Institute for Social Mathematics Research

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THE UNIVERSITY OF QUEENSLAND
AUSTRALIA
CREATE CHANGE

Final Report - Mathematics

THE UNIVERSITY OF QUEENSLAND
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1. Executive Summary

1.1 Background

On 12 June 2020, Australia's education ministers tasked the Australian Curriculum, Assessment and Reporting Authority (ACARA) to undertake a review of the Australian Curriculum from Foundation to Year 10 (the Review) to ensure it is still meeting the needs of students and providing clear guidance on what teachers need to teach. ACARA has worked in close consultation with the profession and key stakeholder groups to complete the Review. The Review looks over the existing 3 dimensions of the Australian Curriculum; that is, the 8 discipline-based learning areas, 5 general capabilities and 3 cross-curriculum priorities. To improve the Foundation to Year 10 (F-10) Australian Curriculum, ACARA's broad aims are to refine, realign and declutter the content of the curriculum within its existing structure.

As part of the Review, ACARA invited public feedback on its proposed revisions to the Australian Curriculum. The consultations were open from 29 April to 8 July 2021. ACARA has contracted the Institute for Social Science Research (ISSR) at The University of Queensland to undertake an independent analysis of the data collected during the consultations and to prepare consultation reports to assist ACARA in completing the revisions.

All feedback from the consultation process, including detailed and year-specific submissions, has been read and considered by the ACARA review team in further revising the Australian Curriculum. ISSR carried out an analysis of aggregated qualitative and quantitative data with a view of providing high-level overview of the response patterns. This report presents a summary of the results from this analysis for the learning area Mathematics.

1.2 Consultation features and caveats

There were 3 channels in which feedback from consultations was received:

1. an online survey (with a mix of closed and open-ended questions) capturing overall respondents' feedback on the proposed revisions to the introductory sections (rationales, aims, organisational structure, key connections and key considerations), curriculum content (year level descriptions, achievement standards, content descriptions and content elaborations), as well as their demographics and organisational detail (Appendix A);
2. open submission process, which involved providing written feedback by email to ACARA;
3. written feedback from the state and territory education authorities and national non-government sectors provided in response to invitations accompanied by guidelines that reflected the online survey structure.

The character of the consultation was public, and participation was anonymous for individuals. This allowed participation of individuals and groups with varying understandings of the Australian Curriculum, the proposed revisions, and the Review terms of reference (TOR). The consultations did not impose protocols to confirm the identity of participants or that participants submitted their feedback only once. This enabled individuals and organisations to potentially provide inaccurate stakeholder characteristics and/or provide multiple responses or to use multiple channels. Submissions received included 2 petition-style emails (emails with multiple signatures) indicating some mobilisation of particular stakeholder networks. The 3 different channels of capturing feedback were also associated with methodological differences (see Section 3.4.1).

Results of the consultation included in this report should be seen in this context. They report perceptions of participants captured through different channels in the consultation process without assuming that these are representative of relevant stakeholder groups. They present perceptions as they were conveyed by stakeholders without qualifying them against the proposed revisions to the curriculum and without making assessments about their professional or other value.

1.3 Methodology

Individual feedback received via emails was de-identified by ACARA prior to making it available to ISSR. Identification of organisations among email submissions was maintained so that the participating organisations could be listed in the reporting. Jurisdictional feedback also remained identifiable for documentation in the reporting.

Responses from the survey were only included when they had been completed, which required the participant to continue to the final page. The final page was determined by the selections made by the respondent. Data from quantitative questions were cleaned and checked for consistency and processed using statistical software.

ISSR developed a code frame (Appendix C) that defined the themes and subthemes that emerge from the open-ended responses and established rules for coding such open-ended responses to those themes and subthemes. This code frame was used to analyse the feedback provided via open-ended survey questions, via open email submissions, and via written feedback from jurisdictions and national non-government sector bodies.

Stakeholder perceptions are reported for each of the 3 channels without applying weights and without identifying more or less authoritative voices among participating stakeholders within each consultation channel.

1.4 Stakeholder response and profile

The online survey was completed 654 times, and there were 76 email submissions as well as 9 submissions from jurisdictions and national sector peak bodies.

More than half (51%) of 654 survey respondents were teachers. Schools (17%) and school leaders (13%) were the next largest types of respondents. These 3 respondent groups constituted 80% of all survey respondents. Respondents from Queensland over-represented their state by 2.7 times (54% of all respondents versus 20% of Australia's population share), while New South Wales and Victoria were particularly under-represented among survey respondents. The respondents' distribution across the Government, Catholic and Independent sectors was broadly consistent with the size of these sectors as measured by the share of student enrolments.

About 59% of survey respondents reported on the Foundation to Year 6 (F-6) level of the curriculum so that overall results are more influenced perceptions in relation to that level.

Email submissions were received from a wide range of stakeholders/stakeholder groups with various perspectives and interests. Academics or experts in the field were the largest identifiable group, followed by a relatively even spread of respondents as teachers/schools (including principals), associations or bodies, and parent or community members. Jurisdictional formal submissions were received from 7 of the 8 invited jurisdictions and the 2 national peak bodies, which represent the Independent and Catholic school sectors.

Written submissions were invited from each state and territory as well as the national sector peak bodies of the Catholic and Independent school sectors. The Australian Capital Territory abstained from providing feedback at this point while noting its contributions to the Review via working groups, individual submissions, regular meetings and trial schools.

1.5 Stakeholder feedback

1.5.1 Online survey

The survey asked a series of 23 quantitative questions that sought agreement ratings[1]. These were grouped into 3 main sections: Introductory elements, Curriculum elements, and Overall feedback. Summary of key feedback is as follows:

- *Introductory elements*: Between 61% and 77% of respondents agreed or strongly agreed with the positive statements about various aspects of the curriculum presented to them. The level of agreement (strongly agreed and agreed) was highest for the statements on the rationale being clear about the importance of the learning area (76%) and the aims identifying the major learnings that students need to demonstrate (77%), and the lowest for the statement that the key considerations section provides important information for planning teaching and learning (61%).
- *Curriculum elements*: Between 52% and 70% of respondents agreed or strongly agreed with the positive statements about various aspects of the curriculum presented to them. Responses were most positive in relation to the year level descriptions providing a clear overview of learning at year levels (70% agreement) followed by the content descriptions specifying the essential knowledge, understanding and skills (65%). Respondents were least like to agree or strongly agree with the proposition that the content elaborations provide a range of contexts for meaningfully integrating the general capabilities and cross-curriculum priorities (52%). In addition, respondents were also asked whether the amount of content in the content descriptions can be covered in each year. More respondents disagreed or strongly disagreed (56%) with the statement than did agree or strongly agree (37%).
- *Overall feedback*: This section asked a set of questions directly related to the TOR of the Review and what it set out to achieve, as well as whether the introductory sections provide important information. While 63% of respondents agreed that the introductory sections provide important information, the 5 statements directly related to the TOR received lower agreement (between 31% and 52% agreed or strongly agreed). The statement 'Curriculum content has been refined, realigned and decluttered' received the least positive responses with 31% of respondents agreeing or strongly agreeing and 63% disagreeing or strongly disagreeing.

All in all, of the 23 statements that sought agreement ratings in the survey, the ones about the aims and rationale received the most positive agreement scores (77% and 76% agreement). At the other end of the ranking sit the 5 TOR statements about decluttering and improvement of the curriculum for which the level of agreement was relatively low (31% and 42% agreement). This was similarly the case for the statement that the amount of work can be covered in each year (37% agreement).

As more than half of all survey respondents (54%) were from Queensland, Queensland-specific contexts and issues are likely to have affected overall results. Overall results are also more shaped by F-6 respondents who constituted 59% of the all respondents.

The responses to the quantitative statements tended to be more positive for the Years 7 to 10 (Y7-10) school curriculum, compared with the F-6 curriculum. Respondents who provided feedback on F-10 were least likely to agree with the positive statements about various aspects of the curriculum presented to them. Of different types of respondents, parents were, often by a large margin, less likely to agree or strongly agree with any of the statements seeking agreement compared to teachers, schools and school leaders, with the latter being most inclined to confirm the proposed statements in the Introductory and Overall feedback section of the survey. Catholic school respondents were notably more likely to agree with the statements presented in the survey, compared to Independent and Government school respondents. Regional respondents were more

[1] These questions had been set up as compulsory in Survey Monkey and included 5 options: Strongly agree, Agree, Disagree, Strongly disagree and Don't know. Percentages of respondents who agreed or strongly agreed are based on all respondents including those that selected the Don't know option.

inclined to agree with aspects related to introductory elements, achievement standards and the realisation of the TOR, compared with metropolitan respondents.

Furthermore, respondents were also invited to add their general comments on aspects of the revised curriculum that have improved and on aspects that need further refinement via open-ended questions in the survey. The perception that the Mathematics curriculum content needed to be reduced to be able to have time to teach it all was one of the more prevalent themes that emerged from open-ended feedback captured in the survey. There were various suggestions about removing content, yet there was no dominant pattern as to what should be removed. Further, the feedback on the need to remove content was across the board rather than specific year levels. Related to the suggestions for specific removal or relocation of content was the view that the proposed inclusion and sequencing of content within the Mathematics curriculum needs further revision to ensure there is a clear progression of learning and mastery of basic facts or the development of mental calculation methods. Some notable proportion of commentary encouraged further clarity in the language of the curriculum.

Open-ended feedback was heterogenous and, at times, expressed opposing views on the same matters/elements of the curriculum. Among the open-ended feedback was also acknowledgement that the Mathematics curriculum had improved, with references to the new strand organisation and the clarity with embedding the proficiencies within the content descriptions, to more detailed elaborations, clear connections with general capabilities, and alignment between content descriptions and achievement strands.

1.5.2 Email submissions

While, as far as can be determined, there were differences in the respondent profiles of email submissions and survey responses (e.g. proportionately more teachers and schools responded in the survey than provided email submissions), the themes arising from the email submissions were fairly similar to those that were found in the open-ended comment in the survey data.

Of the 76 email submissions, there were 2 petition-style emails: one related to the removal of recall of number facts and the other concerned with the proposed replacement of the 4 Proficiencies in the current Curriculum with “Core Concept Organisers”. Of the remaining 74 submissions, there were respondents who saw the proposed revisions as an improvement, including to both clarity and to specific content. However, others recommended that the curriculum required some further refinements and improvements, particularly to language, with concepts like ‘mathematising’ and ‘evaluate’ seen as problematic. The recommendations for additional content, or the removal of content, were wide ranging. There were some who expressed concerns about the age-appropriateness of the content, although these views did not appear to be expressed by individuals or groups who had self-disclosed as teachers.

1.5.3 Jurisdictional feedback

In total, there were 9 submissions from jurisdictional stakeholders in relation to the learning area of Mathematics. The key themes were *introductory elements* (commented on by 8 jurisdictions), *clarity* (commented on by 9 jurisdictions), *implementation* (commented on by 8 jurisdictions), *manageability* (commented on by 7 jurisdictions), and *inclusive content* (commented on by 7 jurisdictions). Generally, jurisdictions appeared to agree that more decluttering was needed to achieve manageability. Queensland and Western Australia offered particularly detailed suggestions in relation to this theme.

While some jurisdictional stakeholders acknowledged improvements of the Mathematics curriculum in various aspects, for example, pertaining to the rationale, aims, strands/sub-strands, and sequencing of content, most participating jurisdictions noted that more decluttering and reduction was required; the revised curriculum was still seen as too difficult to achieve. There was also a pattern in feedback indicating that language tends to be overly complex (academic and/or inaccessible specialist terms) and that there needs to be more alignment between content and achievement standards and attention paid to developmentally appropriate content although this is not expressed by all. The inclusion of financial mathematics was recommended by some jurisdictions.

Another aspect of jurisdictional feedback related to the inclusion of First Nations perspectives in the Mathematics curriculum. Queensland noted that there are authentic opportunities to recognise and explore the Aboriginal and Torres Strait Islander Histories and Cultures cross-curriculum priority; however, some content descriptions may be culturally insensitive. Victoria regarded Indigenous perspectives as well represented in the revised curriculum. The National Catholic Education Commission noted that clear examples are needed regarding First Nations Peoples' activities, including a well-resourced list of suggestions/background knowledge.

Problem solving was another issue some jurisdictional stakeholders commented on. The teaching of problem solving was strongly supported by Tasmania. Queensland noted that the explicit inclusion of critical processes of mathematical reasoning and problem-solving content will require significant work at whole school, year level and unit level and that professional development will be needed. Victoria noted that a balance between fundamental mathematics knowledge and skills and applied approaches such as problem-solving is not yet evident. The Northern Territory welcomed the greater emphasis on problem solving and reasoning.

1.6 Summary and conclusions

The consultations were public and largely anonymous so that stakeholders with varying degrees of understanding of the curriculum, educational issues and the TOR of the Review could participate. Feedback about the revised Mathematics curriculum, which was provided by stakeholders through the 3 channels of participation was of great variety in terms of the perceptions and opinions expressed as well as the extent, depth and detail that were involved in the feedback.

While the report abstains from identifying an 'authoritative voice' among the various individual and group respondents, there are some consistent patterns of feedback received through the 3 consultation channels:

- There is an acknowledgement that the curriculum or parts thereof have improved. Of the different elements of the curriculum, the rationale and the aims appear to be perceived most positively.
- There is a strong perception across all 3 channels that there is still too much content/that the curriculum needs to be further decluttered to achieve better learning outcomes for students.
- Critical views on the age-appropriateness and developmentally appropriate sequencing of content was a notable subtheme across all 3 consultation channels.
- The call for improved clarity in the wording overall, as well as in relation to content descriptions and achievement standards came also distinctly through the 3 feedback channels.

This report provides a high-level analysis of the information captured through the 3 channels of consultation.

2. Introduction

2.1 Overview of the Review

On 12 June 2020, Australia's education ministers tasked ACARA to undertake a review of the Australian Curriculum from Foundation to Year 10 (the Review) to ensure it is still meeting the needs of students and providing clear guidance on what teachers need to teach. ACARA has worked in close consultation with the profession and key stakeholder groups to complete. The Review looks over the existing 3 dimensions of the Australian Curriculum; that is, the 8 discipline-based learning areas, 5 general capabilities and 3 cross-curriculum priorities. To improve the F-10 Australian Curriculum, ACARA's broad aims are to refine, realign and declutter the content of the curriculum within its existing structure.

In preparing for the Review, ACARA considered the latest research and international developments, and consulted with practising teachers, curriculum experts, key academics and professional associations. It formed the Mathematics Curriculum Reference Group and the Teacher Reference Group to provide advice and feedback, with members nominated by state and territory education authorities and non-government sectors. To reflect the focus on primary schools, ACARA further created the Primary (F–6) Curriculum Reference Group and the Teacher Reference Group, which helped give advice and feedback on how to improve the curriculum for the youngest students.

2.2 Proposed revisions to Mathematics

From the research, teacher feedback and work with the reference groups, ACARA identified some key areas where the Mathematics curriculum could be improved. The proposed revisions to the Australian Curriculum in Mathematics aim at removing outdated and non-essential content, adding new content important for students to learn now, and at better embedding mathematical reasoning and problem-solving into essential content. It includes the following key changes:

- Core concepts that strongly underpin the learning area of Mathematics have been used to identify essential content and refine content descriptions and achievement standards.
- Curriculum content is now organised under 6 interrelated strands – number, algebra, measurement, space, statistics, and probability. This is different from the current structure, where content is organised under 3 paired content strands and 13 sub-strands, with 4 separate proficiency strands.
- The former proficiency strands have been embedded in the revised content descriptions and achievement standards to strengthen the development of mathematical proficiency.
- Many of the content descriptions have been revised, refined and realigned to ensure they specify the essential mathematics content that students should learn, and to give greater clarity to teachers about what to teach.
- Mathematical processes such as modelling, problem-solving, statistical investigation, computational thinking and simulation have been embedded in the revised content descriptions.
- The set of content elaborations have been further developed.

2.3 Stakeholder consultation

As part of the Review, ACARA invited public feedback on its proposed revisions to the Australian Curriculum. There were 3 channels in which feedback was received.

2.3.1 Online survey

The main vehicle through which the public participated in the consultation was an anonymous online survey, which was set up in Survey Monkey and administered by ACARA. The survey captured stakeholder demographics, organisational details and perceptions on the proposed revisions to the introductory sections (rationales, aims, organisational structure, key connections and key considerations), curriculum content (year level descriptions, achievement standards, content descriptions and content elaborations) and sought overall

feedback in relation to the proposed revisions within the scope of the review (an outline of the questionnaire is given in attachment A). The survey posed 23 quantitative statements to capture the level of agreement of respondents to these statements. One of the statements was “The amount of content can be covered in each year”. Respondents who disagreed or strongly disagreed with the statement were asked an open-ended question about what content should be removed or what revisions were needed to make the amount of content more manageable. All survey respondents could also leave open-ended feedback of a general nature as well as open-ended feedback that was year-level specific.

