity about alignment with NCEA.

There was also critical feedback and queries raised in relation to the depiction of strands across phases (p. 19). The most common queries were about why Years 12 and 13 were divided into mathematics and statistics, why the strands did not progress across all levels, and why measurement and geometry were merged at Year 11. Some respondents questioned whether it was appropriate to put Years 11, 12, and 13 all into one phase. These themes recurred and are discussed in more detail in the feedback on teaching sequences for each of these year levels (see Sections 9–11 of this report).

4. Teaching guidance

There were 59 responses about the teaching guidance section overview (45 from a school, 14 from other people or groups).

Overall positive feedback

More than a third of comments on this section were generally positive; for example, suggesting that the teaching guidance was "supportive for new teachers with clear structure and expectations" and "seems to be fairly commonsense and what you would expect a good teacher of maths to do".

> The sections on these pages are done well and include a lot of good guidance for teachers. A lot of schools would be doing a lot of the areas discussed already, but some areas will be a reminder of good practice. (School response)

Some feedback commented on the value of this section for professional learning and discussion.

> This is good for all teachers (beginning and experienced) to plan, track, implement, discuss with colleagues, and reflect on for improvement for next time. (School response)

However, some added notes of caution about teachers' need for time, resources, and support to do this well.

> The teaching guidance is possibly the most valuable part of this document for teachers. Although it needs to involve a 'deep dive' with all Mathematics teachers in order to understand critically the what, how etc—it is very effective and helpful. It will however require 'TIME' in order for schools and departments to unpack it effectively. (Other education organisation response)

> To have time to do everything that is suggested—rich interactions, group work, motivate students, building relationships, explicit teaching, differentiated teaching, retention, consolidation, accelerated approaches—in 3 sessions of Maths a week and 1 hour with a teacher aid a week … I really want to have a curriculum document that acknowledges what is happening in classes and how we can cater for students with such a wide ability/motivation/time and teacher aid/or other supports. (School response)

Overall critical feedback

Critical feedback on this section included questions about whether pages 20–26 were "necessary" and what effect they would have in practice. The guidance was described by some as "very aspirational" and that it "looks like an AI-generated context for a beginning teacher and not for a classroom teacher".

> Experienced teachers are less likely to change their pedagogy if they do not agree with this curriculum. (School response)

Some respondents highlighted cultural embeddedness within the context of Aotearoa New Zealand as a "missing" aspect in the guidance.

> It is important to note that students learn best in culturally sustaining environments that reflect their values and lived experiences. We recommend the inclusion of references to Te Tiriti o Waitangi and use of mātauranga Māori in the curriculum. (School response)
>
> Give us some explanation of what we should be doing to connect more thoroughly with our local roots/ancestry. (School response)

Some respondents voiced concerns about the curriculum update and implementation timelines, and "constant changes to the Year 11 curriculum" already putting strain on teachers and schools.

> Now, with changes looming for the Year 12 and 13 courses, we are once again being placed in an impossible position. (School response)
>
> Do you expect us to do all these from next year? How will the assessment look like in Years 9 and 10? How do we test our students? How do we report this to parents? (School response).
>
> Can you slow the pace? (School response)

These concerns recurred through other parts of the feedback and are discussed in the "Overall feedback and support materials" section of this report (Section 12).

Developing a comprehensive teaching and learning programme

Some respondents were happy to see "the emphasis on explicit teaching" and guidance around how to approach this. There were also a few positive comments about the subsections on positive relationships with mathematics and statistics and rich tasks. There was also some critical and improvement-focused feedback about the elements in this section, such as the comments below:

> Rich tasks—this section could be improved by being more explicit that rich tasks are most effective when students have already developed some confidence with the mathematical and statistical processes appropriate to the task. One of the key failure modes of rich tasks as described is when they are used too early in the learning process, so that students experience a disempowering lack of progress or understanding of the likely solution methods. (School response)
>
> What is concerning is the continued direction of insisting that students have a very good understanding of the English language to be able to unpack and show clear communication. We have no problem with clear communication, but we would prefer that this could be mathematical communication, not literacy communication as this greatly disadvantages students that are ESOL. (School response)

Using assessment to inform teaching

There were a few positive comments about this section, but these were outnumbered by queries and critical comments including that this information was "very general" and that "most secondary teachers will skim these and never refer to them again". Several respondents requested more information about what assessment would look like, and how it would be reported to parents. Other feedback on these pages included the examples below:

> On the assessment page, I thought the 2nd paragraph about formative feedback could have read '… to highlight the big ideas, concepts & procedures, and processes, students are developing'. (School response)

> ‘Teachers use observation, conversations, and low-stakes testing to continuously monitor students’ progress in relation to their year level in the teaching sequence.’ This is difficult to achieve as there is often only one teacher to 27–32 students in the class and with content to be delivered, it is not possible to use such methods to monitor students’ progress. (School response)
>
> It would be good to see some comment about the impact of LLM [large language model, AI] technology on assessment. For example, ChatGPT will happily write an Excellence-level report for AS91580-2 given access to a few exemplars, an appropriate data set, and 5 minutes’ thought on the user’s part. (Other education organisation response)

Planning

A few respondents commented positively on the planning section, noting it aligns with current practice and includes connecting and reflecting in each lesson. However, more comments expressed concerns or critique. Some respondents were concerned about what they thought were overly ambitious content expectations and content overload, especially for students below expected levels. Some queried “accelerative approaches”.

> ‘Plan for all students to experience all the statements in the sequence for their year level’ (page 24). This statement is of great concern. At Years 12 and 13 it simply cannot apply. For Years 9–11 this seems to be undo-able—there is far too much content to reasonably achieve this, despite the recommendation to blend concepts together. Different schools have different timetables and might not have the time during the day to cover this material … The ‘accelerative approaches’ referred to later on, while useful, are unlikely to be sufficient to remedy this gap in my opinion. (School response)
>
> What is the detail behind ‘accelerative approaches’? (Regional mathematics association)

One respondent was concerned that categorising “more challenging rich tasks and problem solving” will lead to inequitable outcomes.

> Don’t like that ‘more challenging rich tasks and problem-solving’ are alluded to as ways to extend students rather than as general good practice to include for all—I fear this will mean they are not offered to all, making it inequitable. (School response)

A few respondents noted that the planning expectations were prescriptive.

> Our discussion did centre on the almost prescriptive nature of ‘Teaching and learning plans are developed for each year, topic or unit, week, and lesson’. Is there an expectation that there will be the same teaching order and lesson plans for all classes or will teachers be encouraged and enabled to be responsive to student need? (Regional mathematics association)

Several respondents called for more centralised planning support to relieve teacher workload and ensure consistent planning.

> The ‘Planning’ section (pages 24–25) implies that every teacher/school is expected to plan from scratch, which is a huge waste of resources. This should be centralised and provided by the government. A Year Overview level of planning should be included in the curriculum document, at least as an example, and teachers need guidance on what percentage of teaching time should be spent on each strand. (School response)

Once again, there were many comments about time, PLD, resourcing, and the time frames for finalising and implementing the curriculum change (see Section 12 “Overall feedback and support materials”).

5. Phase 4 progress outcome

There were 52 comments about the phase 4 progress outcome, including 40 from schools and 12 from other people and groups.

Positive feedback

Feedback on phase 4 progress outcome was largely positive, with respondents generally agreeing that the outcome clearly communicates what students need to be able to know, understand, and do by the end of phase 4.

> Clear communication: Yes. Skills are detailed in the document, what needs to be learnt by the end of Y9 and Y10. Teaching considerations give some examples of activities that could be covered in teaching. (School response)

> Yes, the [progress outcome] does communicate very effectively and in great detail what the students are required to UKD, and thus what and how teachers need to teach. (Other education organisation response)

There were various bits of positive feedback about specific content within these pages. For example:

> Statistics—great to see the introduction of data ethics at this point. (Other education organisation response)

Improvement suggestions

Three main themes were evident in critical and improvement-focused feedback on the phase 4 progress outcome: specific content suggestions; a desire to see more detail and specificity for teaching towards these outcomes; and feedback about wording and layout.

Content suggestions

Respondents provided a range of suggestions, opinions, and feedback about specific content on these pages, particularly the “Know” sections. There were few consistent themes in the feedback, but the selection below illustrates some of the areas that were commented on.