2.3.2 Email submissions

A second channel for the public to provide feedback on the proposed revisions to the Australia Curriculum was via written feedback by email to engagement@acara.edu.au.

2.3.3 Jurisdictional feedback

The state and territory education authorities and national non-government sectors were separately invited to provide their jurisdiction feedback in written form. In these cases, the invitations were accompanied by guidelines that reflected the online survey structure.

2.3.4 Consultation details

The consultation period ran over 10 weeks between 29 April and 8 July 2021. Relevant materials outlining the proposed changes to elements of the Australian Curriculum and the associated reasons for them were also made available on ACARA’s purpose-built consultation website during that time. Stakeholders were encouraged to consider these materials prior to, or while, responding to the survey questions or providing feedback by email.

Participation in the online survey was anonymous for individual respondents. Groups who participated in the online survey were asked to provide the name of the organisation they represented. Feedback received via email submissions sometimes contained information about the identity of the participant. Individual details were removed by ACARA prior to being provided to ISSR, while information related to a group or organisation was retained and shared with ISSR.

The public and largely anonymous character of the consultations allowed people and organisations with various understandings of the curriculum and the proposed changes to the curriculum to participate in the consultations. Some aspects of the Review received national media attention at the time of the consultation period, which may have stimulated participation by particular groups.

2.4 This report

2.4.1 Purpose of report

During the consultation period, qualitative and quantitative data were gathered in relation to various elements of the Australian Curriculum and various year levels. Some of the feedback was very detailed in talking about the Australian Curriculum, the proposed changes, and/or suggestions for further improvement to the Australian Curriculum. All feedback, including detailed and extensive submissions, has been read and considered by the ACARA review team in further revising the Australian Curriculum.

ISSR has been contracted by ACARA to undertake an independent analysis of the qualitative and quantitative data. The purpose of this report is to provide an analysis of the feedback collected to support ACARA personnel to make recommendations about refinements to the curriculum.

The key interests of this report lie in:

- understanding the profile of stakeholders who participated in the consultations for Mathematics;
- understanding the level of stakeholder agreement and disagreement with different elements of the revised Mathematics curriculum;
- identifying the areas of the revised Mathematics curriculum that stakeholders perceive most positively and those deemed in need of further refinement;

- gauging stakeholder perceptions about whether the Review achieved its overall objectives within the terms of its reference; and
- highlighting the potential similarities and differences in the above based on the level of the curriculum (F-6, Y7-10 and F-10) and stakeholder demographics.

2.4.2 Structure of report

The following section (3) describes the treatment of data captured through the different consultation channels, and the methods of analysis and presentation. Section 4 presents information on participating stakeholders before results from the consultation are shown in Sections 5, 6 and 7. The structure of presenting the results follows the structure of the 3 channels of participation – survey results are included in Section 5, feedback from the open email submissions in Section 6 and feedback from jurisdictional submissions in Section 7.

3. Data processing, analysis and presentation

3.1 Data transfer

ACARA provided responses to the survey and those received via email to ISSR through a secure project folder in the ACARA cloud. Responses from the survey were only included when they had been completed, which required the participant to continue to the final page. The final page was determined by the selections made by the respondent. ACARA also provided ISSR with the written jurisdiction feedback and the received email submissions. The latter included 2 petition-style emails – emails with multiple signatories.

Individual feedback received via emails was de-identified by ACARA prior to making it available to ISSR. Identification of organisations among email submissions was maintained so that the participating organisations could be listed in the reporting. Jurisdictional feedback also remained identifiable for documentation in the reporting.

3.2 Data cleaning – survey data

All quantitative questions had been set up as compulsory in Survey Monkey and the resulting data overwhelmingly adhered to the pre-given questionnaire structure and response formats so that minimal data cleaning was required. In a few cases participants had information recorded as an individual as well as a group respondent. This could occur where respondents identified as either of the 2 and then later went back to the relevant survey page and changed their response to the respectively other respondent type, which triggered a trajectory that captured more information on either the individual or group characteristics of the respondent. Each of these cases was scrutinised and the information retained that most likely reflected the stakeholder type based on the information provided. For example, a record that indicated an individual respondent who was a primary school teacher in a Government school in a metropolitan area, and that also indicated a group response for a Government school in a metropolitan area that represented one person was determined to be the former and the latter information was deleted from the cleaned dataset.

Leading and trailing blanks were removed from open-ended responses to prepare the textual data for coding while all content of such responses was retained as it had been given.

3.3 Coding of open-ended responses

3.3.1 Developing code frame

ISSR in consultation with ACARA developed a code frame that defined the themes and subthemes that emerge from the open-ended responses and established rules for coding such open-ended responses to those themes and subthemes. The code frame was developed in 3 steps.

Step 1 - Scrutinising the survey questions developed, and associated materials, for key themes and categories

Prior to receiving any survey responses, 2 qualitative researchers scrutinised the proposed curriculum changes, along with the survey questionnaires, to provide an initial outline of the themes they expected to see in the data. This outline was updated iteratively as the analysis in Step 2 and 3 continued.

Step 2 - Inductive analysis of interim responses

Inductive analysis commenced once the first survey data became available. Once the survey responses were received, the qualitative researchers read through the open-ended feedback and familiarised themselves with the data. Together, they then generated themes that were linked to the data set and began coding the data without reference to the outline of themes developed in Step 1. This approach enabled the researchers to be open to new patterns in the data and to make revisions to the draft outline of the code frame.

Step 3 - Content analysis of interim responses

Content analysis was then employed. The 2 researchers coded a portion of the data independently using the developed draft code frame. They then met to discuss commonalities or differences in coding the data, until agreement was reached. In this activity, the researchers noted nuances in themes across learning areas, cross-curriculum priorities and general capabilities and the code frame underwent a revision to incorporate these nuances.

The code frame was then examined against a sample of later arriving email submissions as well as some of the jurisdictional and national sector peak body feedback which established that the developed codes/themes also largely applied to feedback received through these channels. During all steps ISSR consulted ACARA staff who sense checked the evolving code frame and who provided inputs into its evolution.

3.3.2 Coding

Open-ended responses from 3 survey fields were then coded according to the developed code frame. This concerned responses to the question “What content should be removed or what revisions are needed to make the content more manageable?” This question was asked when respondents disagreed or strongly disagreed with the preceding statement “The amount of content can be covered in each year”. The other 2 open-ended fields could be used by all respondents. One prompted the respondents to provide comments about general aspects of the revised curriculum that have improved and the other prompted them to provide comments about general aspects of the revised curriculum that needed further improvement (for the survey questions see Appendix A).

In addition, respondents were also asked whether they wanted to provide open-ended feedback for individual year/band levels, and if that was the case, which year/band levels this concerned. Respondents who indicated they wanted to provide such specific feedback were presented with the same 2 prompts for each year/band level that they had selected. Both the feedback captured under the more general prompts as well as feedback captured in the year-level specific fields have been considered by ACARA in revising the Mathematics curriculum post consultation, however, the year-level specific feedback was deemed as too specific to be included in high-level reporting and was not coded to themes.

Consistent with the treatment of open-ended responses captured through the online questionnaire, written feedback received via emails was coded on the basis of the code frame while year-level specific feedback coming through this channel has been considered by ACARA without it being coded to themes for the reporting here. The coding of jurisdictional feedback was undertaken in a similar way (also see Section 3.4.4).

Open-ended feedback expressed by the same individual or group/organisation could contain multiple themes. In this case the different themes were coded to the same stakeholder record.

3.4 Data analysis and presentation of results

3.4.1 Information captured from the 3 channels for providing feedback

The 3 channels of providing feedback were associated with methodological differences. Survey participants adhered to a pre-given structure consisting of closed questions seeking agreement ratings and prompting for open-ended feedback of a general or year/band level specific nature. The survey also captured demographic characteristics of respondents including type of stakeholder, state/territory, school sector and remoteness of school. This allowed treating this data like any other survey data by calculating descriptive statistics such as frequencies, percentages and breaking down results by respondent characteristics and by presenting the descriptive statistics in tables or graphs.

In most cases, the email submissions did not adhere to the structure and prompts of the survey. They constituted unprompted, mostly open-ended feedback that sometimes came with additional materials attached. Two emails had multiple signatories (petition-style emails). While some submissions contained some information about the stakeholder, such as profession or organisation name, the demographic

characteristics that were systematically captured in the survey were largely not provided as part of the email submissions. The analysis of information from the email submissions therefore focuses on the themes and subthemes that emerged without assessing stakeholder differences.

Eight jurisdictional education authorities and 2 national sector peak bodies were explicitly invited to participate in the consultations and were given guidelines for their participation. These guidelines reflected the structure and content of the online survey. However, the degree to which jurisdictions adhered to these guidelines varied and feedback was overwhelmingly of an open-ended nature. As was the case with some of the email submissions, the feedback received from the jurisdictions tended to be comprehensive.

To further take account of the methodological differences between the 3 consultation channels, feedback received through each channel is reported in a separate section.

3.4.2 Reporting of online survey data

The reporting of feedback is preceded by information on participating stakeholders to aid interpretation of the overall results. This information includes the level of the curriculum that was selected by respondents, their respondent type (e.g. teacher, parent, academic), the state or territory they were based in, and, for respondents who identified as teachers, school leaders, parents, students and schools, the school sector and remoteness area of the relevant schools.

Overall results on the 23 questions are presented as stacked bar charts that show the percentage breakdown across the 5 response categories (strongly agree, agree, disagree, strongly disagree, don't know). Across the 5 categories, responses add up to 100%.

Unless indicated otherwise, the prevalence of themes expressed by stakeholders in open-ended comments is reported as a percentage based on the total number of respondents (e.g., 11% of survey respondents expressed theme A). Where the same respondent expressed multiple themes the respondent was included in the percentages for each of the reported themes. The number of respondents who provided open-ended feedback is also reported.

Differences between stakeholder groups are explored via bar charts that show the percentage of the combined strongly agree/agree responses for different stakeholder categories. This percentage is referred to as the *level of agreement* in the report. The level of agreement is expressed as a proportion of all respondents including those who selected the 'don't know' option. Stakeholder categories are considered in such comparisons when they have 30 or more respondents. Stakeholder group dimensions considered in the analysis of group differences are type (e.g. teacher, academic, parent), state or territory, school sector and school location.

Potential differences between stakeholders who responded to different levels of the revised curriculum (F-6, 7-10 and F-10) are also assessed by comparing the relevant percentages of the combined strongly agree/agree responses.

Percentages are rounded and may not exactly add up to 100% in tables or graphs. The original survey statements were abbreviated to 80 characters in the graphs to ensure readability. Appendix B documents which survey statements were abbreviated in which way for the reporting.

3.4.3 Reporting of email submissions

The reporting of email submissions consists of identifying the key themes that emerged after coding, based on the proportion of respondents who expressed the themes and subthemes. This is accompanied by drawing out examples that reflect different dimensions or aspects within a theme. Particular attention was given to drawing upon examples that represent the nuance within the data, especially within the 'Other' subthemes that include learning area specific detail. Further, attention was given to drawing upon examples to illustrate dominant or leading sub themes, defined by being discussed by a relatively large number of respondents. While the reporting of the survey data makes use of percentage breakdowns to explore differences between stakeholder groups (where possible), the analysis of data from email submissions

summarises general trends and themes from the feedback. This takes account of the unstructured way the information was provided across the many submissions.

3.4.4 Reporting of jurisdictional feedback

The reporting of jurisdictional submissions consists of identifying the key themes that emerged after coding, based on the proportion of jurisdictional respondents offering feedback on the themes and subthemes. This is accompanied by direct quotes that reflect different dimensions or aspects within a theme. Particular attention was given to drawing out examples that represent nuance within the data. Attention was also given to providing examples that illustrate leading themes and sub themes, identified by the amount of feedback received in relation to themes and sub themes.

Additionally, the invited jurisdictions were encouraged to respond to the 6 survey statements from the Overall feedback section of the survey. Five of the 9 participating jurisdictions (Tasmania, Queensland, Western Australia, Northern Territory and Independent Schools Australia) provided responses to these questions. Analysis of data from jurisdictional submissions thus summarises general trends and themes from the qualitative feedback, synthesising this with feedback from the 5 jurisdictions who responded to the 6 survey statements.

A summary of positive feedback and aspects that need further attention, as identified by each jurisdiction, are included as Appendix G.

3.4.5 Multiple participations

The consultations were open to the public without imposing protocols that confirmed the identity of participants or that participants submitted their feedback only once. Based on the names of organisations captured in the survey and those self-reported in email submissions, it is apparent that some organisations have completed the on-line survey as well as provided an email submission in relation to the same learning area, subject, general capability or cross-curriculum priority. It also appears that in some cases the same organisation submitted multiple survey responses for the same element of the curriculum. In some cases, state-based affiliate organisations provided feedback that was separate and additional to the feedback provided by their national parent organisations, which presented the consolidated feedback of that organisation. It is further possible that individuals participated multiple times for the same element by completing more than one survey (using different computers), by completing a survey as well as providing an email response or by providing multiple email submissions. The extent to which individuals and organisations participated in the consultation about the particular elements of the Australian Curriculum multiple times cannot be determined. Multiple participations could have particularly influenced the consultation results where the number of participants was low.

3.4.6 Interpretation of results

The consultation process used different channels of capturing feedback, which was associated with methodological differences noted in Section 3.4.1. The overall character of the consultation was public. Participation was anonymous for individuals. In principle, everyone could participate regardless of their relation to, and their understanding of, the Australian Curriculum or the Review terms of reference. The Review attracted media attention, and petition-style emails (with signatures) received during the consultation period indicate some mobilisation of particular stakeholder networks. It is possible that the same individual or organisation expressed their voice more than once in relation to the same elements of the Australian Curriculum that was in scope of the Review. Results of the consultation included in this report should be seen in this context. They report information captured through different channels in the consultation process without assuming that these are representative of relevant stakeholder groups. They present perceptions as they were conveyed by stakeholders without qualifying them against the proposed revisions to the curriculum and without making assessments about their professional or other value.

4. Stakeholder participation and profile

4.1 Overall response

Table 1 shows the number of times the online survey was completed, the number of email submissions received and the number of jurisdictional and national sector peak bodies who provided written feedback. The online survey was completed 654 times, 76 email submissions were received and 9 of the 10 invited jurisdictions and national sector peak bodies returned feedback on the revised Mathematics curriculum.

Table 1: Number of participations, Mathematics consultations

	n
Online survey	654
Email submissions	76^
Jurisdictional feedback	9

^ The number of received emails included 2 petition-style emails that were signed by 263 and 369 individuals respectively. For more detail on email submissions see Section 4.2.2.

Reporting of stakeholder feedback is undertaken on the basis of a learning area, general capability or cross-curriculum priority. In some cases, email submissions were of a general nature and could not be allocated to a specific learning area, general capability or cross-curriculum priority. These were mainly concerned with general comments around values or virtues that should be taught, the extent to which the curriculum content was inclusive of diverse student needs, evidence-based, decluttered and age-appropriate. Some of these emails had a focus on play-based learning in early years.

There were 108 of those submissions and while their content does not fit into any of the learning area, curriculum priority or general capability specific consultation reports, they have all been considered by ACARA in further refining the Australian Curriculum.

4.2 Stakeholder profile

4.2.1 Survey respondents

Table 2 shows the types of stakeholders who completed the online survey as an individual or as a group. More than half (51%) of 654 survey respondents were teachers. Schools (17%) and school leaders (13%) were the next largest types of respondents. These 3 respondent groups constituted 80% of all survey respondents.

Of the 330 teachers, 211 identified as primary school teachers, another 107 as secondary school teachers and 12 as F-12 teachers. Of the 86 responding school leaders, 50 identified as primary school leaders, 31 as secondary school leaders and 5 as F-12 school leaders.

Table 2: Type of survey respondent, Mathematics survey

Type of respondent	n	Percent
Individual respondent		
Teacher	330	50.5%
School leader	86	13.1%
Academic	22	3.4%
Parent	49	7.5%
Student	6	0.9%
Employer/business	6	0.9%
Other - Individual	21	3.2%
Group respondent^		
School	110	16.8%
Professional association	8	1.2%
Education authority	9	1.4%
Parent organisation	1	0.2%
Other - Group	6	0.9%
Total	**654**	**100.0%**

^ A list of participating groups (other than schools), which self-identified in the survey is provided in Appendix D.

The dominance of primary school teachers and leaders outlined above is reflected in the levels of the curriculum that respondents provided feedback on. About 59% of survey respondents gave feedback on the F-6 curriculum, 27% on the Y7-10 curriculum and 14% on the F-10 curriculum (Figure 1).

Figure 1: Level of curriculum selected, Mathematics survey respondents

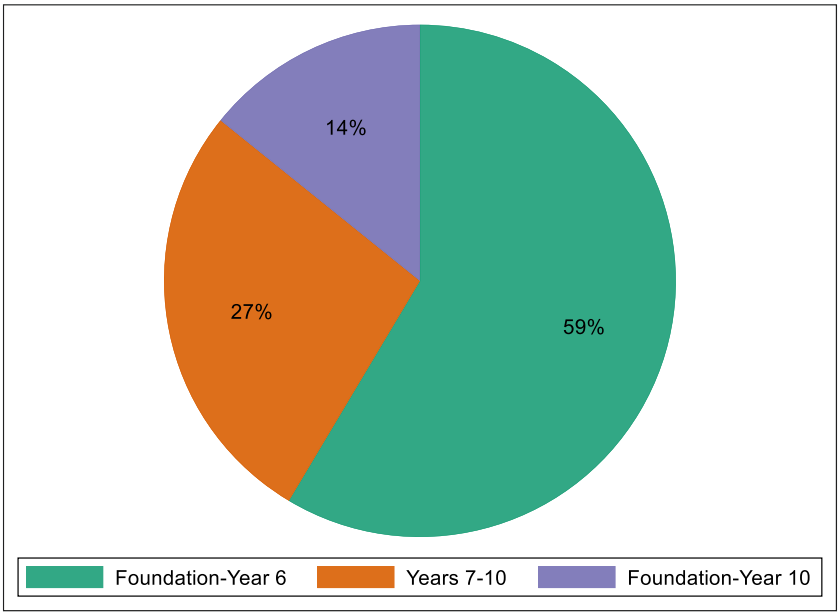
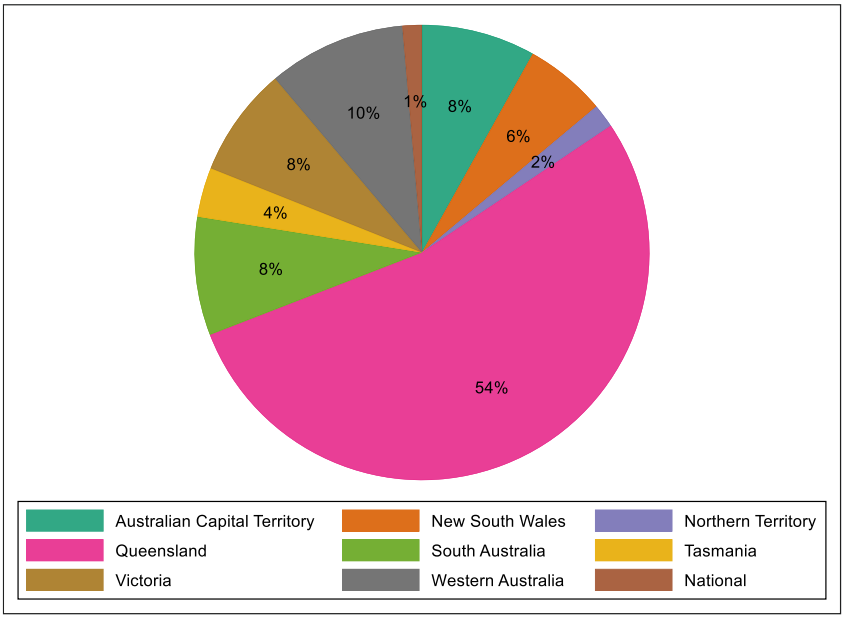


Figure 2 shows the distribution of Mathematics survey respondents among the states and territories of Australia. Queensland had the largest representation of survey respondents, with 54% of respondents based in that state. In relation to state and territory populations, respondents from Queensland over-represented their state by 2.7 times (54% of all respondents versus 20.2% of Australia's population share[2]). Based on

[2] Source: Australian Bureau of Statistics, National, state and territory population December 2020.

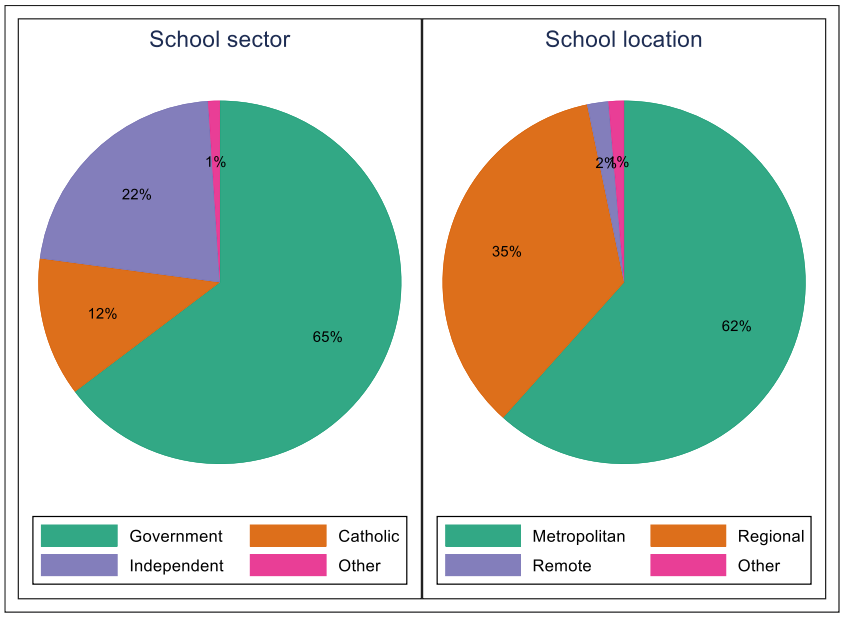
jurisdictional shares in the national population, the 2 largest states, New South Wales and Victoria, were particularly under-represented among survey respondents.

Figure 2: Mathematics survey respondents by states and territories



Respondents who identified as a teacher, school leader, school, student or parent were asked in which sector their (child's) school was and in which remoteness area it was located. Almost 2 in 3 (65%) of these respondents indicated a Government school, 12% indicated the Catholic school sector and 22% the Independent school sector (Figure 3).

*Figure 3: School sector and remoteness area, Mathematics survey respondents^*



^ Teachers, school leaders, students, parents and schools.
'Other' responses in the pie charts relate to staff who worked across schools, parents who had children in multiple schools and, in the case of school sector, also to TAFE and University students.

The respondent distribution somewhat reflects the student enrolment distributions in 2020: 66% of students were enrolled in Government schools, 19% in Catholic schools and 15% in Independent schools[3].

[3] ABS 2021, Schools, Australia 2020. https://www.abs.gov.au/statistics/people/education/schools/latest-release#key-statistics.

Figure 3 also shows in which remoteness area their (child's) school was located. About 62% indicated their school's location as metropolitan, 35% that it was in a regional area and 2% that it was in a remote area. Based on student enrolment distributions in 2020 (72% of students were enrolled in major cities, 26% in regional areas and 2% in remote areas[4]), regional areas are somewhat over-represented among Mathematics survey respondents.

4.2.2 Email submissions

Of the email submissions, there were a total of 76 specifically related to the learning area of Mathematics. Two of these emails were petition-style emails, with overall over 600 signatories.

Of the 76 email submissions, there were 74 submissions that had attachment that was coded alongside the email message provided. The remainder did not have an attachment, but the content within the emails was coded. The findings from this analysis are presented in the section on Feedback from email submissions (see Section 6).

A number of email respondents had self-disclosed their position and/or affiliation, making it possible to summarise some of the demographic characteristics of respondents. It could be determined that of email respondents in this learning area, that the largest identifiable group was academics or experts in the field, and then a relatively even spread of respondents as teachers/schools (including principals and one student), associations or bodies, and parent or community members (Table 3). A list of organisations which self-identified in email submissions across all learning areas, general capabilities and cross-curriculum priorities is provided in Appendix F.

Table 3. Type of stakeholder, Mathematics email submissions

Type of Stakeholder	Number of email submissions	Percentage
Teachers or schools	15	19.7%
Association or body	10	13.2%
Academics or experts	19	25.0%
Parent or community member	12	15.8%
Unclear	21	26.3%
Total	**76**	**100%**

4.2.3 Jurisdictional feedback

Submissions were invited from each state and territory as well as the 2 national sector peak bodies. Nine submissions were received in total: Queensland, New South Wales, Victoria, Western Australia, South Australia, Tasmania, the Northern Territory, Independent Schools Australia, and the National Catholic Education Commission. The Australian Capital Territory abstained from providing feedback at this point while noting its contributions via working groups, individual submissions, regular meetings and trial schools.

Table 4 lists the participating jurisdictions and national sector peak bodies that provided feedback on the revised Mathematics curriculum. The jurisdictions were invited to respond using a pre-defined template that aligned with the online survey that was publicly available, although this template was not always followed. Of the 9 jurisdictions who submitted feedback, Western Australia and Queensland provided extensive and detailed feedback. South Australia, Independent Schools Australia, and the National Catholic Education Commission provided substantial specific feedback. New South Wales provided targeted feedback in relation to key areas of concern; in particular, language and terminology, sequencing of content, the distinction between curriculum and pedagogy, and the core concepts. Victoria took a similar approach to New South Wales. Tasmania, and the Northern Territory provided broad feedback.

[4] ABS 2021, Schools, Australia 2020. https://www.abs.gov.au/statistics/people/education/schools/latest-release#key-statistics.

Jurisdictions used a variety of methods to generate feedback from their stakeholders, such as learning area focus groups, forums, and webinars. Examples of stakeholders include state and independent schooling sectors, and professional associations.

Table 4: Participating jurisdictional stakeholders, Mathematics consultation

News South Wales
Victoria
Queensland
South Australia
Western Australia
Tasmania
Northern Territory
Independent Schools Australia
National Catholic Education Commission

4.2.4 Stakeholder summary and implications for overall results

Of the 654 completed surveys, 51% were submitted by teachers and 54% of stakeholders resided in Queensland. The overall survey results are therefore notably influenced by teachers and respondents who were based in Queensland.

Overall survey results are further largely influenced by respondents who are linked to Government schools and metropolitan areas. However, the proportion of metropolitan respondents in the survey is still below that of the school student population in these areas.

In addition to that, 59% of respondents referred to the primary school level curriculum when responding, 27% of respondents to the secondary school level and the remaining respondents (14%) commented on the F-10 curriculum. The overall survey responses are therefore also more influenced by those given in relation to the F-6 level of the curriculum.

Table 5: Most prevalent respondent characteristics, Mathematics survey respondents

Respondent dimension	Category	n	Percent of all survey completions
Level of curriculum	F-6	383	59%
State/territory	Queensland	350	54%
Type of respondent	Teacher	330	51%
School sector^	Government	376	57%
School location^	Metropolitan	358	55%

^This information was only captured from participating teachers, school leaders, schools, parents and students while the percentage in the last column is based on all respondents.

Email submissions were received from a wide range of stakeholders/stakeholder groups with various perspectives and interests. Of email respondents in this learning area, the largest identifiable group was academics or experts in the field, and then a relatively even spread of respondents as teachers/schools (including principals + one student), associations or bodies, and parent or community members.

Jurisdictional formal submissions were received from 7 of the 8 invited jurisdictions and the 2 national peak bodies, which represent the Independent and Catholic school sectors. The feedback included in jurisdictional submissions, to varying degrees, reflects consultations with educational departments, professional groups, such as teachers and school leaders, and, at times, the Catholic and Independent school associations within the respective jurisdictions.

5. Survey results

Results reported in this section present perceptions as they were expressed by survey respondents. These perceptions are not qualified against the proposed revisions to the curriculum and they are not assessed for their professional or other value.

Overall survey results are dominated by respondents who self-identified as school professional staff – teachers, school leaders and schools constitute 80% of all respondents. Overall results are further shaped by respondents from Queensland (who constitute 54% of all respondents) and respondents who commented on the Foundation to Year 6 curriculum (who constitute 59% of all respondents). While some stakeholder details were captured during the survey, it is uncertain to which extent survey respondents are representative of stakeholder groups (e.g. to which extent participating teachers from Queensland were representative of teachers in Queensland).

5.1 Overall results

The General feedback part of the survey that sought respondent perceptions in relation to the curriculum/proposed changes to the curriculum contained 3 sections: Introductory elements, Curriculum elements and Overall feedback (see Appendix A). The presentation of the results focuses on feedback captured in these 3 sections and follows their structure.

The survey also captured feedback that was year-level specific. This feedback has been considered by ACARA in refining the Mathematics curriculum. However, it is not reported here beyond the number of respondents who provided such detailed feedback.

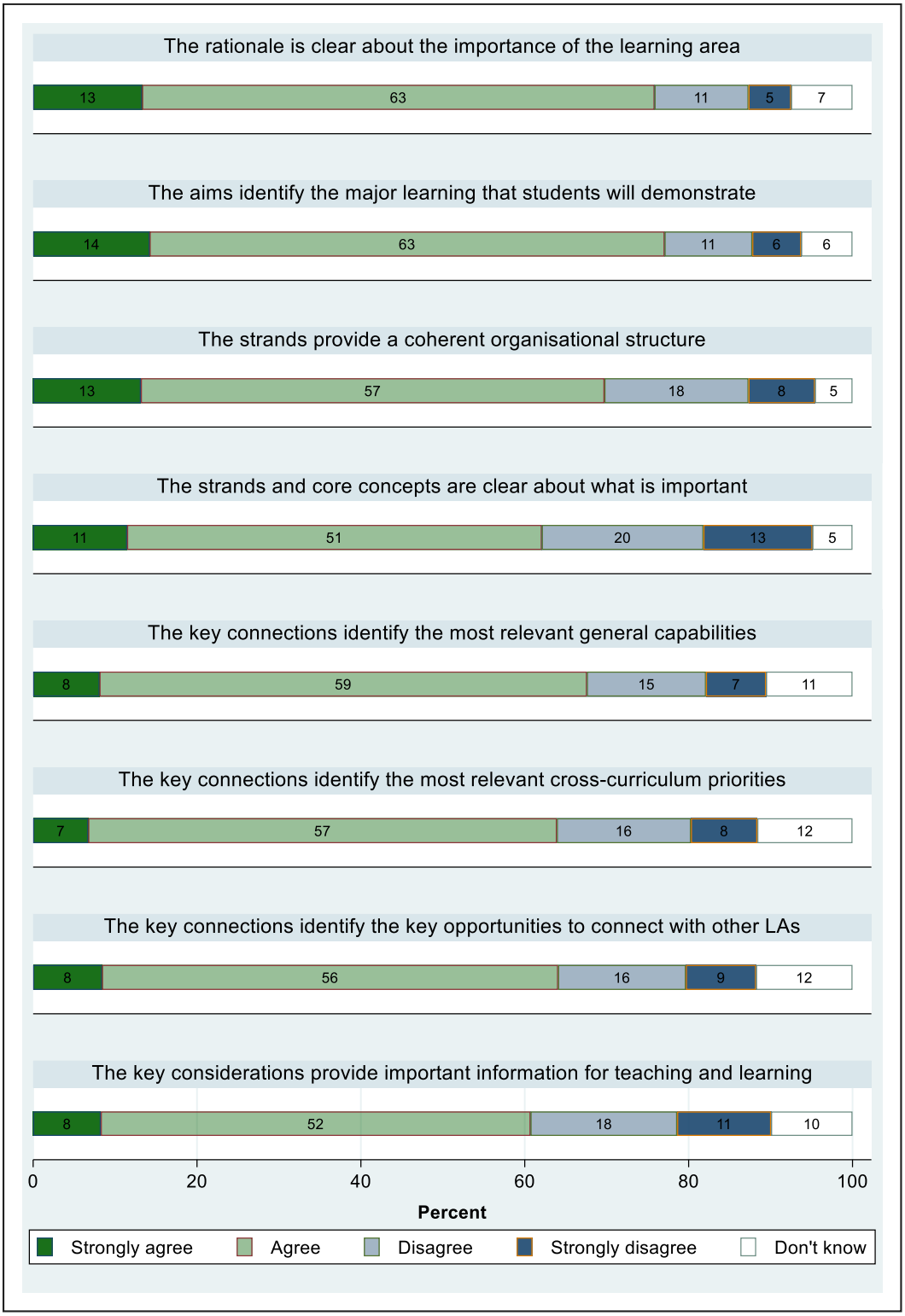
5.1.1 Introductory elements

Respondents were presented with 8 statements in the Introductory elements section of the questionnaire and asked to give an agreement rating for each. These statements related to the rationale, the aims, the organisational structure, key connections and key considerations in the introductory sections of the Mathematics curriculum. The results are reported in Figure 4.

Overall, between 61% and 77% of respondents agreed or strongly agreed with the presented statements. The level of agreement (strongly agreed and agreed) was highest for the first 2 statements: on the rationale being clear about the importance of the learning area (76%) and the aims identifying the major learnings that students need to demonstrate (77%). They were lowest for the statement that the key considerations section provides important information for planning teaching and learning (61%)

Levels of disagreement ranged from 17% to 33% and were inversely related to levels of agreement. The prevalence of ‘don’t know’ responses was highest for the statements on key connections and key considerations, which may indicate less familiarity with these elements in the introductory section of the curriculum among respondents compared with the rationale, aims and organisational structure of the revised Mathematics curriculum.