> There are some really big ideas in this section but, aside from the headings being translated, there is no connection to mātauranga Māori or Pasifika. Where are the connections? (School response)

> Page 28 some tweaks to ratios and rates content, new section in algebra but nothing about representing linear and quadratic relationships and using these tools to solve problems. Similarly, specific itemised additions to measurement. Why is locus of a circle in the Progress outcome? (Other education organisation response)

> The types of data [discrete and continuous] and the suitable graphs used to display the different types of data. Look at the advantages and disadvantages of the different types of displays used. Also recognise the central values, the implications of each and impact of outliers on each central value. (School response)

> Number—'Students know that there are an infinite number of rational numbers between any two numbers.' This is a big ask. We have many teachers who would not be confident discussing this idea, let alone students ready to grapple with it. (Other education organisation response)
>
> There is mention of the transformations of translation, reflection and rotation for Year 9, no mention of enlargement (except in the vocabulary), calls enlargement resizing, not mentioned on DO page. (School response)
>
> Statistics and probability look quite different from the rest of the progress outcomes—there is a lot more to them. Is there a reason they are not split up more simply like the other strands progress outcomes are? (School response)

More detail and specificity for teaching towards these outcomes

Some respondents said they wanted more detail, specificity, and clarity about how the ideas within the progress outcome were intended to be carried through into the teaching sequence. The comments below are illustrative of this theme:

> It is frustrating having to look at the UKD section and the teaching sequence section separately. It would be good to have them integrated. As busy teachers we will end up referring only to the teaching sequences and skipping the UKD section. (School response)
>
> For each 'Know' statement, we would appreciate to see specific examples like in many other countries' curriculum documents (and examples of what it does and/or does not include). (School response)
>
> It would be quite hard to plan from this alone, so the Teaching Sequences comes to the rescue there. The Algebra section does not mention anything about Algorithmic Thinking which is in the Teaching Sequence. (School response)
>
> We appreciate the emphasis on flexible thinking and strategy use, reflecting a shift from procedural fluency alone to deeper conceptual understanding. Clearer guidance could better connect this outcome to teaching strategies, particularly for culturally and linguistically diverse students. (School response)

Some respondents expressed a desire to see "clear outcomes at the end of all year levels".

Feedback about wording and layout

Some feedback queried the meaning of particular words.

> Seems to have a lot of uncommon language that some teachers do not understand (e.g., 'principal square root'). Do students really need to know all of this? We need better explanations of all of these words (e.g., what is the difference between 'poor model', 'no model', 'good model')? (School response)

There were also few suggestions about layout, such as reducing paragraphs to bullet points, turning them into a "checklist", or formatting in tables.

6. Phase 4 teaching sequence

There were 66 comments about the phase 4 teaching sequence (pp. 30–46), including 50 from schools, and 16 from other people and groups.

Positive feedback

There was quite a lot of positive feedback about these pages, particularly from page 32 onwards, with some saying this was "the most practical and useful part of the document".

> It is clear, explicit and succinct. The glossary is useful for the teachers and helps to highlight the importance of literacy within the learning area. (School response)
>
> Really support these pages. Very clear and concise. Explicit teaching concept. Easy to read and navigate. The teaching consideration column is good. Having the Y9 & 10 together makes it good to compare and contrast. (School response)
>
> The language of mathematics and statistics—this was a good inclusion in the curriculum so we know what language we are expected to expose to the students. (School response)

Some respondents questioned the usefulness of pages 30–31. Some said the teaching considerations columns on pages 32–45 were "good" and "helpful" though some wanted more detail (see below).

Improvement suggestions

The most common suggestions for improvement were requests for "more detail" and "more examples" to give teachers more clarity of what is expected at Years 9 and 10.

> Including examples of complex tasks or integrated projects relevant to the sequence would showcase the practical application of skills, particularly in culturally responsive environments. (School response)
>
> In the Teaching Considerations sections, there could be links to appropriate resources held in Tāhūrangi. (School response)

Some respondents also suggested a different layout to make it easier to see progressions across all phases and year levels.

> Seeing how Year 9 progresses into Year 10 is helpful—it would be even more so if it could include Year 8 and Year 11 in the same progression format. Years 9 and 10 are critical bridging years between primary curriculum and formal qualification study, so seeing Years 8–11 in a progression (rather than Years 9–10 in isolation) would be beneficial. Year 11 also feels quite isolated in this curriculum document—it is part of phase 5, but not included in any progression (because Years 12 and 13 split into maths and stats) so including it in phase 4 would feel more cohesive. (School response)

Level of difficulty and content coverage concerns

Some feedback expressed concerns about the levels of difficulty at Years 9 and 10, as well as the amount of content to cover at either or both year levels. These concerns were sometimes expressed at a general level, as expressed in the quotes below:

> I have checked with the September 2023 curriculum and also tracked back to the 2024 Years 7 and 8 phase 3 to look for similarities and differences. I think there is a great deal of movement of content into phase 3 that seriously overloads the phase and will mean re-learning in Year 9. In many cases it is better to shift content back to Year 9 and to teach thoroughly with a better range of difficulty of tasks, rather than teaching in phase 3 with simpler cases, and then re-visiting it again in phase 4 with more difficult situations. (School response)

> There is a lot of content for students to cover in phase 4 … even if students were proficient in all phase 3 content, there is just so much to cover in phase 4, that it might not be feasible for everything to be covered adequately in Years 9 and 10. (School response)

> The lack of prior knowledge could affect progression within and across levels. The gaps are compounding and widening and increasing. The rapid change of curricular and standards in the Intermediate Phase could potentially affect the forthcoming levels. (School response)

Some of the feedback about content coverage and level of difficulty was specific to particular strands or concepts, as illustrated below:

> The conceptual ideas of statistics and probability are very advanced for the students at my school. They often have no statistical background at the beginning of Year 9. There is a lot to cover here in what is usually only 4–5 weeks a year. (School response)

> In the 'measuring' section (but also briefly touched on in number without clarifying the year level it applied to)—most Year 9s are not ready to be introduced to significant figures; this should be left to Year 10 … In the 'measuring' section, I wonder why the speed calculations statement is the same at both year levels. Would it be better to only calculate speed at Year 9, then find the other time or distance from speed at Year 10? (School response)

Feedback on each strand

Algebra and algorithmic thinking

This strand received the most feedback, with most comments being about algorithmic thinking. While some respondents were pleased to see this in the curriculum, others expressed concern that it was "taking up precious space in this curriculum" and queried what supports would be available for teaching it. Some questioned whether it fitted best in other learning areas.

> Love the addition of Algorithmic thinking (p. 36) but it needs more explicit ideas about what you actually want us to teach. Are we teaching coding in full even though AI will do it for us now? Or are we just teaching the basic ideas that would show up in earlier years in the digital technology curriculum? (School response)

> We appreciate that financial mathematics and algorithmic thinking are great applications of the skills we teach in mathematics and statistics, and have taught them to our own classes when we have had time. However, we believe that they fall more logically into social studies (under commerce/business/accounting) and technology (under digital technology). (School response)

Aside from algorithmic thinking, feedback on algebra included some suggestions of things that were felt to be "missing" (measuring angles, quadratics at Year 10, skills such as vertical/horizontal lines, substituting and solving to solve problems, and finding intersection points). Some feedback suggested certain content would be too hard for students.

> Equations and relationships—Remove non-linear patterns from Y9. This will be way too hard for them. (School response)

> In the 'equations and relationships' section—I think introducing linear inequalities in Year 9 is too early. It is very easy to introduce at a later stage (probably Year 10). In my experience, Year 9 is too early to introduce y = mx + c. We start students with gradients in Year 9 (which often only our stronger students get) before introducing y = mx + c in Year 10. (School response)

Statistics

There was some positive feedback that this strand "much more detailed and unpacked compared to the other strands". However, other feedback questioned the amount of content in this strand, or suggested the focus was not quite right; for example, "too much reliance on statistical investigation and PPDAC [Problem, Plan, Data, Analysis, and Conclusion]".

> With the introduction of Numeracy, and the poor pass rates nationally, at least half of the Y9 and Y10 curriculum for Statistics should be devoted to understanding and interpretation of data visualisations. This is a huge part of the Numeracy assessment. Literacy/Labelling/Context of a data visualisation. Types of data visualisations (all the different graphs). Infographics and working out how to interpret these. Proportional thinking when observing pie graphs. Understanding height and width of bar graphs. Understanding scale and intervals—minor/major units. Those are just a few things that come to our minds. But PLEASE this major reliance on Statistical Investigation is just too much and gets very tedious for students. (School response)

> Statistics is too heavily weighted as a strand. There are too many deep-thinking concepts when students at this stage do not appear to have grasped the mechanics of statistics; for example, the impact of variability. (Other education organisation response)

> There is a lot of content in the Statistics strand. It may be better to do two types of statistics investigations per year level, rather than listing all four types for Year 9 and Year 10. This would be easier to fit into the teaching year and means students don't get tired of repeating the same thing each year. (School response)

One submission provided extensive feedback on the statistics strand. This was provided to the Ministry of Education to review in full.

Probability

This strand also received mixed feedback, with some pleased to see this as a separate strand, while others commented on the amount of content included, or expressing the view that there was "too much emphasis on investigation cycles".

> It seems that the probability is all based around conducting probability-based experiments—is this the intent? I don't know what the solution is here, but maybe a split something like: —randomness—probability investigations—mathematical probability (toolbox skills). (School response)

Some respondents thought the difficulty level was too high for Years 9–10 or wanted more clarity and specificity about concepts to teach.

> Probability basics need to be added to Y9—concepts of experimental/theoretical and other vocabulary. Basic probability problems, not only investigations. (School response)
>
> I am concerned by the reference to simulations—in fact the entirety of the Year 10 box appears to be what I am currently teaching to Year 12 students in the 2.13 topic. Also in that section: What aspects of independence and dependence and conditional probabilities would be expected at these year levels? Are we looking at formal definitions or an informal approach such as 'do the probabilities on later branches remain the same, or change'? (School response)
>
> Probability models, trees, with and without replacement, independence, joint and conditional probabilities, and law of large numbers should not be just put in the teaching considerations. If teachers are expected to cover these concepts, it should be explicitly in the Year 9 and Year 10 columns—and split up over the Year 9 and Year 10 years. (School response)

Geometry

Several responses commented on the pathways section, which one respondent suggested could be renamed "navigation".

> In pathways, direction is stated as N30W which is a notation not used in NZ schools before—we have usually just stuck with bearings. (School response)
>
> Directional systems that will be future proofed (bearings, GPS, ??). (Regional mathematics association)

Other comments suggested "missing" content.

> Classes and properties of 2D and 3D shapes are missing. (School response)
>
> There is mention of the transformations of translation, reflection and rotation for Year 9, no mention of enlargement (except in the vocabulary), [document] calls enlargement resizing, not mentioned on DO page. Vocabulary should have centre of rotation, mirror line, scale factor and notation for translation. Year 10 should have enlargement mentioned explicitly. (School response)

Some comments about geometry overlapped with feedback about the measurement strand (see below).

Measurement

There were comments about the boundary between the measurement and geometry strands, including some people who expressed "concern about the proposed merger into one strand", Some queried whether Pythagoras fitted better in one or the other strand, or both. The absence of trigonometry was mentioned by several respondents.

> Why is Pythagoras in measurement? It would usually be in geometry alongside Trig. Not saying this move is a bad thing though, I actually think it might be useful where it is. (School response)
>
> There is no trigonometry at Year 10 in either measurement or geometry. While time is limited, including an introduction to trigonometry is needed to support students in being successful in applying these skills at Year 11. (School response)

One school expressed mixed views about the amount of content at Years 9–10.

> We note that Pythagoras, speed/distance/time, area of trapeziums and kites, scale a shape by a factor and finding the corresponding perimeter, area or volume has been at Year 10 in the past, but has been brought into Year 9. While some members of the department felt that this didn't really benefit students' mathematical journey as the curriculum already feels too big … others understood

> the purpose of it as it allows for the spiral curriculum. In saying that, if the basic perimeter and area is done well in primary then we do not have to re-cover it at Years 9 and 10, and there would be room for these additions. However, if we need to go over the material (which, from our experience, is highly likely) then the measurement topic has grown significantly, without anything seemingly taken out of this or other Year 9 strands. (School response)

Number

Some respondents queried how connections with other learning areas would be signalled.

> Include examples of how to connect scientific notation to learning in mathematics, otherwise it seems like an add on that does not connect to other aspects of the Number topic students are learning. Alternatively, scientific notation is left in the domain of the sciences, where very large values and very small values are commonplace, and can be appropriately discussed in context … The Ministry is currently writing the curriculum for social sciences (which includes commerce). [How will those writers ensure] that what they are including aligns with what is in the mathematics curriculum? How will the curriculum writers for maths show where there are across-curriculum links? (School response)

There were a few comments about content felt to be missing, and differing views about the relevance of some content in view of technology.

> Under number structure: Knowing cube numbers up to 1,000 seems really advanced knowledge to expect. I would guess that most teachers in my department don't have this knowledge. Is this really essential information in a world with calculators? (School response)

> Currency conversions—is this necessary for how the world is moving? When there has been other content removed from phase 4 which we expect would be due to the advancements in technology. (School response)

> Clarify whether a calculator is or is not allowed/recommended. (School response)

> Number > Rational Numbers > Year 9 mentions dividing fractions and decimals by whole numbers (bottom of p. 34) but there is never a mention (including in previous phases) of dividing fractions by fractions and decimals by decimals! Is this vital skill now suddenly out of the curriculum altogether? (School response)

7. Phase 5 progress outcome

There were 47 comments about the phase 5 progress outcome (pp. 47–49). Thirty-six were from schools, and 11 were from other people and groups.

Positive feedback

Many respondents affirmed that the phase 5 statement "clearly communicates what students should know, understand, and be able to do by the end of this phase". Some comments appreciated the alignment with intended learning outcomes and felt the overall purpose was well articulated.

> Clearly states what is needed, good look at being prepared and excellent students if all of it is done across schools. (School response)
>
> Looks great—gives clear ideas on what a good teaching and learning programme [is]. (School response)
>
> I appreciate the focus on global context. Interesting read. (School response)

Improvement suggestions

There were a few specific suggestions, including the examples below:

> Page 47 could use a bit more focus on agency (e.g., the first stats paragraph on page 48 mentions 'action and advocacy'). (School response)
>
> None of these concepts are related to agency—the ability to take action, be in control, feel confident, apply learning, feel hopeful etc. We suggest adding words/concepts such as 'applying these solutions to solve real problems in their lives, community and at a national and global level'. We also suggest adding 'environmental contexts' to the last sentence in Connecting situations. (Other education organisation response)
>
> These outcomes seem to ignore the whole field of Discrete Mathematics. The document overall mentions logic and logical thinking 14 times, but there is no mention of understanding how formal logic works. (Other response)

Some responses said the language in these pages was "overly dense", "jargon-heavy", or "repetitive", suggesting language and layout could be simplified and streamlined.

> The statement of overall intent is quite wordy and uses a significant amount of jargon. (School response)
>
> Bullet points of key skills might be more visible and less lost in all the language. (School response)

Another common suggestion was to have more clarity about what learning progression looks like for each year level, "especially in the statistics strand". This theme recurred in the feedback about the Year 11 and Years 12–13 teaching sequences (see Sections 9–11 of this report).

> The document might incorporate examples or indicators that illustrate what successful achievement at phase 5 looks like in practice, assisting teachers, students, and whānau in visualizing the progress outcome more effectively. (School response)

Some people had concerns about "Years 11–13 being in one phase". Questions about whether Year 11 really belongs in phase 5 were also evident in the feedback on the Year 11 teaching sequence (see Section 9).

> I worry that [by] putting Years 11, 12, and 13 together, there is a potential for misunderstanding/under-representing the sheer knowledge gain at each year level here and the differences between each level which is a difficulty we had with the previous curriculum even broken into Levels 6, 7, and 8. Kaiako jumped straight to Year 13 content and assessments for statistics instead of working through the lower level progressions because they did not see the point of them. There is even greater risk/potential for this now (unless that is the intention?) with the three levels being lumped together. (School response)

> The description on page 47 includes comments about Years 1–10 and Years 12–13, so Year 11 feels ignored. (School response)

One comment suggested that phase 5 outcomes do not always feel sufficiently more complex than those in phase 4.