Figure 4: Introductory elements, Mathematics survey respondents



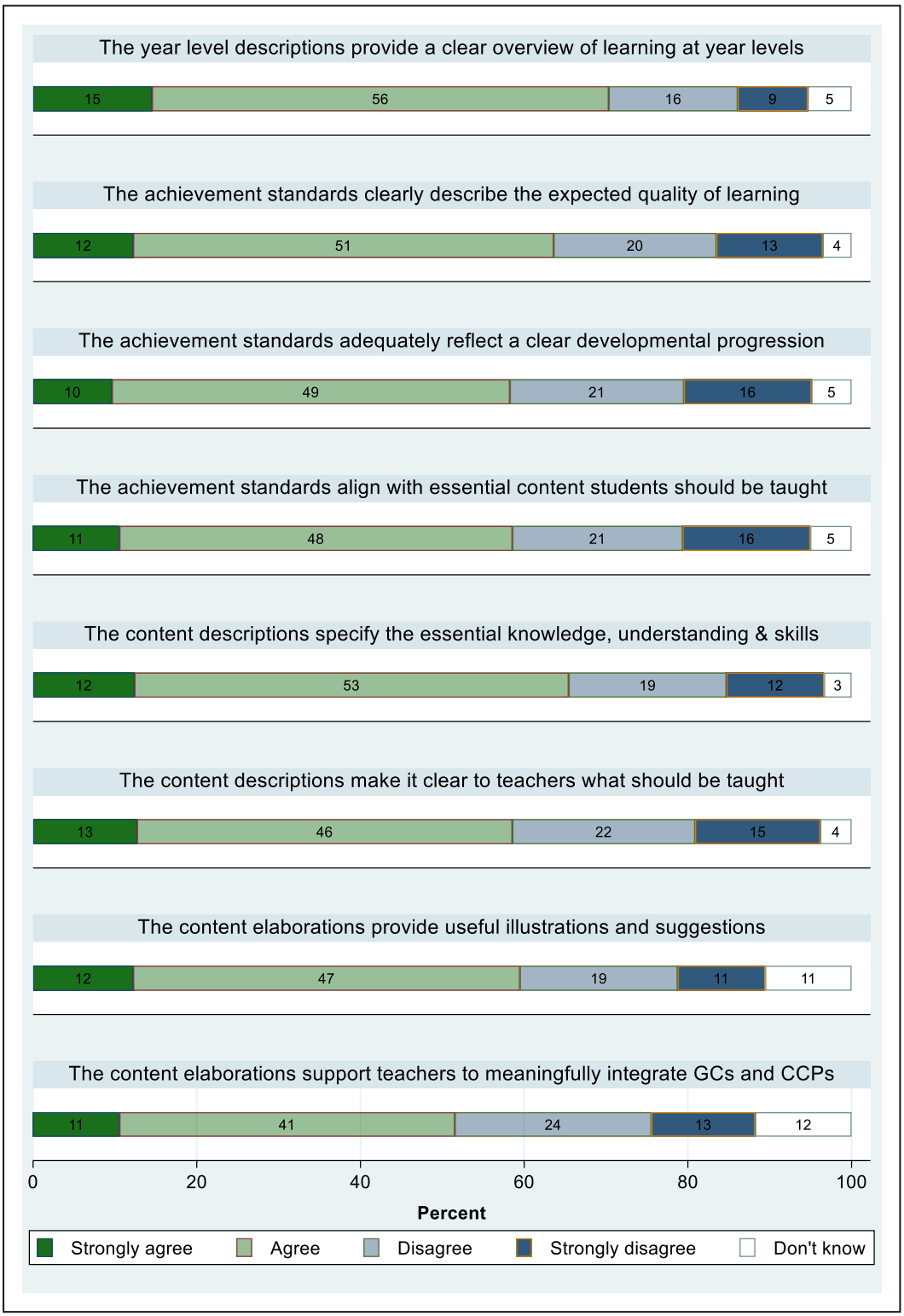
Percentages in the bars are rounded and may not add up to the % agreed and strongly agreed quoted in the text.

5.1.2 Curriculum elements

The next section in the questionnaire captured perceptions on 4 curriculum elements: year level descriptions, achievement standards, content descriptions and content elaborations. Overall results for 8 of the questions in this section are shown in Figure 5. Between 52% and 70% of respondents agreed or strongly agreed, and between 24% and 38% disagreed or strongly disagreed with the presented statements.

Again, in each case most respondents agreed or strongly agreed with the statement.

Figure 5: Curriculum elements, Mathematics survey respondents



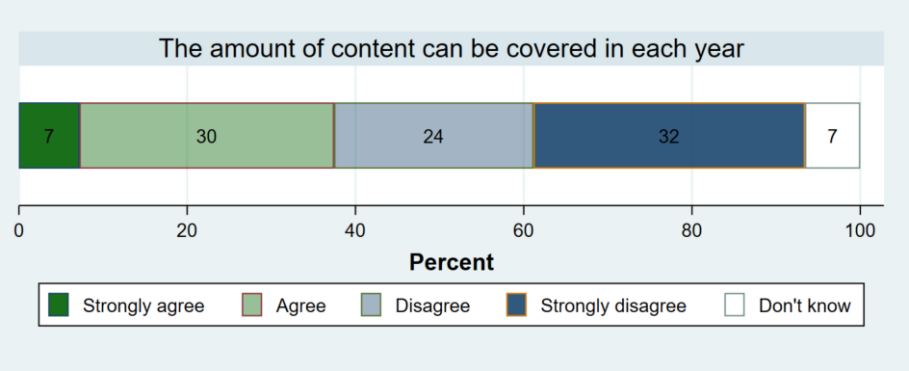
Percentages in the bars are rounded and may not add up to the % agreed and strongly agreed quoted in the text.

Responses were most positive in relation to the year level descriptions providing a clear overview of learning at year levels (70% agreement) followed by the content descriptions specifying the essential knowledge, understanding and skills (65%). Respondents were least like to agree or strongly agree with the proposition

that the content elaborations provide a range of contexts for meaningfully integrating the general capabilities and cross-curriculum priorities (52%).

Respondents were also asked whether the amount of content in the content descriptions can be covered in each year. In this case, more respondents disagreed or strongly disagreed (56%) with the statement than did agree or strongly agree (37%) (Figure 6). That is, the majority of respondents did not agree that the content could be covered each year.

Figure 6: Amount of content, Mathematics survey respondents



The 56% of respondents who disagreed or strongly disagreed were asked a follow-up question to clarify what content should be removed or what revisions were needed to make the content more manageable. Of the 366 respondents who were asked this follow-up question, 285 provided a comment.

Of those 101 respondents provided specific examples or ideas of content to remove (see Table 6) while other respondents simply stated there was too much content or commented on other matters.

The 285 comments provided to this question were coded according to the themes and subthemes covered in the code frame. While the question explicitly asked respondents what content should be removed or revised to make the content more manageable, some respondents did not address this, but rather saw this as an opportunity to comment on any aspect of the curriculum.

The top 5 main themes that emerged from feedback given by those 285 are listed in Table 7 together with their prevalence, which is based on the 654 Mathematics survey respondents. It is possible that a single response has utterances that span across multiple themes. As a result, a comment from a single respondent would be coded to more than one theme. Likewise, a single response could be coded to more than one subtheme.

The top 5 themes from responses to these included: *manageability, content should be removed; clarity, sequencing of content* and *implementation*.

The predominant theme was around *manageability* and the perception that there was still too much content to cover. It is perhaps not surprising that this was the leading theme given the question prompt. There was a dominant feedback pattern indicating that respondents perceived the proposed changes to the Australian Curriculum: Mathematics had not adequately decluttered, clarified or streamlined the curriculum. The view that there was too much content was across the board rather than specific year levels.

> *"There is far too much that needs to be packed into each term. The curriculum needs to be streamlined, and reduced so that we can focus on one topic at a time for a beneficial amount of time. We have had to cram the concept of time into a 2-week unit, but the students need far longer than that. They are floundering because they are supposed to be building upon prior knowledge from last year." (Primary teacher, Queensland, Government, Metropolitan).*

Some respondents felt that the content had been reorganised, content descriptions combined and reallocated to different year levels.

> *"Combining statements or removing words has NOT refined, realigned or decluttered. Content has increased so making it difficult for teachers to teach content in depth and students to learn and consolidate learning." (Primary teacher, Queensland, Government, Metropolitan).*
>
> *"It has 10 less content descriptors, but they are simply merged into others so in effect there is a lot more being added. The achievement standards are cumbersome and wordy." (School leader – Primary, Queensland, Government, Regional).*

The second dominant theme was *content should be removed.* Here, a number of respondents provided general feedback that more content needed to be removed but without providing specific recommendations as to what should be removed.

> *"I honestly do not know what needs to be taken out, but it is way too full as it is." (Primary teacher, South Australia, Government, Metropolitan).*

A number of respondents did provide more specific recommendations (and a summary of these suggestions is provided in Table 6). As can be seen there were a variety of views expressed as to what could be removed, without a single dominant topic emerging.

Table 6: Examples of proposed content for removal, Mathematics survey respondents

Remove/Reduce
Some of the content should be removed and placed in optional content e.g., AC9M10A02, AC9M10A03, AC9M10SP02, logarithms.
Remove stem and leaf plots.
3D coordinates and measurement should not be a major topic in Years 9 and 10.
Remove AC9M9A03 E2, AC9M9M06 E2, AC9M9A04 E3 from Year 9.
Remove Euler's formula and networks from Years 9 and 10.
Solving quadratic equations and non-linear relations in Year 9 should be removed.
Remove calculating change from money.
Remove analog clock to the minute.
Pythagoras should be removed from Year 8 and left in Year 9.
Remove or reduce the probability strand.
Remove factorise from Year 7.
Year 7 content on algebra can be refined to remove solving.
Remove binary descriptors of achievement and use open-ended descriptors.
Triangles should be removed.
Content descriptors need to be reduced some elaborated rather than combined.
Reduce the content relocated from Year 1 to Year 2
Year 7: Geometry/Space) (particularly angles at a point, angles in parallel lines) Year 8: Space (3D coordinate systems) Year 9: Space Year 10: Space
Remove decimals from Year 4. All of times tables too much for Year 4. Reduce by moving some from Year 4 to Year 3.

The third most frequently commented upon theme was *clarity.* Comments related to clarity referred to the readability of the overall curriculum, as well as the clarity and specificity of individual elements, including content descriptions and achievement standards. As can be seen from Table 7, the majority of respondents who commented in relation to the theme of clarity expressed a view that further refinements were needed to improve clarity.

"Vague terms like understand and establish are not helpful. Give me a clear easy to follow document so I know what I need to learn for that learning strand not only one example of a descriptor." (Primary teacher, Western Australia, Government, Metropolitan).

"The content descriptions need to be concise and explicit. By introducing the general capabilities and key considerations into the content descriptions the language has become far more challenging for teachers to interpret and far more subjective. From the new document, it is now up to the teachers to determine to what extent they are teaching content. Don't clump multiple content ideas together in one content description." (Secondary teacher, Western Australia, Independent, Metropolitan).

Table 7: Content that should be removed or revisions needed to make content more manageable (top 5 themes), Mathematics survey respondents

Theme/Subtheme	Number of respondents	Percent of total
Manageability (amount of content)	**137**	**20.9%**
Still too much content/further decluttering needed	137	20.9%
Content should be removed	**131**	**20.0%**
General views that there is content that should be removed	44	6.7%
Content should be removed as it is not aligned with rationale/aim of learning area	17	2.6%
Content should be removed that is not aligned with who we want our children to become (e.g., confident, knowledgeable, skilled)	5	0.8%
There is too much emphasis on Indigenous cultures and perspectives	2	0.3%
Various other LA specific content that should be removed	87	13.3%
Clarity	**97**	**14.8%**
The overall language of the curriculum could use further revision to be clearer and/or easier to understand	46	7.0%
The wording of the content descriptions is clearer and/or easier to understand	3	0.5%
The wording of the content descriptions could use further revision to be clearer and/or easier to understand	52	8.0%
The wording of the achievement standards need further clarity	21	3.2%
The wording of introductory elements (rationale, aims, key connections) is clearer and/or easier to understand	1	0.2%
The wording of introductory elements (rationale, aims, key connections) could use further revision to be clearer and/or easier to understand	3	0.5%
Sequencing of content	**96**	**14.7%**
The sequencing of content needs further improvement	96	14.7%
Implementation	**78**	**11.9%**
Pedagogy - this overarching theme encompasses feedback about how children should be taught	54	8.3%
Assessment - this theme encompasses feedback on delivering assessment to students according to achievement standards and curriculum contents.	19	2.9%
Support for implementation (e.g., professional development, teacher training, resources such as planning advice and resources, classroom resources)	13	2.0%

Comments were provided by 285 respondents. Percentages are based on all 654 Mathematics survey respondents. All theme and subtheme categories that emerged from this comment box are shown in Table E1 in Appendix E.

The third leading theme related to the *sequencing of content.* A common discussion point in relation to this theme was that teachers needed time to consolidate learning and ensure that students could progress onto more advanced topics. There were some concerns raised about some of the sequencing that would not enable the teaching of foundations before moving on to advanced areas.

"Place value should have a more natural progression, such as place value should be up to 10 000 in Year 3 and up to around 100 000 in Year 4. Timetables should not all be taught in Year 4, it is too much to master in one year. When using the new vocabulary, there needs to be a scope and sequence of vocabulary and it needs to be a working document so that teachers can learn and understand what each term means." (Primary teacher, Western Australia, Catholic, Metropolitan).

"Still not enough emphasis on the basics. Students are getting to Year 6 that still don't know times tables. That is more than half the class not just the slow learners." (Parent, New South Wales, Government, Remote).

"Focus on numbers to 1000 only up until (inclusive) Year 4. If students do not have basic number skills, they cannot access numbers beyond 1000. Once they truly have a deep understanding of place value, basic facts and number they will pick up numbers above 1,000 easily in later years." (Primary teacher, Queensland, Government, Regional).

The theme of *implementation* was the 4th most common theme. While technically out of scope of the TOR for the consultation, comments related to resourcing, teacher expertise and capability, methods and practices of teaching and assessment were coded under the theme of *implementatio*n. In relation to Mathematics, implementation issues that were raised were concerns about non-specialist teachers being able to implement the curriculum successfully.

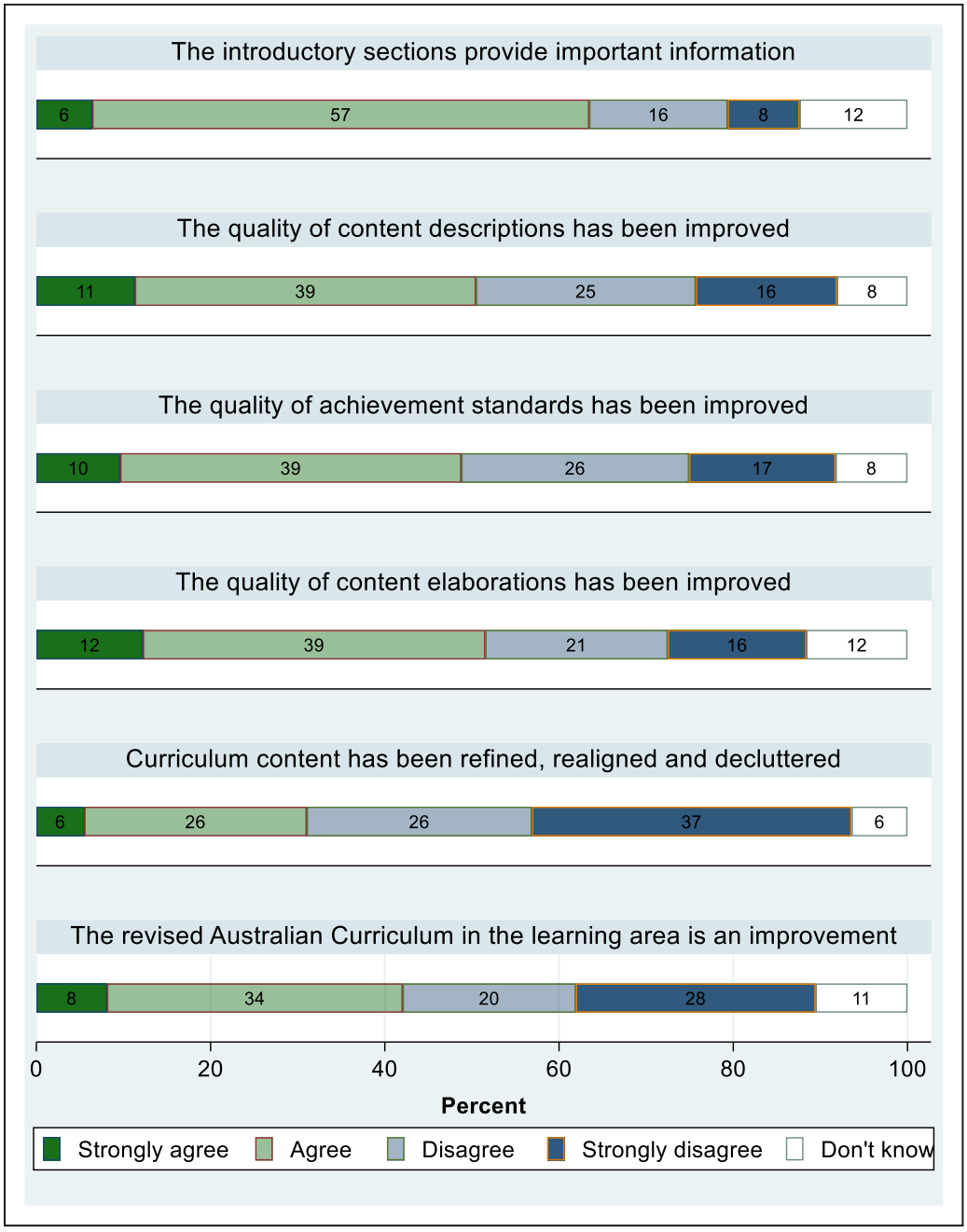
5.1.3 Overall feedback

In the Overall feedback section respondents were asked whether they thought the quality of achievement standards, content descriptions and content elaborations had been improved, whether the curriculum content had been refined, realigned and decluttered and whether the revised Australian Curriculum: Mathematics was an improvement on the current version. These questions directly related to the terms of reference (TOR) of the Review and what it set out to achieve.