> We note that these Do progress outcomes are not obviously different or more complex when compared with phase 4 (or earlier phases), which is surprising considering the importance of skills/practices for students in their final years of secondary school. (Other education organisation response)

Respondents also noted an absence of "meaningful connection to mātauranga Māori and how this fits across the curriculum". Finally, there was some feedback expressing "significant concern" about the specialisation into mathematics and statistics at Years 12–13, and what implications this may have for school-level course design and learner pathways. This theme is discussed in the feedback on the Years 12–13 teaching sequences (Sections 10–11 of this report).

8. Phase 5 components of a comprehensive teaching and learning programme

There were 39 comments (29 from schools, 10 from other people and groups) giving feedback on the phase 5 teaching sequence "components of a comprehensive teaching and learning programme" (pp. 50–52). The feedback was largely positive, though some questioned "why they were necessary", suggesting they were "a repeat of pages 20–21".

> Opening statements are all fine. (School response)
>
> We appreciate the emphasis on mathematical reasoning, conceptual understanding, communication, and making connections across strands and to real-world contexts. (School response)

Some feedback suggested additional ideas to include or make more visible. For example:

> There are no specific references to students using their maths and stats learning/ investigation results to take real action. (Other education organisation response)
>
> Statistics at Years 12 and 13 usually require report writing. I wonder if this needs to be mentioned in the "Communication in mathematics and statistics" section. (School response)
>
> 'Positive relationships [with mathematics and statistics]'—could be expanded in connection with line-of-sight to future employment opportunities. One key motivator for continuing to study mathematics and statistics in senior high school is that it opens up pathways into a broad selection of industries. (Other education organisation response)

Some feedback noted the absence of references to mātauranga Māori, Pasifika knowledge, as well as the absence of assessment and planning guidance that was present in phase 4.

> Where is Mātauranga Māori and Pasifika knowledge that we should be explicitly connecting to throughout our courses and curriculum? … assessment and planning are completely missing from phase 5 that were present in phase 4. What does this mean for our teaching and assessment going forward?" (School response)
>
> We believe that we as teachers have an obligation to uphold Te Tiriti o Waitangi in all of our teaching sequences, so that ākonga Māori have equal opportunity in our education system, and so that we acknowledge and sustain the ways in which Māori culture contributes to Mathematical and Statistical innovations. (School response)
>
> It may also be useful to highlight how these components link to the NCEA change package and the revised standards, to ensure alignment between curriculum and assessment. (School response)

There was also a call for more teacher guidance and examples of "what it looks like" to teach the content using these approaches.

> Very broad in aspiration and very hard to create and measure. Only quality and experienced teachers will be able to model these processes and see the opportunities for stretching students' knowledge and insights. (School response)

> Most of the document references designing tasks or issuing tasks to students, but doesn't give adequate examples of what these tasks could look like. (School response)

Similarly, there were calls for more clarity about expected progression in students' learning in the strands, across all year levels.

> With the Draft document presented as it is, one cannot see the progression of strands from Years 9 to 13. Document could be organised in strands from start to finish to see clear progressions, clear examples up to a level, and see clearly the expectations required to be achieved. (School response)

Feedback in relation to these two ideas recurred across each of the Year 11 and Years 12–13 teaching sequence feedback (see next sections).

9. Year 11 teaching sequence — mathematics and statistics

There were 51 open comments giving feedback on the Year 11 teaching sequence for mathematics and statistics (35 from schools, 11 from other people or groups).

Three of the most frequent themes in the open comments were:

- Relationship to achievement standards
- Whether Year 11 is pitched at the right level
- More clarity and guidance for teachers.

Some feedback suggested there was too much to cover at Year 11. Regarding the strands, the most feedback was given for the statistics strand, followed by algebra, and measurement and geometry. One submission provided extensive feedback on statistics content at Years 11 and 12–13 and was provided to the Ministry of Education to review in full.

Relationship to achievement standards

A third of respondents queried the relationship between the curriculum and NCEA achievement standards, with some saying it was "difficult to comment" until teachers could see how the curriculum would link with standards, and how these would be moderated. Some commented on curriculum and assessment sending "mixed messages", as illustrated below:

> We have had the Level 1 AS define the teaching and are still unsure of the level of complexity that is required and are still waiting for NZQA moderation of the revised standards to provide clarity of the level required. Can the curriculum please define the level of the teaching and learning and then the assessment only assesses what has already been carefully exemplified in the curriculum document. (Other response)
>
> The release of the assessment activities prior to the curriculum appears to reinforce that teachers need to teach to the assessment rather than the curriculum which seems at odds with messages we get from the Ministry of Education. (School response)
>
> With the new Level 1 assessment for 1.1 it is impossible to teach all four 'topics'—Comparison, Relationship, Time Series, and Probability—and then give any sort of dataset that could remotely encompass all of these possibilities. I can already see schools leaning towards one or two of these and skipping the others to save time and sanity. (School response)

Whether Year 11 is pitched at the right level

More than a quarter of responses expressed some uncertainty about the level of difficulty of Year 11. Some commented on a shift of content into Years 9–10.

> Year 11 number all done in Year 9 and Year 10. (School response)
>
> In general, I found that the gap between Years 10 and 11 was smaller than I was expecting (and smaller than it is currently), with significantly more content moved to Years 9 and 10 than currently, but not a huge amount of difference at Year 11. (School response)

Others noted parts of Year 11 that they thought might be too difficult for this level.

> The levels of Critical evaluation and coherent structuring described for Stats at Year 11 is something we don't see with some Year 13 students and is likely too aspirational. (School response)

Several responses speculated about whether Year 11 belonged in phase 4, phase 5, or should sit on its own between these phases.

> It seems Year 11 is linked to Years 9 and 10, therefore should Year 11 be phase 4 rather than 5? (School response)
>
> Given the Numeracy and Literacy Co-requisites, Year 11 is now a 'grey area' of being caught between phases. Perhaps it should be on its own and not attached to phase 4 or phase 5—it seems like it is phase 4.5. (School response)

Some suggested layout considerations to help clarify progressions.

> The layout here of Year 11 being isolated misses an opportunity to show progressions between year levels. (School response)
>
> I like how Years 12 and 13 are next to each other. I think you need specific examples for the level you expect students to reach for Years 11, 12 and 13. We need clear examples to differentiate [Year 11], like with level 1, to help understand what the level is we are aiming for. (School response)

More clarity and guidance for teachers

In addition to the feedback, some respondents commented on statements in the teaching sequence which they felt lacked sufficient clarity and guidance "to avoid unnecessary repetition and to ensure meaningful progression".

> Statements such as 'simplify, expand, and factorise algebraic expressions' and 'substitute into, rearrange, and simplify algebra expressions or formulae' are too vague. More clarity is required as to what level of understanding we are required to cover. (School response)
>
> What is the level of rates and ratios required for this level of the curriculum when we have introduced them at Year 9? What does 'using proportional and inverse proportional reasoning where appropriate' actually mean? (School response)

Some commented on teacher professional development needs.

> Quite a few of the higher-level concepts brought down from Years 12 and 13 will need professional development for teachers who currently only teach up to Year 11. We have a lot of these teachers around the country who have maybe started out as primary teachers or who are just not confident to teach to that level. (School response)

Amount to cover

Around six responses felt there was "too much to cover" at Year 11.

> With the amount of content in the curriculum teachers are going to feel the pressure to cover content over problem-solving and using rich tasks, to the detriment of student engagement. Significant investment in Teacher Professional Development and/or removing content from the curriculum is required to improve this situation. (School response)

Feedback on each strand

Statistics

The statistics strand had the most comments, with many responses asking for greater clarity about learning progressions for statistics from phase to phase and year to year.

> We think that there needs to be much more of a difference between year levels, so that we are not simply teaching the same thing year after year. New concepts keep students interested in a topic, and we want them to retain their interest in statistics. (School response)

The assessment connection was again noted.

> From a content perspective, the statistics and probability strands appear to be at the appropriate level, however, when we look at the actual achievement standards and how they are assessed, then problems come in. The assessment of statistics standards at level 1 is a mess! (School response)

Some responses indicated a need for support and resourcing for teachers around statistics teaching.

> 'Create multiple data visualizations for the investigation, providing global and local view.' Will datasets be provided that include global and local views? Will there be resources available for teacher training and as well as in class around the multiple data visualizations? … A statistics helpdesk where you can ask questions, get training and access up to date datasets would be perfect. (School response)

> The PPDAC model doesn't seem to include any guidance about what teachers/learners could do with their data/conclusions at the end, like apply these to help solve real issues (by teaming up with other learning areas). We understand this is a specific model used in stats, but it would be great to mention somewhere to teachers that they could link with social inquiry/action or science projects to help make the findings and process more relevant for students. (Subject association)

Various other phrases in the teaching sequence were commented on by some respondents.

> The use of 'outlier' in the analysis section of statistics could be amended to 'unusual'. (Regional mathematics association)

> Year 11 statistics: Plan—'using interrogative questions …' Is there another kind of question? I'm unclear what the word 'interrogative' is adding to this clause. I'm keen on ethical practices being explicitly taught as part of the PPDAC development. (Other education organisation response)

Algebra

Algebra received a range of comments. Several commented that statements "simplify, expand, and factorise algebraic expressions" and "substitute into, rearrange, and simplify algebra expressions or formulae" were "too vague".

> This statement is exceptionally broad and could cover everything from binomial expansions to logarithms. (School response)
>
> More clarity is required as to what level of understanding we are required to cover. (School response)

Additional feedback about algebra includes the points made below:

> It's sad that Algorithmic Thinking has dropped away at this level (and at Years 12 and 13). I think it should still be there. Developing an understanding of how problem-solving processes can be automated is important. (School response)
>
> Much more focus needs to be made of Transformations of Quadratics in intercept form: y = a(x + b) squared + c where a = scale factor, b = horizontal shift (opposite) and c = vertical shift. This can be done nicely with interactive graphical software such as Desmos. It is important since the coefficients of the equations determine the behaviour of the parabola. This is foundational work for understanding other types of graphs at NCEA L2, and how the geometric representations link with the equations. (School response)

Measurement and geometry

A few respondents queried the merging of measurement and geometry at Year 11.

> Suddenly we have measurement and geometry together for Year 11 … why? To save space? (School response)

A few respondents suggested content might fit better in another strand or year level.

> Transformation of line and parabola fits better in algebra than geometry. (School response)
>
> Cognitive overload of introducing trigonometry and then going to a high level (3D shapes) in one year [is] too much for most students. Better to learn quadratics and trig in Year 10 and then refresh it the following year. (School response)

Other responses commented on content that was new, or missing. For example:

> Volume of cylinders are now back into relevant Year 11 teaching (and assessment??). Why do we have to call the cartesian plane an XY plane? (School response)
>
> Where has circle geometry gone? This was a great way to introduce the concepts of 'proof' as well as core knowledge that is needed in other aspects of mathematics. We would like to see this back in the curriculum. (Regional mathematics association)

Number

There were a few comments about the number strand. While some stated they were happy with the strand, others suggested much of the content in this strand was more suited to Years 9–10, or that the progressions at Year 11 were not appropriate.

> In Year 9, students are expected to increase or decrease a number by a fraction or percentage. In Year 10, they are expected to calculate the percentage increase or decrease between two numbers and then in Year 11 perform operations with percentages, including increasing and decreasing a quantity using a single multiplier. These skills do not flow nicely, and we think that the Year 11 skill is a bit contrived, as many of us do not mind how a student calculates a percentage increase/decrease, simply that they are able to. (Regional mathematics association)
>
> Irrational numbers in Year 11, maybe near the end of the year or as extension?? (School response)

Probability

A handful of comments on the probability strand included two suggestions that probability was "overrepresented" in the document, one suggestion that the complexity of probability might need to increase a bit, and some additional suggestions as illustrated below:

> Probability—undertaking a large number of trials using digital tools is a good idea, but is quite a shift from what's often been done at Year 11 in the past. Will need to ensure teachers get sufficient support using these tools themselves and teaching students how to use them effectively and critically. (Other education organisation response)

> 'Proposing possible theoretical outcomes and associated probabilities for situations where no theoretical model exists'—the wording of this sentence is confusing. Perhaps change to 'estimating probability using experimental probabilities'. We ask for the clear and helpful bullet points to be supplemented by an example. For example, on page 52, 'apply rates and ratios, using proportional and inverse proportional reasoning when appropriate' would be made much clearer if a clear example is attached. (School response)

10. Years 12–13 teaching sequence—mathematics

There were 53 open comments giving feedback on the Years 12–13 teaching sequence for mathematics (41 from schools, 12 from other people or groups). Feedback included some generally positive feedback, such as the examples below:

> Overall looks pretty good. (School response)
>
> Overall happy with the sequence, might be hard to get through the content, but possible. (School response)

Much of the feedback centred around three high-level themes for improvement and clarity:

- Course design and learner pathway concerns
- Relationship to achievement standards
- Missing content.

Additional themes included concerns about the amount of content to cover, teachers needing more clarity, resources, support materials, and time for implementation. Some responses also gave specific feedback on content and wording across pages 61-67 of the teaching sequence.

Course design and learner pathway concerns

Much of the Years 12–13 mathematics feedback focused on queries or concerns about school-level course design, learners' pathways, and opportunities for learners to experience success with learning in mathematics. This feedback was often linked to two other themes (discussed below): relationship between the curriculum and achievement standards; and the removal of content and standards that were felt to be working well for students.

Many respondents had questions about the division of mathematics and statistics. They queried what this meant for school-level course design, and how changes to current course design approaches might impact on students' engagement with and success in mathematics, and learning pathways beyond school.

> Do we have to teach all of the maths AND all of the stats curriculum at Years 12 and 13 or are we just teaching one or the other? Where is the space for general mathematics courses and applied mathematics courses where students can really understand and apply the mathematics to their own lives? Years 12 and 13 now feel really academic and content-heavy. (School response)
>
> This seems very 'algebra heavy' and hard for students who are not destined for calculus in Year 13. Year 12 is too early to make this separation into mathematics and statistics. This may prevent many students from doing any mathematics at Year 12 and push them towards statistics (not that there is anything wrong in that) earlier than in our current practice. Our experience is that students often 'mature' into their mathematical/algebraic thinking as Year 12 progresses—they do not arrive 'fully formed' in Year 12 and we feel many may not start or drop out. (Regional mathematics association)

As described further below, these concerns were frequently linked to comments about removal of existing achievement standards and content that was felt to serve some students.

> We don't agree that mathematics and statistics should be reserved only for students intending to go to university, and believe that we should retain some of the more practical content at Years 12 and 13. We know that mathematics and statistics open a large variety of pathways for our ākonga, and continuing to study mathematics and statistics until Year 13 increases their future opportunities. We would like to see a vocational mathematics and statistics pathway retained in the new curriculum, supported by standards, until Year 13. (School response)

Relationship of the curriculum to assessment standards

More than a third of respondents who gave feedback on Years 12–13 mathematics raised questions or concerns in relation to assessment and alignment of the curriculum with achievement standards. Most respondents said that they needed to see how the curriculum would be assessed, and the implications of this for what topics might be taught or prioritised, and how courses might be designed.

> We need to see how these are planned to be assessed as in, how will the topics be combined? (School response)
>
> It is really hard to see how these teaching sequences lend themselves to assessment, current or otherwise. I would really like to see possible assessments/standards before I need to teach this. (School response)
>
> Unclear—will schools need to cover the entire teaching sequence and be testing on everything or will the assessments remain similar where schools choose which concepts are taught? (School response)
>
> There is confusion about NZQA requirements for UE in future. (School response)

Some commented on a "disconnect" between current achievement standards and the new curriculum content.

> How will the disconnect be managed between what is in the curriculum and what is assessed. For example: first principles and a few other numerical methods (calculus) have been in the curriculum but haven't been in any exams recently. (School response)
>
> The Year 12 mathematics curriculum has previously been built from a selection of the Level 2 NCEA standards. We are concerned that the breadth of concepts covered in the new Year 12 curriculum will not be feasible due to time constraints, if there are only four available standards in Level 2 NCEA. We have the same concerns in relation to Year 13 mathematics and Level 3 NCEA. (School response)

Some expressed concern about the potential loss of content and current standards they felt were working well for their students.

> We are concerned that at least three of our current achievement standards (91260, 91576, 91587, and possibly 91573) will not be able to be used if this version of the curriculum is mandated for 2026. This will limit opportunities for course planning and student achievement. (School response)
>
> Without these standards, I worry that many students will turn away from maths completely as they will struggle to relate to real-life applications at Years 12 and 13. (School response)

Missing content

More than a third of respondents made comments about content felt to be missing from the curriculum. The most frequently mentioned "missing" content included networks and critical path analysis (CPA), conics, and Year 13 simultaneous equations. The removal of networks and critical path analysis was of high concern for some respondents, linked with concerns about learner pathways and opportunities to experience success with mathematics learning.