The Overall feedback section also asked respondents whether the introductory sections provide important information. Results for all these questions are shown in Figure 7. They show that the statements directly related to the TOR received notably lower agreement (between 31% and 52% agreed or strongly agreed) than the statement about the introductory section (63%).

The statement 'Curriculum content has been refined, realigned and decluttered' received the least favourable responses with 31% of respondents agreeing or strongly agreeing and 63% disagreeing or strongly disagreeing.

Figure 7: Overall feedback, Mathematics survey respondents



Percentages in the bars are rounded and may not add up to the % agreed and strongly agreed quoted in the text.

5.1.4 Aspects that have improved and aspects that need further improvement

Respondents were also invited to add their general comments on aspects of the revised Mathematics curriculum that had improved and on aspects that needed further refinement. Responses were captured in 2 text boxes that were respectively labelled. About 53% of the survey respondents commented in one or both of those boxes (Table 8).

Open-ended responses were coded according to the developed code frame. When coding these open-ended responses, it emerged that comments did often not adhere to the positive (aspects that have improved) and negative (aspects that need further improvement) frames of the 2 text boxes. Instead, the emerging themes were often the same in both boxes. Because of this, comments captured in these boxes are reported combined below.

Table 8: Open-ended comment, Mathematics survey respondents

Commenting status	n	Percent
Not commented	310	47%
Commented in 'have improved box'	75	11%
Commented in 'further improve' box	109	17%
Commented in both boxes	160	24%
Total	**654**	**100%**

The top 5 themes of the responses to the open-ended questions are listed in Table 9. The leading themes that emerged from the responses to these questions included: *introductory elements, content that had improved, manageability, clarity,* and *implementation.*

Most commonly, respondents commented on the *introductory elements* in their feedback, and this constituted the leading theme. A number of respondents saw improvements to the usefulness of the introductory sections of the proposed curriculum. This included the rationale/aim, strands/sub-strands and core concepts, as well as the key connections.

> *"The rationale in the revised curriculum is clear about the importance of mathematics in school and life beyond school. It is pleasing to see reference to mathematics having its own innate beauty and value. The links that the rationale makes to mathematics in our modern world are also important. The aims are clear and identify key learning that students will demonstrate. We support the revised organisation of the learning area." (Other – Group, National).*

> *"The Core Concepts of mathematising, structure, and approaches is a real strength of the revised curriculum. These Core Concepts are essential foundations in the teaching of mathematics and are reflective of the work the Academy does in reSolve: Maths by Inquiry." (Other – Group, National).*

In addition, the organisation of content in the 6 new strands and the removal of proficiency strands as separate strands was commended by a number of respondents.

> *"We support the separation of the content from 3 to 6 strands. The current groupings of 3 strands suggest that connections can only be made between topics within a strand, for example, number and algebra are connected and there is limited connection between number and algebra with measurement, geometry, statistics, and probability. We support the change from Geometry to Space. Space more accurately reflects the scope of study within the strand; geometry is just one aspect." (Other – Group, National).*

> *"Love the new strand organisation and the clarity of embedding the proficiencies within the CDs; it has been so difficult for teachers to prioritise proficiencies while trying to deal with teaching all the CDs. Love the rearrangement of some of the concepts between year levels also." (School leader – Primary, Queensland, Government, Regional).*

> *"The embedding of the proficiencies (and their expansion in scope) into the content strands is excellent." (Other – Group, National).*

However, while there was a many positives comments, it can be seen from Table 9, more respondents saw that further refinements were needed to some introductory elements. In particular, there was feedback to reconsider the use of sub-strands to further organize the content descriptions within strands, to provide coherence and clarity for teachers and address feedback on the mathematical processes.

> *"The decluttering of the curriculum is appreciated, to provide more time and space for rich learning opportunities. A key criticism of the current mathematics curriculum is that the proficiency strands are separated from the content and are presented with little direction as to what a teacher is*

expected to do with them. This is a concern for teachers, and it would be helpful if further clarity can be provided here." (Professional association, National).

Table 9: Aspects that have improved/need further improvement (top 5 themes), Mathematics survey respondents

Theme/Subtheme	Number of respondents	Percent of total
Introductory elements	**162**	**24.8%**
The rationale/aims have improved	5	0.8%
The rationale/aims need further improvement	20	3.1%
The strand/sub-strands/core concepts have improved	65	9.9%
The strand/sub-strands/core concepts need further improvement	104	15.9%
The key connections have improved	20	3.1%
The key connections need further improvement	19	9.9%
Content has improved/should remain	**77**	**11.8%**
General views that content has improved	27	4.1%
Content has better alignment with rationale/aim of learning area	7	1.1%
Content has better alignment with who we want our children to become	9	1.4%
The level of emphasis on Indigenous cultures and perspectives is appropriate	16	2.4%
Various other LA specific content that has improved or should remain	41	6.3%
Manageability (amount of content)	**116**	**17.7%**
Decluttering of content evident, the amount of content is more manageable	10	1.5%
Still too much content/further decluttering needed	110	16.8%
Clarity	**163**	**24.9%**
The overall language of the curriculum is clearer and/or easier to understand	36	5.5%
The overall language of the curriculum could use further revision to be clearer and/or easier to understand	72	11.0%
The wording of the content descriptions is clearer and/or easier to understand	45	6.9%
The wording of the content descriptions could use further revision to be clearer and/or easier to understand	36	5.5%
The wording of the achievement standards is clearer and/or easier to understand	18	2.8%
The wording of the achievement standards need further clarity	38	5.8%
The wording of introductory elements (rationale, aims, key connections) could use further revision to be clearer and/or easier to understand	4	0.6%
Implementation (out of scope)	**108**	**16.5%**
Pedagogy – this overarching theme encompasses feedback about how children should be taught	69	10.6%
Assessment – this theme encompasses feedback on delivering assessment to students according to achievement standards and curriculum contents	17	2.6%
Support for implementation (e.g., professional development, teacher training, resources such as planning advice and resources, classroom resources)	39	6.0%

Comments were provided by 344 respondents. Percentages are based on all 654 Mathematics survey respondents. All theme and subtheme categories that emerged from the 2 comment boxes are shown in Table E2 in Appendix E.

The second most common theme was *content that has improved or should remain*. These comments reflected perceived improvements to the curriculum and included a wide range of topics including the

inclusion of more detailed elaborations, more comprehensive connections to numeracy, and reorganisation of the achievement standards and strands.

> *"Greater effort to provide elaborations. More widely accepted breakdown of main content areas achievement standards provides more information incorporation of proficiencies into content descriptors is a good decision. Good to see essential mathematical concepts have been retained. Good to see a greater focus on the generation of error and its significance." (Secondary teacher, Western Australia).*

> *"The elaborations have explicitly included many important numeracy concepts such as patterns in 100's charts and adding and subtracting with 100's chart. Fact families for numbers 0-10 and adding numbers 0-10 to ie 4+ 8 = 12 so 12+8 =24 etc. Bridging through 10, 100 and 1000 when adding and subtracting, using open number lines. Trading when subtracting. Block multiplication. Multiplication using arrays, fluency of times tables and reverse division facts. Division as partitioning and sharing. I also like the use of the parallel line emphasis on shapes in the primary curriculum rather than just knowing the shape names and how many sides they have. The elaborations overall provide a source of sound numeracy teaching from trusting the count through to placing decimals and fractions on a number line. If all elaborations are explored thoroughly our future students will have sound numeracy skills. There are too many positive elaborations to comment on individually you have done a fantastic job with the number and algebra strands in the primary sections." (F-12 teacher, Victoria, Government, Metropolitan).*

Again, the organisation of content in the 6 proficiency strands into the content descriptions was reinstated as a positive change.

> *"F-6 Proficiency strands moved and embedded into the content descriptions and achievement standards is positive. Removal of sub-strands. Changing the achievement standard with 2 strands per paragraph is easier for teachers when creating assessments. Separation of number and algebra – highlights the importance of both these strands. 7-10. The number of elaborations for each content description. Linking mathematical skills to STEM; The 6 interrelated strands.; Embedding of the proficiency strands; Increased detail in the Achievement Standards; Increased mapping of the Achievement Standard to the Content Descriptions." (Education authority, Queensland).*

> *"We support the separation of the content from 3 to 6 strands. The current groupings of 3 strands suggest that connections can only be made between topics within a strand, for example, number and algebra are connected and there is limited connection between number and algebra with measurement, geometry, statistics, and probability. We support the change from Geometry to Space. Space more accurately reflects the scope of study within the strand; geometry is just one aspect." (Other – Group, National).*

> *"Organising the content into Strands is a major improvement for planning and teaching." (Primary teacher, Queensland, Government, Regional).*

> *"Like the inclusion of proficiencies within the curriculum. Appreciate the detail in the elaborations and the emphasis on problem solving and reasoning approaches." (Education authority, Queensland).*

The clear connections with general capabilities were also commended by respondents.

> *"It feels like the general capabilities are more explicitly noticeable and this feels like an improvement that would support schools to implement the 3 dimensions of the curriculum." (School leader – Primary, Queensland, Government, Regional).*

The third most common theme in this section related to *manageability*. A number of respondents commented that they had observed decluttering in the curriculum.

> *"Any amount of decluttering is a good step!! Positive. Simplified structure with proficiencies now embedded into content descriptions and achievement standards." (School leader – Primary, Queensland, Independent, Metropolitan).*

However, as evident in Table 9 and similar to what was noted in the section on Curriculum Elements (see Section 5.1.2), of the respondents who made a comment related to manageability, the overall majority saw that further decluttering was needed for the amount of content to be manageable.

> *"I think that instead of decluttering the curriculum you have just combined different learning areas into one descriptor. I think the amount of content is fine but you have now combined them and made them more wordy, complicated and harder to break down." (Primary teacher, Australian Capital Territory, Government, Metropolitan).*

> *"The curriculum has not been "decluttered" or "refined" - just reorganised. The quantity of content that is required to be taught in one year is totally unachievable. With this curriculum, children will not have the opportunity to consolidate learning or deepen their understanding of concepts." (Primary teacher, Queensland, Government, Metropolitan).*

The 4th leading theme related to *clarity*. Coded within this theme were comments related to the ease of readability of the overall curriculum and the organization of material, as well as the clarity and specificity of specific elements, such as content descriptions and achievement standards.

A number of respondents saw improvements in clarity with the proposed revisions. In particular, some respondents noted refinements and revisions to content descriptions to embed the proficiencies which made them explicit.

> *"A number of the content descriptors and achievement standards have been made more specific which clarifies the expectations for teachers. The increased number of content elaborations will assist teachers across a variety of year levels." (School, Queensland, Government, Regional).*

> *"The rationale and explanation of content descriptions and elaborations are well written with fantastic references to current research. I believe the core concepts and their structure 'calls out' in necessary detail, the very important elements, relationships and approaches of Mathematics. These are critical for teachers to know and understand how to incorporate into their teaching." (Other – Individual, Northern Territory).*

> *"The content descriptions are more specific and clear. The cognitive verbs are a great addition." (Primary teacher, Queensland, Government, Metropolitan).*

Some respondents also noted stronger and clearer links between content descriptions and achievement standards.

> *"The organisation of the achievement standards by strand has made them easier to use. The alignment between achievement standards and content descriptors has improved." (School, Queensland, Government, Regional).*

Some respondents also commented on the improved clarity of connections with the cross-curriculum priorities.

> *"The cross-curriculum priorities have also been explained in a more detailed and specific way, which is clearer for teachers to apply." (Other – Individual, Northern Territory).*

However, as can be seen from the table, there were also calls to further refine the clarity of curriculum elements, such as refining content descriptions and, where appropriate, reducing their complexity and length.

> *"Content descriptors lack specific statements/elaborations that outline the level of skill required. E.g., solving simultaneous equations - this can be done graphically, using elimination, using substitution and with technology. describing a solution as stated in the elaboration doesn't help us determine the level to teach." (Secondary teacher, Queensland, Independent, Metropolitan).*

> *"Content descriptors are more complex than before. Subjects are broken down into too many areas· There are no clear ideas or directions on how to teach foundation how to make and justify their mathematical decisions and how to explain reasoning. It would be good to have clear expectations under elaborations." (School, Queensland, Independent, Metropolitan).*

Implementation was the fifth most common theme. Comments around challenges with implementation, due to a lack of resources or the structure of schools, as well as comments around the pedagogy, were technically out of scope of the terms of reference of the consultation. However, to comprehensively code all of the comments provided through the consultation, they were recorded under a theme of implementation, which generally capture perceived implementation challenges. Of note for the learning area of Mathematics were comments related to implementation were often related to teaching methods and practices, as well as having sufficient resources to support teachers.

> *"Concerned that for some grade levels that the depth expected (and needed) may turn the learning into a checklist scenario rather than giving it the justice it deserves. We need to support teacher capacity in their own understanding. We already have teachers who struggle with maths because they learnt traditionally and fail to see the connections/big ideas in this curriculum area. Having resources/online webinars, etc. that are free so that teachers across the country can build their own understanding is going to be crucial. We don't know, what we don't know. I know this shouldn't be up to ACARA however, I do feel that when there is such an obvious deficiency in knowledge and understanding at a teacher level we are always going to struggle to have students to draw out connections and understandings." (School leader – Primary, South Australia, Independent).*

5.1.5 Year level specific comment

Respondents were also prompted to make comment about specific year levels. Of the 654 respondents 137 provided such detailed feedback, some of whom in relation to multiple year levels. Table 10 lists the number of respondents who provided feedback for each year level. This year-level specific feedback has been scrutinised by ACARA personnel.

Table 10: Year level specific open-ended feedback, Mathematics survey respondents

Year level	Number of respondents
Foundation	23
Year 1	30
Year 2	27
Year 3	17
Year 4	13
Year 5	15
Year 6	17
Year 7	33
Year 8	27
Year 9	25
Year 10	34

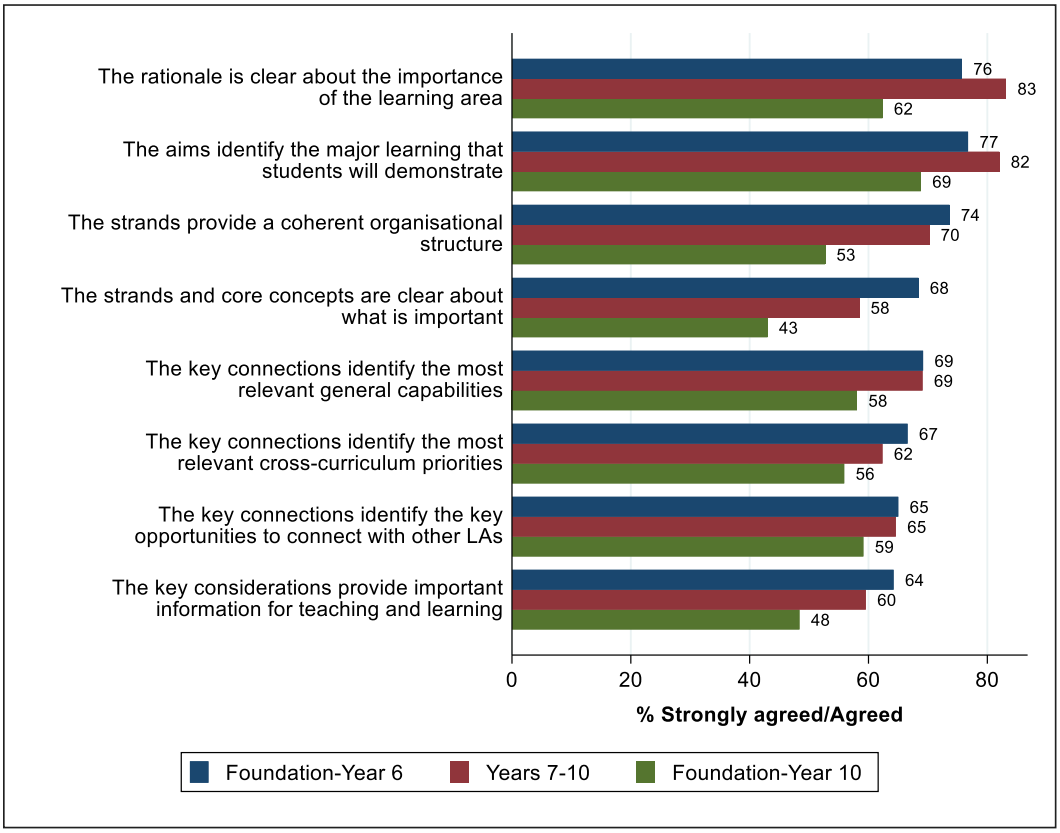
5.2 Differences by level of the curriculum

This section explores whether there were differences in survey responses between the 3 different year levels of the curriculum that respondents could report on. This was achieved by comparing the percentages of agreement (combining strongly agree with agree) across the 3 levels (F-6, Y7-10, F-10). The results are grouped in 3 graphs according to Introductory elements, Curriculum elements and Overall feedback.

Figure 8 shows the level of agreement for the statements in the Introductory element section between respondents whose responses were framed by different year levels of the curriculum. There were some differences between the levels of agreement expressed by primary and secondary school level respondents with the latter expressing more favourable views on the rationale and aims, and the former expressing more favourable views in relation to some of the strand, key connections and key elaboration statements.

The most notable pattern in the graph, however, is the consistently lowest level of agreement by the F-10 respondents.

Figure 8: Introductory elements by level of curriculum, Mathematics survey respondents



This response pattern was somewhat similar for the statements in the Curriculum section of the survey. Of the 3 groups, primary curriculum respondents were most likely to agree with the statements on year level descriptions, achievement standards and content descriptions while F-10 respondents were least likely to do so (Figure 9).

F-10 respondents were also least likely to confirm that the quality of the achievement standards, the quality of the content descriptions and the quality of the content elaborations had improved (Figure 10).

Figure 9: Curriculum elements by level of curriculum, Mathematics survey respondents

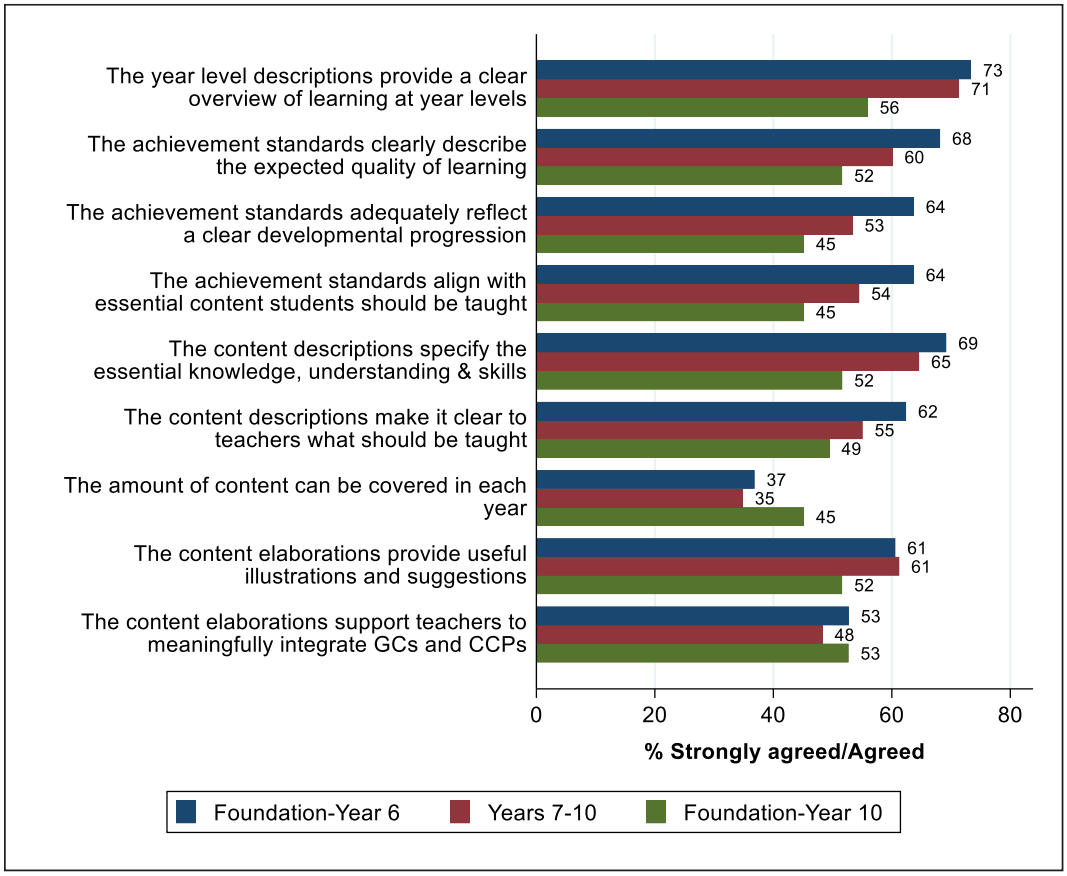
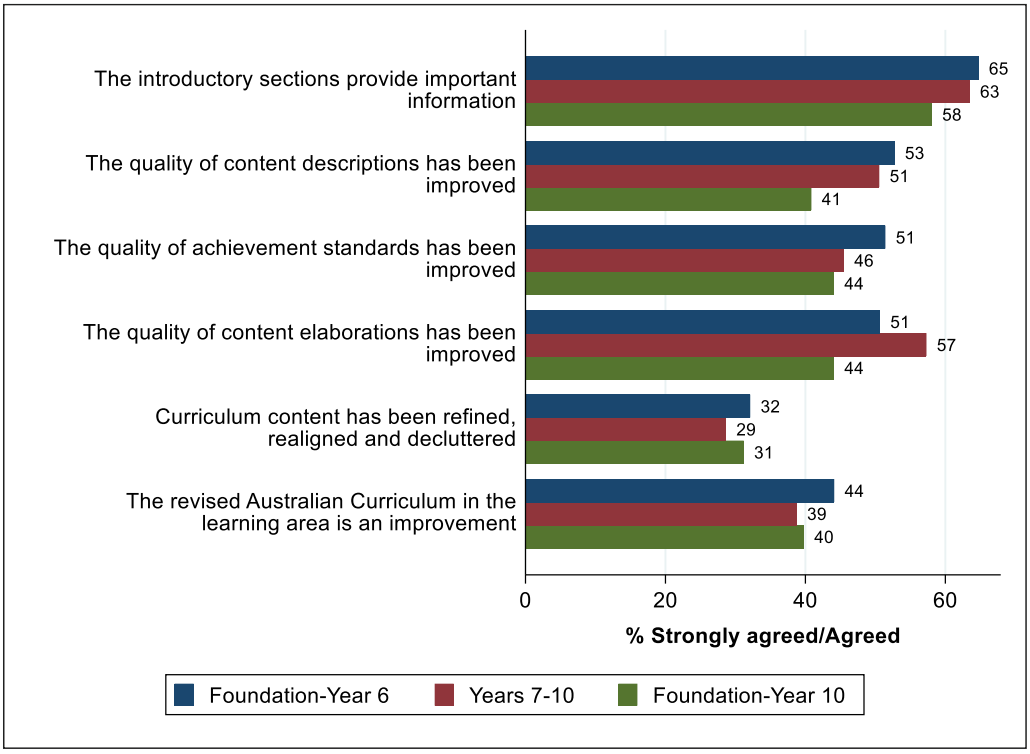


Figure 10: Overall feedback by level of curriculum, Mathematics survey respondents



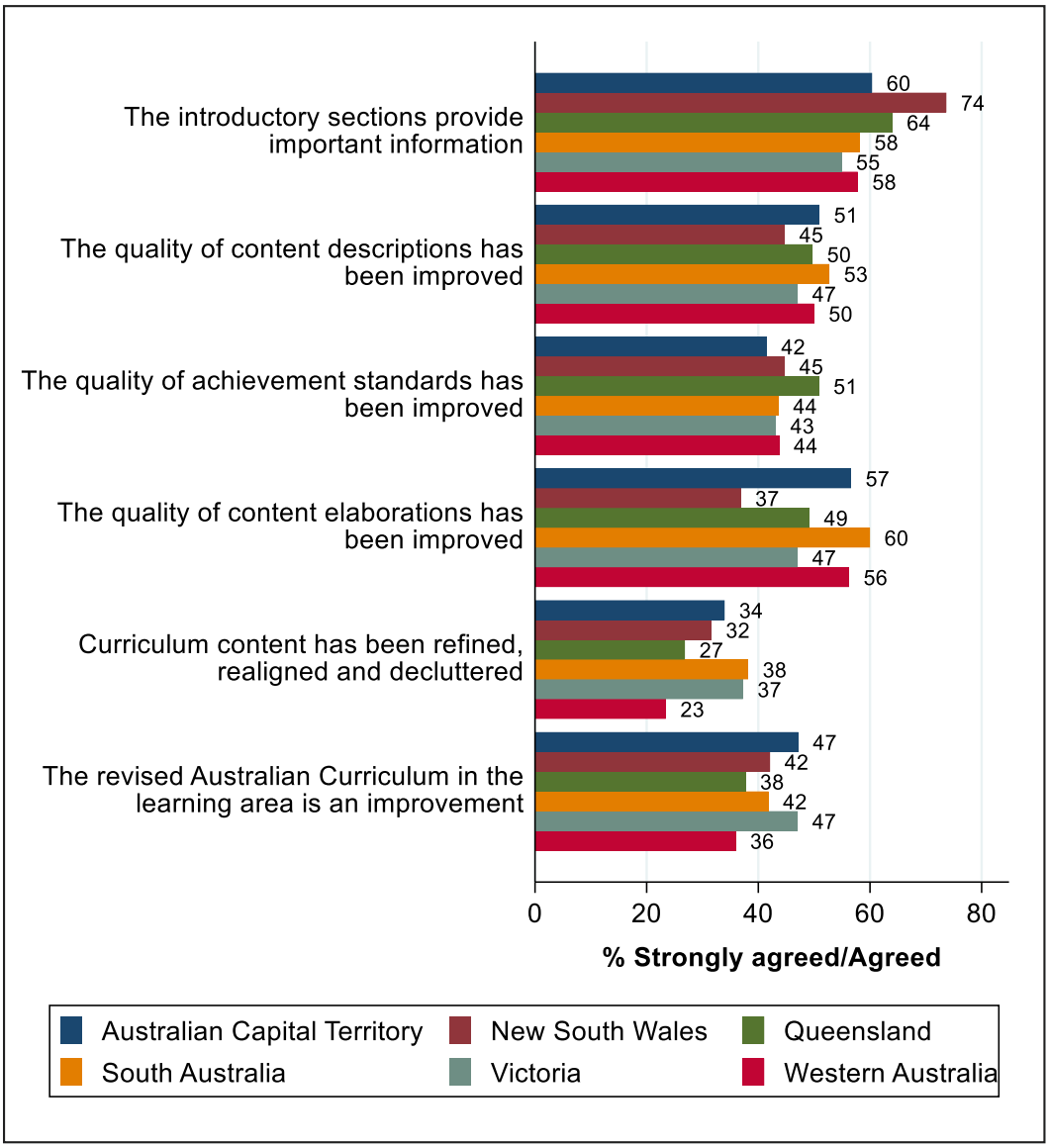
5.3 Other differences between stakeholder groups

5.3.1 States

There were 6 states and territories with 30 or more respondents: Australian Capital Territory (n=53), New South Wales (n=38), Queensland (n=350), South Australia (n=55), Victoria (n=51) and Western Australia (n=64).

There were numerous differences between the perceptions of groups of respondents from these states and territories without there being a systematic pattern to those differences. This is reflected in responses to the statements in the Overall feedback section of the survey (Figure 11). There is no obvious pattern discernible of states or the Australian Capital Territory having responded particularly positively or negatively to multiple statements relative to respondents from the other states. The ranking of the states/territory based on their level of agreement rather changed from statement to statement. This very similarly applied to responses to the statements in the Introductory and Curriculum sections of the survey.

Figure 11: Overall feedback by state, Mathematics survey respondents

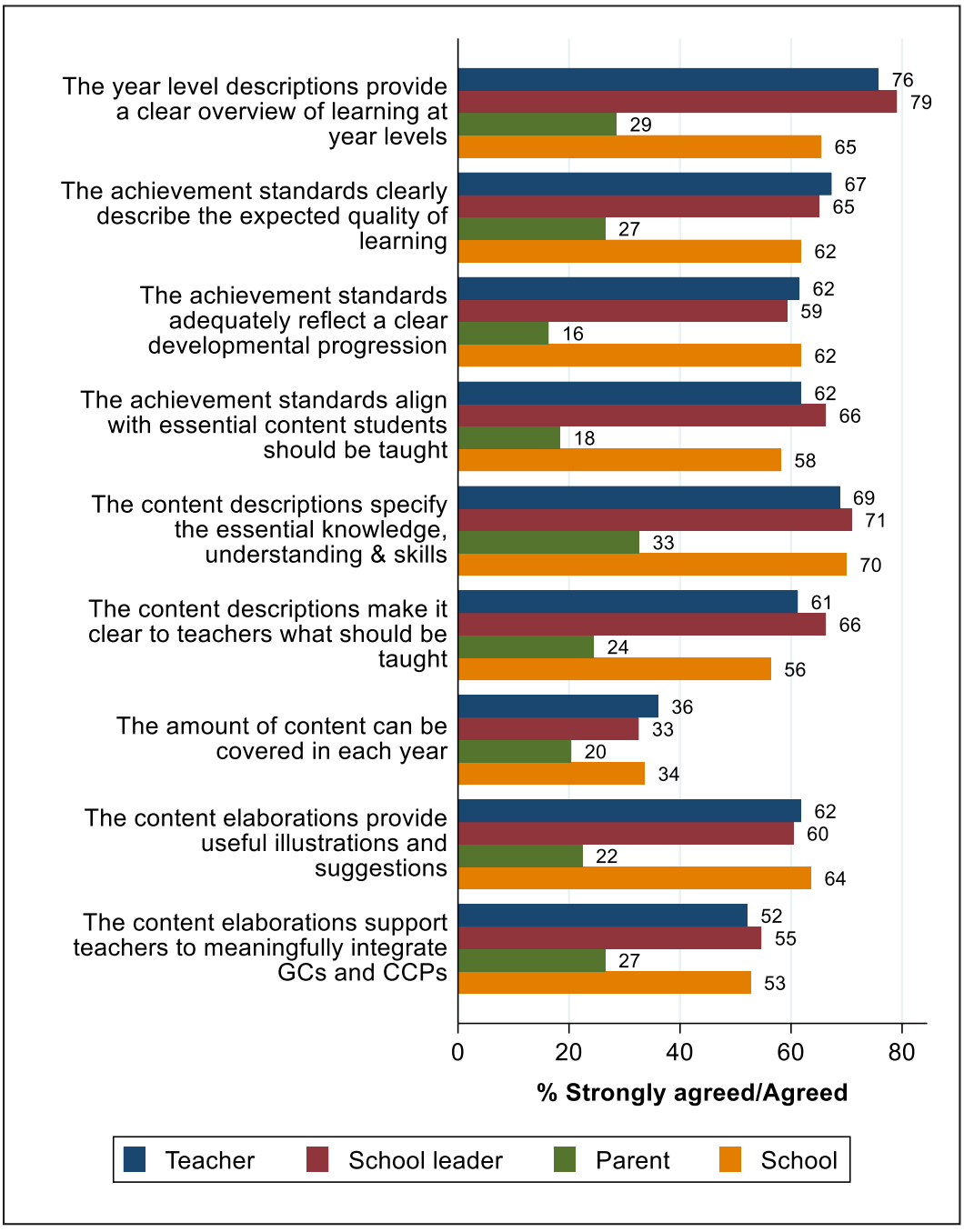


5.3.2 Type of stakeholder

Teachers (n=330), School leaders (n=86), parents (n=49) and schools (n=110) were represented by more than 29 respondents. There were differences between these groups' perceptions, which are illustrated in Figure 12, which shows the level of agreement to the statements in the Curriculum elements section of the survey.

For the most part, agreement levels expressed by teachers, school leaders and schools were similar while parents were dramatically less likely to agree or strongly agree with any of the statements than the former 3 groups.