> What is the reasoning behind moving networks and CPA from the curriculum? Are teachers correct in thinking that they are now in the digital curriculum? Why have 3x3 simultaneous equations been removed from Level 3? If this content is no longer included will the current standard that assesses it become obsolete or invalid from future assessments (i.e., are we going to be allowed to assess this standard in 2026?). Why has the triangular distribution been removed, especially given that it was only introduced as part of the standard updates a few years ago? What informed this decision? (Regional mathematics association)

Other content that some respondents noted was missing included anti-differentiation, integration, and related rates of change.

> Why has integration (anti-differentiation) disappeared from Year 12—[this] gives a student a better understanding of differentiation. Also kinematics will be trivial without the ability to integrate. The practical situation of kinematic limits the context and level of question. (School response)

One organisation response noted "the lack of specific references, examples or contexts related to sustainability, nature, climate change etc within the maths Years 12–13". The organisation suggested a few places where these contexts could be added (these are included in the feedback by page numbers below), adding "there will be many more examples that could be included, if you consult with senior maths teachers who are using local curriculum/ environmental contexts in their programmes". Another organisation's response felt that "the complexity of trig modelling has been reduced to a level that makes real world practice situations less realistic".

Detailed feedback by page numbers

Some comments were made about content on specific pages, summarised in the table below:

Page numbers	Examples of feedback comments
Pages 61–62 Feedback on these pages (7 responses) was mostly about logarithms and linearising.	• Year 12, linearising data—this is quite an ask. Currently, students struggle to get hold of what a logarithm is at all, let alone using them in the context of logarithmic measurements. I recommend leaving this for Year 13. • Why do we need to have linearising—what real-life application involves this anymore? A dead skill—software does this. • Pg. 62. Year 12, 'simultaneous equations, one of which may be linear'. Surely this is a typo, and ought to read 'one of which may be non-linear'?! Even presuming that is the case, it would be helpful to specify what kind of non-linearity we're considering. Are we expecting students to solve anything more involved than a mixed quadratic in two variables? More detail is required here.
Pages 63–64 Feedback on these pages (10 responses) was mostly about binomial expansions and circle. There were suggestions that Year 12 was too early for some content.	• Binomial expansion. Quite reasonable to include this, but it feels a lot to include it in Year 12. L2 algebra is already very full. • At Year 13, investigate fractals. There is nice maths in this, but this is an idea you could easily drop if the curriculum ends up feeling too full. • Sequences: 'Work with recursive sequences' could do with far more detail. Does this just mean 'read a definition of the Fibonacci sequence', or will students be expected to generate a closed form from a recursive definition, or find a partial sum, or similar? 'Sigma notation'—very nice to have students see this at high school, but Year 13 would be quite early enough. • We like all the content covered in Years 12 and 13 calculus. Although we wonder if you are bringing in too much content from Year 13 calculus to Year 12 (like binomial expansions and unit circle).
Pages 65–66 Feedback on these pages (6 responses) mostly concerned trigonometry and graphing.	• Good that trig graphing is still in the teaching sequence … Please provide good resources for graphical applications. • There are a few places where examples could be expanded upon or changed slightly to help role model learning that is working towards a sustainable future for our students: Page 65 Investigate situations such as: traffic flow in towns or cities. Change to active transport/bike or pedestrian flow. • Like the approach to calculus with graphs in Year 12 and the adding in of first principles at Year 13. • I feel including exponential form in an already packed curriculum at Level 3 is too much. Making b = 1 and c = 0 in trigonometric models makes it even harder to come up with real-life contexts to model and is removing a skill that students generally understand.
Pages 67–68 Feedback on these pages (7 responses) concerned numerical methods and modelling and contexts for teaching this.	• Introducing numerical methods to calculate integrals is interesting. More detail is needed though. Does this include using Desmos/GeoGebra to calculate definite integrals? Or is it the trapezium rule? Or is it much more informal? Currently very unclear. • Numerical methods not useful for future learning. • Already a lot of content in Years 12 and 13 mathematics. Why need to add in numerical methods and linearising. • Riemann sums??? • Modelling—Emergency relief (add: caused by climate change). Add: modelling environmental data (water, air, predator control, carbon emissions).

11. Years 12–13 teaching sequence—statistics

There were 50 open comments giving feedback on the Years 12–13 teaching sequence for statistics (39 from schools, 11 from other people or groups). Some feedback was generally positive, such as the examples below:

> The teaching sequence encourages students to engage with uncertainty, variation, and the ethics of data use, which aligns well with current curriculum and societal priorities. The Years 12–13 statistics teaching sequence is well-aligned with the goals of phase 5 and provides a strong foundation for students to develop statistical thinking. (School response)
>
> We like the opportunity to explore different sources of data (e.g., data from text, images, sounds and movements). We like the inclusion of sensors in collecting data to move in time with modern technology. We really like the inclusion of ethical and responsible data processes … We like the acknowledging of potential biases when communicating findings. We like the inclusion of different types of data displays. We like the changing parameters of probability distributions. (School response)

However, much of the feedback raised questions or concerns, and made suggestions for improvement. The main themes in the feedback were:

- More clarity around learning progressions
- Examples, guidance, and resources for teachers
- Relationship to achievement standards
- Distributions
- Other content that is missing and/or not understood.

More clarity around learning progressions

Some feedback suggested it was unclear how aspects of statistics learning were intended to progress or deepen over year levels or phases, as outlined in the examples below:

> The draft curriculum document outlines the phase 5 (Years 11–13) statistics progression, but the year-by-year teaching sequences for Level 2 (Year 12) statistics are not explicitly detailed in the same way as they are for earlier phases. (School response)
>
> In statistics it is unclear the progression across some aspects of the phase. For example, it is unclear how ethical considerations are developing across phases 4 and 5. More exemplification and looking carefully at this across the 5 years is needed. (Other response)
>
> The current draft lacks specific guidance on how students' knowledge in statistics and probability should develop from phase to phase. This is the only strand where similar concepts appear repeatedly across phases, but without clear detail on how understanding is expected to deepen. (School response)

Some comments were more general about finding the content difficult to follow.

> I find the teaching sequence vague and generally unhelpful. (School response)
>
> Topics aren't highlighted, loose descriptions given instead, will have to search through the document to find the information on a topic. Topic headings would be useful. (School response)

Examples, guidance, and resources for teachers

Linked with the theme of seeking more clarity, many comments asked for more examples, guidance, and resources.

> Again, it's really hard to read through this and understand what it means for my teaching and learning. A lot of these bullet points are quite vague and do not tell me what I should be teaching. Examples would be helpful, as well as ideas of how these ideas fit together and build from previous ideas. (School response)
>
> There is now a clear step up in content between Year 12 and Year 13. However, again, there are very few examples of what this actually should look like in the classroom/teaching. The content ideas need to be much clearer. Examples please! (School response)
>
> Would like links and/or examples of the teaching considerations (to help gauge the level of difficulty). (School response)

There were also requests for examples based in culturally responsive contexts.

> With additional practical examples, digital tool integration, and culturally responsive contexts, it can better support a diverse range of learners and future pathways. (School response)

Some feedback identified a need for resources, guidance about resource selection (for example, software), and teacher professional development to support teachers with areas that may be new or unfamiliar to them.

> Will there be teacher training and support for his shift in focus? Will data situations be provided? How do teachers become up to speed with data technologies? Same scenario with the data collection instruments. Will there be a statistics helpdesk that can answer any questions, provide training for teachers as well as provide regular up to date datasets that can be used in the classroom? (School response)
>
> There is a lot of 'new' language included in this curriculum compared to our existing document (e.g., recurrence intervals, confusion matrices). Will there be sufficient PLD and resourcing for these methods/tools? (School response)
>
> Teacher support will need to be provided for the manipulating and restructuring of data so as not to compromise their data sets. (School response)

Relationship to achievement standards

As with Years 12–13 mathematics, the relationship to NCEA and achievement standards was a significant theme. Many asked variations of "How will this relate to NCEA?" Some comments suggested teachers struggling with interpreting the curriculum would look to the standards for guidance about what to teach.

> I will be relying on the achievement standards to guide teaching which is not best practice. (School response)
>
> Phase 5 does not break down Years 11, 12, and 13 separately. We as teachers will need to fill in the gaps by looking at NCEA achievement standards [when they become available] to determine the

> appropriate step between foundational Year 11 skills and more advanced Year 13 expectations. (School response)

In general, teachers wanted more information about what the standards would be, and how assessment would occur.

> Teachers are seeking information on how the current standards at Levels 2 and 3 will be invalidated, replaced or merged under the new curriculum structure. (Regional mathematics association)

> I don't have a lot of experience with these standards, but it would be helpful to know how some of these concepts fit with assessment and how AI is a consideration in learning/assessment. (School response)

Distributions

There were at least eight comments about binomial and other distributions, expressing views about which types of distributions that should be taught at Years 12 and 13.

> Introducing uniform, normal and binomial distribution in Year 12, and only Poisson in Year 13 does not seem like the right balance. (School response)

> Why for example is binomial in at Year 12 but not Poisson? These are linked in many ways. (School response)

Several respondents felt that distributions needed to be simplified at Year 12.

> I feel including binomial and uniform distributions in an already packed curriculum at Level 2 is too much. (School response)

> Better to just focus on one distribution in Year 12—but it could be either normal distribution or binomial distribution. Prefer normal distribution at Year 12. (School response)

Other content that is missing and/or not understood

Several respondents queried the "removal of triangular distribution at Year 13".

> Removed triangular distribution at Year 13—why is this the case? (School response)

A few other areas were noted as being missing by some respondents.

> Time series and bivariate data are barely touched on … pg. 72: Only seems to have bootstrapped confidence intervals, without any traditional confidence intervals. I am unsure why this is being removed … I am guessing combinations and permutations have been removed from the curriculum fully now. (School response)

> There does not appear to [be a] create an investigative question in this section. I imagine that there is an assumption that students have this knowledge, but questions currently changed in Year 12 and Year 13 statistics. (Other education organisation response)

Some feedback queried the meaning of terms that were in the teaching sequence. For example, several respondents said they did not know what the terms "recurrence interval" and "confusion matrix" meant. Additional queries about terms and their meaning include these examples:

> Year 12 probability—what is 'joint, marginal and informal conditional probability'? (School response)

> The use of eikosograms & pachinkograms being specifically referenced for the first time is interesting—would like to know the rationale for this. Is it driven by society, data science? (School response)

Detailed feedback by page numbers

Some comments were made about content on specific pages, summarised in the table below:

Page numbers	Examples of feedback comments
Pages 69–70 Feedback on these pages (6 responses) expressed uncertainty about data construction and use.	• Pg. 69 'construct data from sources such as text, images, sounds and movements' sounds pretty loose. Does this push us all into Codap only? Who is pushing for secondary students to do this?? • Pg. 69 is very vague. I doubt teachers will have a common understanding from this. Far more detail needs to be given … Give some examples for what is expected here. • Identify opportunities for using and exploring data to understand and learn about situations—this needs far more clarity as after reading this five times I still don't understand the intention. • Pg. 70: First sentence in the teaching considerations box doesn't align with the Year 12/13 split.
Pages 71–72 Feedback on these pages (5 responses) included uncertainty about recurrence intervals, and teaching concerns.	• What is a recurrence interval? Is this time-series/trig? Also looking at influence of base rates, will this require algebraic methods or just be conceptual understanding? • Pg. 71: Year 13 'Merge data sources'—this sounds really nice, but having struggled to access datasets as a L3 statistics teacher, I would not have felt equipped to lead students in doing this. This will require major support to equip teachers. • Pg. 71: Big emphasis on creating new variables, which I currently only teach to Excellence students in Year 13, and not to Year 12 at all. Pg. 72: Only seems to have bootstrapped confidence intervals, without any traditional confidence intervals. I am unsure why this is being removed. As far as I can tell, university-level statistics papers still use this content.
Pages 73–74 Feedback (4 responses) indicated uncertainty about classification models, and teaching concerns.	• I have no idea what classification models or conditioning on variables to make prediction are (p. 73). • Pg. 73: Communicate findings based on statistical evidence (Years 12 and 13) Teaching considerations: Demonstrate how the impact of findings can be used for: practical actions relevant to the context of the situation. We are pleased to see the above statement included in the teaching considerations for statistics, but suggest that more detail and some examples should be added here, to help guide teachers. For example, you could suggest connecting with biology, education for sustainability, health/PE and other subjects that have achievement standards related to practical actions, both individual and group/community based. • Pg. 74: I am unsure what partitioning is in the context of probability problems (also not on the key terms list). Pg. 74: I don't know why we are introducing eikosograms and pachinkograms. I did not use them in any probability papers (up to 300 level) I took at university. I am not convinced these are important additions to the curriculum.
Pages 75–76 Feedback (4 responses) mainly commented on terms needed in the glossary.	• In the 'language' section. If binomial is to be introduced in Year 12, why no mention of this term? Should recurrence interval, eikosograms and pachinkograms and other new methods, concepts be included? • Lots of key terms from previous pages not introduced here (e.g., binomial distribution, recurrence interval, partitioning, classification model etc.).

12. Overall feedback and support materials

There were 69 “overall feedback” comments. Of these comments, 52 were from schools, and 17 were from other people and groups.

There were three high-level themes in the overall feedback comments, with many comments addressing more than one of these themes:

- Positive feedback: What people like about the curriculum (31 responses)
- Improvement/critique/query: Aspects people would like to change or improve about the curriculum, or queries indicating uncertainty about how to interpret the curriculum (49 responses)
- Implementation: Concerns about the implementation of the curriculum, including time frame and support needs (30 responses).

Positive feedback

The dominant themes within the overall positive feedback were that:

- it is clear and specific about what to teach (approximately half the positive comments)
- it is seen as knowledge-rich (approximately 20% of positive comments)
- it is seen as internationally comparable (approximately 20% of positive comments)
- it raises expectations (just over 10% of positive comments).

The comments below are illustrative:

> Overall, we appreciate that this curriculum attempts to clarify the specific content that should be taught in mathematics and statistics from Years 9 to 13. This is definitely needed, and will help new, establishing, and overseas-trained mathematics and statistics teachers access the curriculum. (Regional mathematics association)
>
> The best part of this document is the explicit list of skills that show teachers what their students should be learning. This can then be developed into cohesive teaching and learning programmes within schools. (School response)

However, positive feedback was frequently tempered with questions or concerns about implementation and support, as outlined below.

Improvement, critique, or queries

There were several different ideas within the improvement-focused, critical, or querying comments. Some of these themes repeated concerns expressed in earlier sections of the feedback, while some additional ideas were expressed more explicitly here than in other parts of the feedback.

Inclusion and cultural responsiveness concerns

A major theme in the critical feedback was a concern that the curriculum is not inclusive of all learners. Subthemes in this feedback included perceptions that the curriculum was not culturally responsive, and was inadequate for supporting learners who struggled more with mathematics learning or were aspired to learning pathways other than university.

> There is no mention of mātauranga Māori/Pasifika, no mention of differentiation or individualised learning, no mention of how we are catering to all the different levels of learners in our classrooms. (School response)

> Is it inclusive of all students? No. Students who are below the expected level cannot access parts/most/some/any of the learning sequence for their school year … we don't believe that we could teach all of the teaching sequence for each year level within the year for any of Years 9–13. (Regional mathematics association)

> The curriculum in phase 5 is not inclusive of all students and does not reflect the range of pathways students pursue. The Year 11 curriculum although general does not provide an accessible curriculum for the many students currently struggling to achieve the CAA [common assessment activity] … We need to provide ongoing learning for students who are not wishing to pursue academic mathematics and ensure that they continue to enrol in a suitable course at Years 11 and 12. (Other response)

> The refreshed curriculum shows only one mathematical pathway for students—an academic one … By only having an academic mathematics pathway, we limit the richness of the subject, and students simply opt out of learning which can have detrimental consequence. (Submission)

Phase concerns

Feedback about phase 4 included some concerns about "repetition" and "overlap" between phases (e.g., between phase 3 and phase 4), or a lack of clarity about what was to be covered in each of Years 9 and 10. Some feedback also expressed concern about learners entering phase 4 with different levels of readiness.