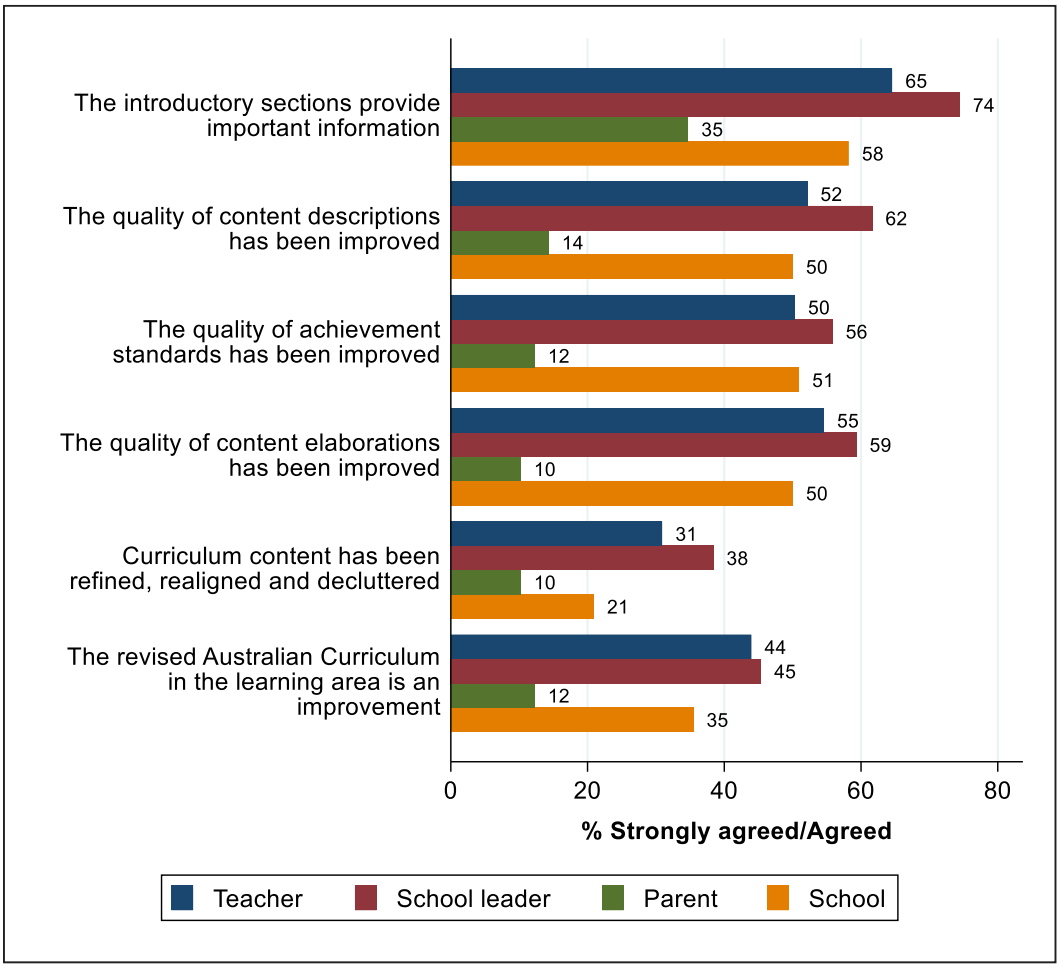
Figure 12: Curriculum elements by stakeholder type, Mathematics survey respondents



The pattern depicted in Figure 12 very similarly applies to responses to statements in the Introductory and Overall feedback sections of the survey with the difference that school leaders as a group gave consistently

the highest agreement ratings in these 2 sections of the survey while responding schools' ratings were below those of school leaders and teachers. This created more notable differences in the agreement levels between school and school leader responses as can be seen in Figure 13.

Figure 13: Overall feedback by stakeholder type, Mathematics survey respondents



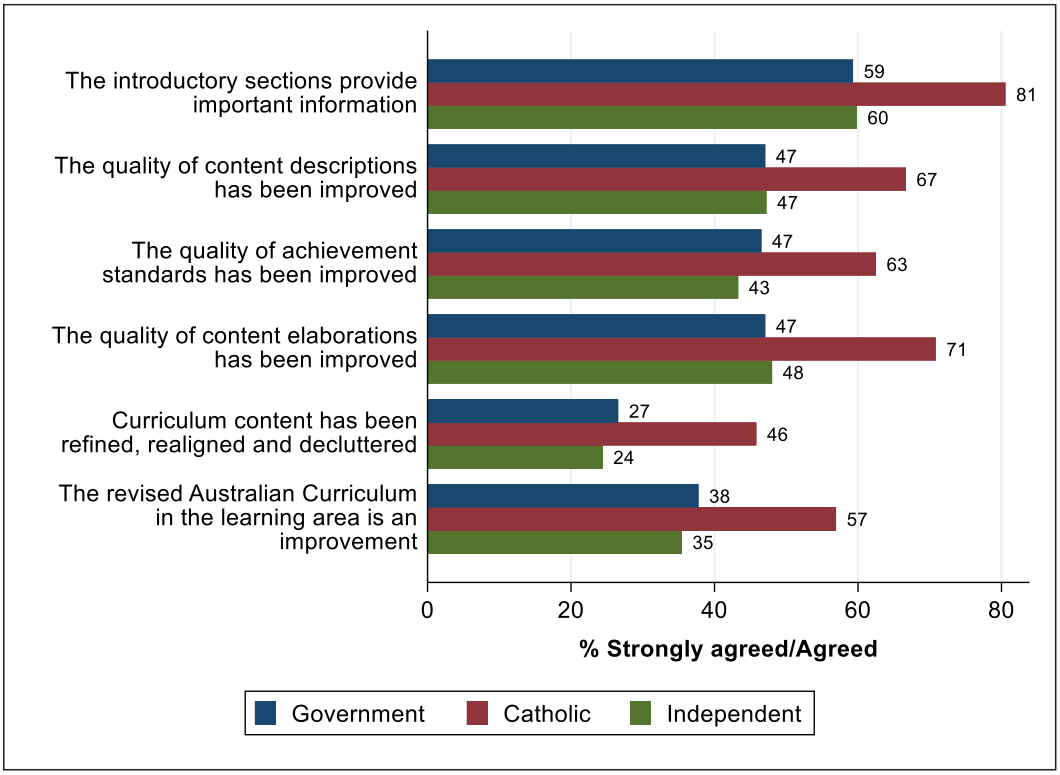
5.3.3 School sector

Teachers, school leaders, students and schools were asked to indicate which school sector they work or study in, and parents were asked to indicate in which sector their child(ren) learn.

Catholic school respondents were notably more likely to confirm all the presented statements in the survey compared to Independent and Government school respondents. The latter 2 groups' agreement levels were, for the most part, very similar. This is illustrated by the results for the statements in the Overall feedback section of the survey, which include the 5 TOR statements (Figure 14).

A clear majority of the 72 Catholic school respondents confirmed that the quality of the achievement standards, content descriptions and content elaborations had improved while this only applied to less than half of the 127 Independent school respondents and the 376 Government school respondents.

*Figure 14: Overall feedback by school sector, Mathematics survey respondents^*



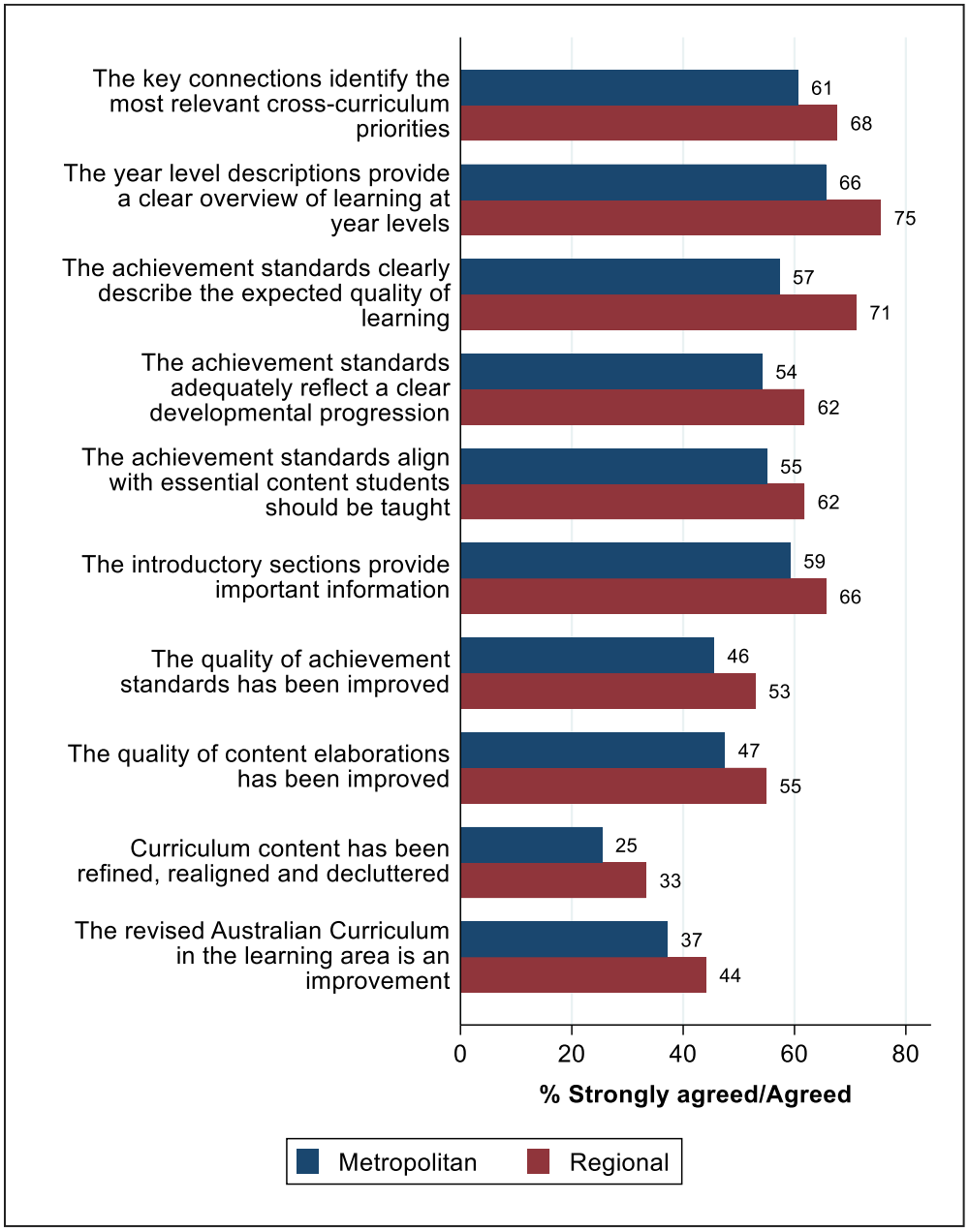
^ Respondents who identified as teachers, school leaders, parents, students and schools.

5.3.4 School location

Respondents who identified as teachers, school leaders, parents, students and schools were also asked their school's location. Respondents linked to metropolitan schools were often more likely to agree with the statements in the survey than respondents linked to regional schools. This is illustrated in Figure 15, which only shows the survey statements for which there was a difference of at least 5 percentage points in the agreement levels between metropolitan and regional respondents.

Regional respondents were more inclined to confirm aspects of introductory elements, achievement standards and the realisation of the TOR than metropolitan respondents.

*Figure 15: Differences by school location, Mathematics survey respondents^*



^ Respondents who identified as teachers, school leaders, parents, students and schools
Respondents linked to schools in remote areas are excluded due to their low number (n=11).

5.4 Summary - survey results

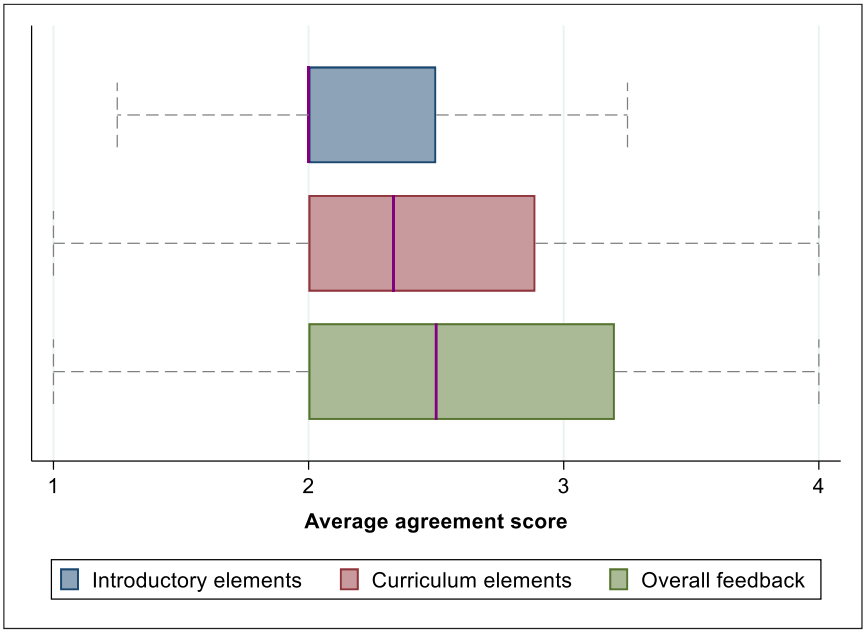
Respondents from Queensland (54%), those who identified as teachers (51%) and those who were linked to Government schools (57%[5]) and schools in metropolitan areas (62%[6]) were the largest respondent groups that influence the overall survey results for the Mathematics curriculum. Overall results are further dominated by respondents who commented on the F-6 levels of the Mathematics curriculum (59%).

There was a general pattern in the agreement responses discernible across the 3 general questionnaire sections. The level of agreement tended to be highest in relation to statements about the Introductory elements of the curriculum (Figure 4), lower for statements about in the Curriculum elements (Figure 5) and still lower for the 5 TOR statements in the Overall feedback section (Figure 7).

[5] Percentage based on all respondents while the numerator only applied to teachers, school leaders, students, parents and schools.
[6] As above.

This is also reflected in the distribution of the average agreement scores of respondents when responding to statements in the different sections. These are plotted in Figure 16, where agreement is higher to the left end of the scale and lower toward the right end of the scale. This shows that average scores for the Curriculum elements were further distributed to the right on the 4-point agreement scale than those for the Introductory elements, and that average scores for the Overall feedback statements were further to the right (the disagreement end) than the average scores for the Curriculum elements.

Figure 16: Introductory elements, curriculum elements and overall feedback, average ratings, Mathematics survey respondents



Response options: 1 – Strongly agree, 2 – Agree, 3 – Disagree, 4 – Strongly disagree
Boxplots[7] show the distribution of average ratings across the 8 agreement statements in the Introductory elements section, across the 9 agreement statements in the Curriculum elements section and the 6 agreement statements in the Overall feedback section. Don't know responses were excluded from calculating averages.
The median is indicated by the pink line in each of the boxes.

Of all 23 statements that sought agreement ratings in the survey, the ones about the aims and rationale received the most positive agreement scores (77% and 76% agreement). This is shown in Figure 17, which ranks all statements in descending order of their agreement level. At the other end of the graph sit the final 2 TOR statements about decluttering and improvement of the curriculum for which the level of agreement was relatively low (31% and 42% agreement) as well as the statement that the amount of work can be covered in each year (37% agreement).