> We are acutely concerned about the gap between what we are expected to teach students from Year 9, and the knowledge that students are entering Year 9 with. We do not believe that a new curriculum for Years 0–8 will solve this on its own and would like to know what other funding, support, and PLD the Ministry has put in place. (School response)

Feedback about phase 5 included a repetition of concerns and questions about the specialisation of Years 12 and 13 into mathematics and statistics. Respondents want to know how this will affect how schools are able to put together their courses and create pathways for students.

> We think the current Years 12 and 13 NCEA structure and curriculum is fine as it is, it doesn't need to be changed. The Level 1 changes have not been successful, and we wouldn't want to see Years 12 and 13 go the same way. Under this new proposed structure, will it be possible to do hybrid courses (e.g. a mix of stats and calculus standards)? If not, why not? (School response)

Missing content

Some comments reiterated concerns about "missing" content already discussed in previous sections, notably networks and critical paths analysis (CPA) in Years 12–13 mathematics, suggestions for more environmental and climate change contexts for teaching mathematics and statistics concepts, and an absence of focus on the role of technology or the philosophy of mathematics.

> No mention of AI and how this could help or hinder, not even technology to be fair. (School response)
>
> I suggest you have a go at answering the question, What is mathematics? That is a difficult question to answer, but covering that first will make it easier for the students to understand subsequent mathematics. (Other response)

Presentation and layout

As in earlier sections, respondents suggested different layouts and summaries to help teachers to understand what progression could look like across year levels and phases, reduce repetition, use of bullet points, and other ideas about how to make the document "easy to use".

Implementation concerns

Many respondents expressed concerns about the expectation for the curriculum to be implemented in 2026. These concerns were expressed alongside:

- uncertainty about what is happening with NCEA achievement standards and assessment at Years 9–10
- concerns about teachers' workload in the next 1–2 years, and potential for further changes
- concerns that non-specialist teachers and novice teachers will not be able to work with this curriculum without more clarity, guidance, and support/PLD
- frustration about the time frames and process for curriculum update, including communication and feedback opportunities.

The comments below are illustrative of the concerns expressed:

> We believe that Term 4 is far too late to release this curriculum and expect it to be implemented in 2026. Within the school calendar our courses and material to inform our school community and for our students to complete subject selection needs to be completed at the end of Term 2. A finalised mathematics Year 9–Year 13 curriculum would need to be available at the start of Term 2 if there is any chance of successful implementation in the next year. This is particularly concerning for Years 11–13, where the implementation of this curriculum also means the changing or retiring of our achievement standards. (School response)
>
> We also need a lot of time, professional development and more TIME to understand the changes and what they mean for our teaching, planning, courses for next year, and assessments. Where and how will we get all of these resources to teach the new content by Term 1 when this only comes out in December after we have already planned and finalised 2026 (in Terms 3–4 of 2025) and are on holiday? (School response)
>
> Will resources or clear guidance be provided to support teachers in delivering this content effectively? Will the current pathways for supporting students to achieve numeracy (and literacy) remain available beyond the currently stated end date? Teachers are also questioning why students are not able to gain NCEA Level 1 with a numeracy and or literacy endorsement. Additionally, with a significant number of non-specialist teachers delivering mathematics at Years 9 and 10, the draft lacks the necessary clarifications and specific guidance in phase 4 to properly support both teachers and students. (School response)

Some respondents called for implementation to be phased.

> Hold back the implementation of the phase 5, as there is not much information given for it, and the students are not ready for it yet. (School response)

Support materials

There were 52 comments about support materials for teaching mathematics and statistics. These included 45 responses from schools and seven from other people and groups. Most respondents indicated that schools require significantly more time, clarity, and resources to effectively implement the mathematics and statistics curriculum. As in previous sections, some respondents proposed delaying the formal implementation of the curriculum or doing so in phases.

> We cannot stress enough that both additional time and comprehensive resource support—including hard materials—are essential for schools to implement these changes effectively. (Regional mathematics association)

> We strongly suggest that the Ministry delay the implementation of this curriculum for Years 11–13, and with it any change of the NCEA standards, until 2027/28 when a full review is undertaken. We would like information about the curriculum to still be made available in Term 4 of this year, so that schools can begin to plan ahead and change relevant junior courses appropriately. This will help the implementation of the new curriculum in the long run, while giving schools and students certainty in the short run. (Regional mathematics association)

> We need at least 5 full days for planning and collaboration both in our own schools and to meet across schools to reflect and refine our approaches to these changes. (School response)

Some respondents suggested types of resources and PLD that they saw as essential to ensuring the successful implementation of the curriculum.

> Guidance around planning, such as example year planners, teaching time proportions per strand, and logical content sequencing. It is a huge waste of resources for every teacher in every school to be creating this from scratch—this should be centralised and provided by the Government. (School response)

> Need for funding resources to accelerate our learners in mathematics. (School response)

> It's important for teachers to have time and guidance with the Understand and Do parts of the curriculum. (School response)

> Mātauranga Māori—we need specific content knowledge and activities to incorporate into our lessons. (School response)

> PLD around how the curriculum is to be interpreted in teaching and learning and then translated into assessments. (School response)

Other messages included the need for equity in providing supports, especially for small and rural schools, and clear and timely communication about key changes and supports.

> It is not a fair workload on small schools compared to large schools that can spread the load around teachers and build resources. (School response)

> An email when major changes are published would save time in teachers having to go back on a frequent basis to see if there is change. (School response)

Appendices

APPENDIX A:
Demographics of school respondents — by respondent

The tables in Appendix A show the school demographics of every feedback response that included a school ID or identifiable school name (*n* = 62). There were three responses "from a school" that could not be matched to a school name or ID. Some schools may be counted more than once in these demographics (e.g. where more than one response was received from the same school).

Urban/rural	Count	Percent
Large urban area	12	19
Major urban area	37	60
Medium urban area	5	8
Rural other	-	-
Rural settlement	1	2
Small urban area	7	11

School type	Count	Percent
Composite	8	13
Secondary (Years 7–15)	17	27
Secondary (Years 9–15)	36	58
Specialist school	1	2

No responses were received from any of the following school types: Contributing, Full primary, Intermediate, Secondary (Years 7–10), Correspondence.

Education region	Count	Percent
Bay of Plenty, Waiariki	6	10
Canterbury, Chatham Islands	7	11
Hawke's Bay, Tairāwhiti	6	10
Nelson, Marlborough, West Coast	1	2
Otago, Southland	7	11
Tai Tokerau	–	–
Taranaki, Whanganui, Manawatū	2	3
Tāmaki Herenga Manawa	12	19
Tāmaki Herenga Tāngata	5	8
Tāmaki Herenga Waka	2	3
Waikato	5	8
Wellington	9	15

Equity Index grouping	Count	Percent
Fewer	26	42
Moderate	17	27
More	12	19
Not applicable	7	11

Roll	Count	Percent
0–100	–	–
101–300	3	5
301–500	9	15
501–1,000	15	24
>1,000	35	56

APPENDIX B:
Demographics of school survey respondents — by unique school ID

The tables in Appendix B show the demographics of schools from which responses were received. In these tables, each school is counted only once, regardless of how many responses were received from that school. In these tables, *n* = 50.

Urban/rural	Count	Percent
Large urban area	10	20
Major urban area	28	56
Medium urban area	5	10
Rural other	–	–
Rural settlement	1	2
Small urban area	6	12

School type	Count	Percent
Composite	5	10
Secondary (Years 7–15)	13	26
Secondary (Years 9–15)	31	62
Specialist school	1	2

No responses were received from any of the following school types: Contributing, Full primary, Intermediate, Secondary (Years 7–10), Correspondence.

Education region	Count	Percent
Bay of Plenty, Waiariki	4	8
Canterbury, Chatham Islands	5	10
Hawke's B ay, Tairāwhiti	5	10
Nelson, Marlborough, West Coast	1	2
Otago, Southland	7	14
Tai Tokerau	–	–
Taranaki, Whanganui, Manawatū	2	4
Tāmaki Herenga Manawa	9	18
Tāmaki Herenga Tāngata	4	8
Tāmaki Herenga Waka	2	4
Waikato	4	8
Wellington	7	14

Equity Index grouping	Count	Percent
Fewer	21	42
Moderate	16	32
More	9	18
Not applicable	4	8

Roll	Count	Percent
0–100	–	–
101–300	3	6
301–500	7	14
501–1,000	12	24
>1,000	28	56

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