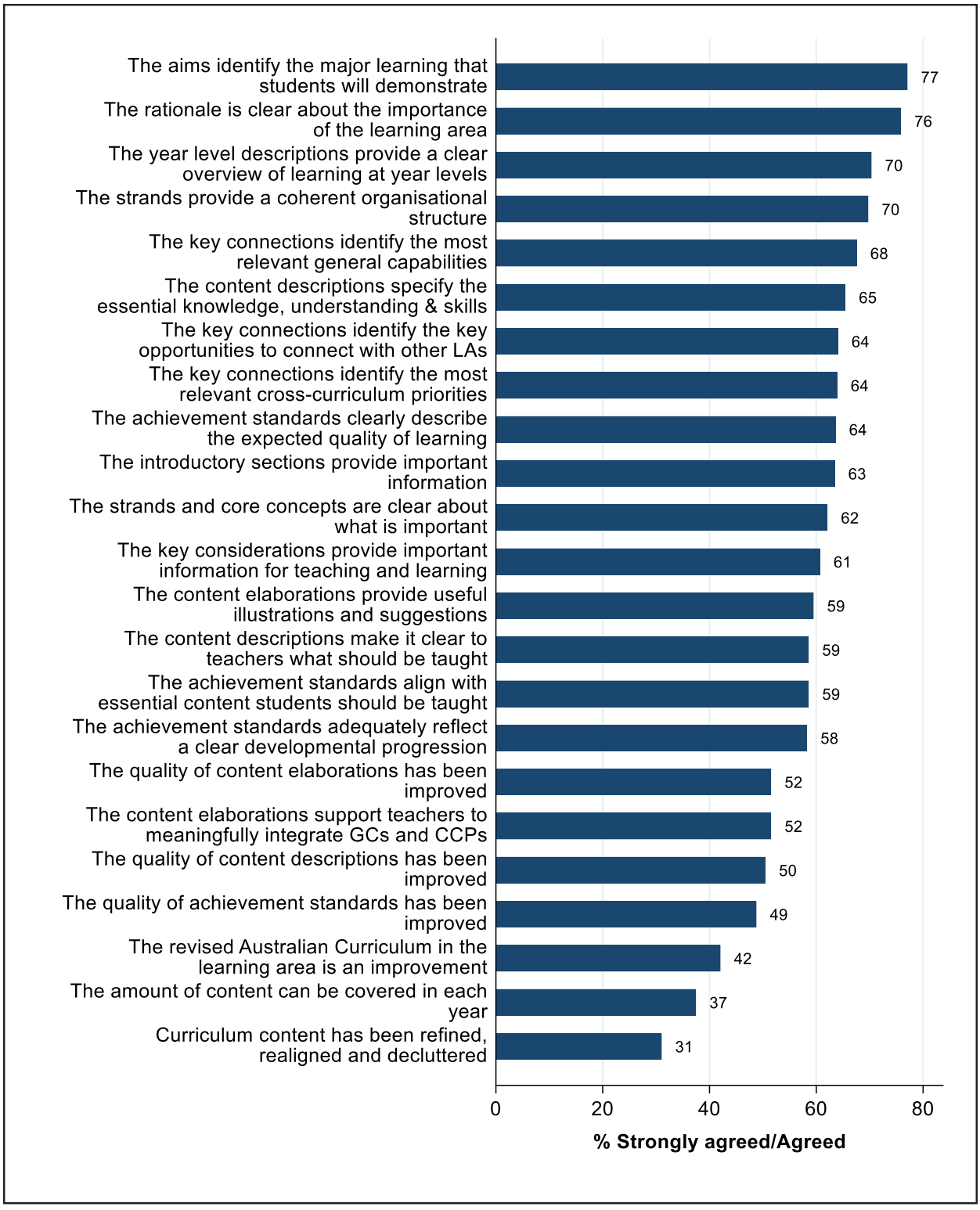
Of the introductory and curriculum elements (excluding the TOR statements), matters of the curriculum that received lesser agreement in the Mathematics survey were:

- the achievement standards adequately reflecting a clear developmental progression;
- the achievement standards aligning with essential content students should be taught;
- the clarity of content descriptions in what should be taught;
- achieving the intended attributes of content elaborations; and
- the amount of content that need to be covered each year.

[7] A box plot (also known as a box-and-whisker plot) displays the distribution of a variable in a way that highlights key summary statistics of the distribution: the median (a line separating the top 50% of values from the lower 50% that would appear in the middle of the box for a normally distributed, and any symmetric, variable); the 25th and 75th percentiles (Q1 and Q3), which mark the 2 ends of the box; and the whiskers, which mark the so-called upper and lower adjacent values (which are the most extreme values within 1.5 times the inter-quartile range (Q3-Q1) from the end of the box).

All of the associated propositions are ranked in the bottom half of Figure 17 based on the level of agreement they received. They also attracted between 30% and 38% of disagreement, excluding the amount of content statement for which the level of disagreement was 56%.

Figure 17: All survey statements, Mathematics survey respondents



Of respondents who selected different levels of the curriculum to report on, F-10 respondents were least likely to approve of the introductory elements, the year level descriptions, achievement standards, content

descriptions and were least likely to confirm that the quality of the achievement standards, the quality of the content descriptions and the quality of the content elaborations had improved.

Of different types of respondents, parents were, often by a large margin, less likely to agree or strongly agree with any of the statements seeking agreement compared to teachers, schools and school leaders, with the latter being most inclined to confirm the proposed statements in the Introductory and Overall feedback section of the survey.

Catholic school respondents were notably more likely to confirm all the presented statements in the survey compared to Independent and Government school respondents. Regional respondents were more inclined to confirm aspects of introductory elements, achievement standards and the realisation of the TOR than metropolitan respondents.

The perception that the Mathematics curriculum content needed to be further reduced to be able to have time to teach it all and for children to better understand was one of the more prevalent themes that emerged from open-ended feedback captured in the survey. There were various suggestions about removing content or aspects of the achievement standards. The feedback on the need to remove content was across the board rather than specific year levels. Related to the suggestions for specific removal or relocation of content was the view that the proposed inclusion and sequencing of content within the Mathematics curriculum has not sufficiently or suitably addressed important concepts, the need for mastery of basic facts or the development of mental calculation methods.

Open-ended feedback was heterogenous and at times expressed opposing views on the same aspects of the curriculum. Among the open-ended feedback was also acknowledgement that the Mathematics curriculum had improved, which references to more detailed elaborations, clear connections with general capabilities, and reorganisation of the achievement strands.

The over-representation of respondents from Queensland makes it likely that the overall survey results were particularly affected by the Queensland-specific context in which the Australian Curriculum is implemented.

6. Feedback from email submissions

There were 76 email submissions related to maths. Of the 76 submissions, there were 2 petition-style emails. The first, with close to 370 signatures, was largely focussed on requesting a reconsideration of the proposed removal of the recall of number facts. The other, with approximately 150 signatures, was primarily concerned with the proposed replacement of the 4 Proficiencies in the current Curriculum with the draft's 13 "Core Concepts", grouped under 3 "Core Concept Organisers".

The code frame (see Appendix C), was utilised to analyse the content of the email submission feedback. As per the open-ended survey feedback, respondents may make the same point multiple times with different examples, but a theme is only coded once for that respondent.

6.1 Major themes and subthemes

Table 11 presents the full list of main themes that emerged from the feedback from the 74 standard email submissions for the learning area of Maths. This includes the number and percentage of email respondents discussing this theme. It is possible that a single response has utterances that span across multiple themes. As a result, a comment from a single respondent would be coded to more than one theme. Likewise, a single response could be coded to more than one subtheme.

As can be seen from Table 11, the leading 4 major themes (in terms of the most number of respondents discussing these themes) were around *clarity, inclusive content*, *further content that should be added* and *implementation (out of scope).*

Table 11: Summary of major themes, Mathematics standard email submissions

Major Theme	Number of email submissions	Percentage
Introductory elements	27	35.5%
Content has improved & should remain	20	26.3%
Content should be added	39	51.3%
Content should be removed	27	35.5%
Evidenced-based content	9	11.8%
Inclusive Content	42	55.3%
Manageability of Content	24	31.6%
Sequencing of Content	22	28.9%
Achievement Standards	8	10.5%
Clarity	44	57.9%
Implementation	37	48.7%
Other	15	19.7%

Table 12 presents the breakdown of email respondents discussing the subthemes under the top 5 major themes[8]. As the table demonstrates, the subthemes that had received comments by the highest proportion of respondents were around learning area specific content as well as the age appropriateness of the content.

[8] The table presents 6 themes as 2 themes are equally ranked as the 5th most prevalent.

Table 12: Summary of subthemes (top 5 themes), Mathematics standard email submissions

Major Theme and Subtheme	Number of emails	Percentage
Clarity	**44**	**57.9%**
The overall language of the curriculum is clearer / easier to understand	5	6.6%
The overall language of the curriculum could use further revision	40	52.6%
The wording of the content descriptors is clearer / easier to understand	12	15.8%
The wording of the Content Descriptors could use further revision	23	30.3%
The wording of the Achievement Standards is clearer / easier to understand	8	10.5%
The wording of the Achievement Standards need further clarity	13	17.1%
The wording of Introductory Elements (rationale, aims, key connections) is clearer and/or easier to understand	1	1.3%
The wording of Introductory Elements (rationale, aims, key connections) could use further revision	6	7.9%
Inclusive Content	**42**	**55.3%**
The curriculum content does not adequately accommodate and enable teaching for diverse learners' interests and capabilities.	12	15.8%
There are concerns around the age-appropriateness of content	35	46.1%
Content should be added	**39**	**51.3%**
General views that additional or new content should be added	16	21.1%
Additional or new content should be added for better alignment with rationale/aim of learning area	2	2.6%
Additional or new content should be added for better alignment with who we want our children to become (e.g., confident, knowledgeable, skilled)	3	3.9%
Various other LA specific content that should be added	27	35.5%
Implementation (out of scope)	**37**	**48.7%**
Pedagogy	17	22.4%
Assessment	10	13.2%
Implementation support (e.g., professional development, teacher training, resources such as planning advice and resources, classroom resources)	20	26.3%
Introductory elements	**27**	**35.5%**
The rationale/aims have improved	6	7.9%
The rationale/aims need further improvement	7	9.2%
The strand/sub-strands/core concepts have improved	11	14.5%
The strand/sub-strands/core concepts need further improvement	16	21.1%
The key connections have improved	5	6.6%
The key connections need further improvement	3	3.9%
Content should be removed	**27**	**35.5%**
General views that there is content that should be removed	10	13.2%
Content should be removed as it is not aligned with rationale/aim of learning area	3	3.9%
Content should be removed that is not aligned with who we want our children to become (e.g., confident, knowledgeable, skilled)	2	2.6%
Various other LA specific content that should be removed	19	25.0%

The leading major theme was *clarity.* The subthemes under the themes of *clarity*, as well as the *introductory elements*, were also relatively prominent amongst respondents. Overall, while there was much positive feedback in relation to perceived improvements to the readability of the overall curriculum and clarity of curriculum elements, there was a greater amount of critical feedback expressing that further improvements and refinements were needed. For instance, as the following comment shows, some respondents saw that there had been improvements to the introductory elements such as the core concepts but recommended further revisions to improve areas for improved clarity and teaching.

> *"Whilst the core concepts of mathematical structures and mathematical approaches are clear enough, it is felt that the core concept organiser 'mathematising' (p6 of the draft) will be confusing and ambiguous to teachers. In particular, there seems to be significant overlap between the sub-concepts listed under mathematical approaches and mathematising. Mathematising is a concept with which our highly qualified educators have no experience. How, then are early career teachers expected to understand and modify their practice accordingly? The language of the curriculum should be exemplary in terms of mathematical appropriateness and clarity. The document will be available to all including parents." (The Australian Mathematical Sciences Institute)*

In relation to language, the terms 'mathematising' as well as 'evaluate' were found problematic by some respondents.

> *"Terminology associated with data are confusing. Categorical, numerical, ordinal, discrete numerical, continuous, measurement data are all included. Although each of these terms is used in other settings, for simplicity in the school setting, we suggest that 2 terms are used: • Categorical data are data that are allocated into groups that are counted. • Measurement data are data that are collected using measurement tools that have a zero and a scale made up of standard units." (Academics)*

> *"I have never before heard the term Mathematising. It is unnecessary to define a new term when we have perfectly adequate terminology in Mathematics already." (Teacher)*

> *"The inclusion of Computational Thinking in the content descriptions is vastly different to anything teachers in Western Australia are used to and finally, the use of the word "evaluate" in the context of computational thinking. Evaluate has a particular meaning in mathematics, it is essentially to find the (numerical) answer to an expression or equations. You CANNOT introduce into the content descriptions a word that has a different meaning to that which every maths teacher understands it to mean." (Teacher)*

Although many found the content descriptions as being improved, there were some views that these could undergo further revision for improved clarity. However, the following respondent felt that there were advantages and disadvantages to having them left open to interpretation.

> *"In general, the maths content descriptors are an improvement on what was there previously although many of these are now more open to interpretation which is both a good and a bad thing. Good in that it might motivate teachers to deepen their mathematical knowledge for teaching and potentially bad if they are misunderstood and key understandings are overlooked." (Academic)*

The 2nd leading major theme was related to *inclusive content.* The concern expressed by a number of respondents about inclusivity of content referred explicitly to the age-appropriateness of content, although these concerns appear to be expressed from community members or those with an unknown status, and not self-disclosed teachers.

> *"Especially at the younger ages maths is not a natural or instinctive process. It is something we all have to learn and while I accept that older students, especially adults, can gain better learning when they understand the 'how' as well as the 'what' I do not think this applies to 5 year old's who will more likely be confused rather than helped."* (*Individual/engineer*)

Nuances that emerged around content were wide-ranging, with various views on what *content should be added* (3rd leading major theme) and what *content that should be removed* (5th leading major theme); with an example as follows:

> *"Some members welcomed the stronger emphasis on problem solving and inquiry, mathematical modelling and computational thinking (key consideration p13). However, members expressed considerable concern at the manner in which these had been implemented in the current curriculum, in particular noting the open-ended nature of many of the proposed inquiries was at odds with effective mathematical problem solving. Members also expressed concerns that this new emphasis comes at the expense of mastery and fluency. Mastery of mathematical approaches is needed before student problem solving can be effective. We also note that many teachers don't have the training and experience to use problem solving as an effective teaching tool." (The Australian Mathematical Sciences Institute)*

Whilst most email respondents were supportive about links with the cross-curriculum priority of Aboriginal and Torres Strait Islander histories and cultures in Mathematics, there were calls for further training and support for *implementation* (the 4th leading theme).

> *"On behalf of the Aboriginal and Torres Strait Islander Mathematics Alliance, I would like to congratulate ACARA on the inclusion of the Aboriginal and Torres Strait Islander Histories and Cultures cross-curriculum priority (CCP) in the Australian Curriculum: Mathematics. Whilst they are in the form of content elaborations only, this will still allow teachers to contextualise them to their own community. We advise however that teachers will need supporting information to understand the cultural knowledge that is part of each and every one of the CCP elaborations. This will help them to be able to teach the elaborations with both cultural and mathematical integrity." (Aboriginal and Torres Strait Islander Mathematics Alliance)*

6.2 Summary

In total, there were 76 email submission related to the Learning Area of Mathematics. The biggest stakeholder group was academics or experts, with a relatively even spread of other stakeholders.

Two submissions were petition-style emails: one related to the removal of recall of number facts and the other concerned with the proposed replacement of the 4 Proficiencies in the current Curriculum with "Core Concept Organisers". Of the remaining 74 submissions, there were respondents who saw some improvements in the proposed curriculum, including both clarity and of specific content. However, others recommended that the curriculum required some further refinements and improvements, particularly to language, with terms like 'mathematising' and 'evaluate' seen as problematic. The recommendations for additional content were wide ranging, while there were some who expressed concerns about the age-appropriateness of the content, although these views did not appear to be expressed by individuals or groups who had self-disclosed as teachers.

7. Jurisdictional feedback

The code frame (see Appendix C) was utilised to analyse the content of the feedback from the 9 jurisdictional submissions. As per the open-ended survey and email feedback, a jurisdictional submission may make the same point multiple times with different examples, but a theme is only coded once for that respondent.

7.1 Jurisdictional responses to Overall feedback statements

As part of seeking their feedback, the invited jurisdictions were encouraged to respond to the 6 survey statements from the Overall feedback section of the survey. Five of the 9 participating jurisdictions (Tasmania, Queensland, Western Australia, Northern Territory and Independent Schools Australia [ISA]) provided responses to these questions.

Table 13 presents the results individually for the 5 jurisdictions that responded to the 6 survey statements.

Table 13: Overall feedback by jurisdictional stakeholder

	ISA	NT	TAS	WA	QLD
The introductory sections provide important information	Agree	Strongly agree	Strongly agree	Agree	Agree
The quality of achievement standards has been improved	Agree	Strongly agree		Strongly disagree	Disagree
The quality of content descriptions has been improved	Agree	Strongly agree	Strongly agree	Strongly disagree	Disagree
The quality of content elaborations has been improved	Agree	Strongly agree	Strongly agree	Strongly disagree	Agree
Curriculum content has been refined, realigned and decluttered	Agree	Agree	Agree	Strongly disagree	Disagree
The revised Australian Curriculum in the LA is an improvement on the current version	Agree	Strongly agree	Strongly agree	Strongly disagree	Disagree

Victoria, New South Wales, National Catholic Education Commission and South Australia did not provide ratings to the Overall feedback survey questions. Tasmania did not provide a rating for the achievement standard question. The Australian Capital Territory did not provide a submission.

Strongly agree | Agree | Disagree | Strongly disagree

It is evident from Table 13 that of the 5 jurisdictions who responded to the Overall feedback statements, there was broad support for the revised curriculum from 3 jurisdictions with Western Australia and Queensland notable in their dissent.

While Victoria, New South Wales, South Australia, and the National Catholic Education Commission (NCEC) did not respond to the TOR statements, analysis of the qualitative data indicates that South Australia generally regarded the introductory elements as improved while noting some lingering wordiness. The NCEC offered mixed views on the introductory elements, noting some improvements but also suggesting sometimes substantial improvements are still needed.

In terms of content, Victoria and South Australia noted improvements to content descriptions and elaborations, although South Australia indicated that some descriptions are still wordy. South Australia also suggested specific improvements to a range of content descriptions in terms of sequencing and clarity. The NCEC notably dissented and indicated “strong disagreement that the quality of content descriptions has been improved”.

In terms of achievement standards, Victoria noted that the quality has improved through greater detail. South Australia noted that these are still wordy but that integrating the proficiencies is an improvement and that

more alignment with content descriptions is needed. The NCEC notably dissented, indicating "strong disagreement that the quality of achievement standards has been improved", agreeing with South Australia that more alignment with content descriptions is needed.

In terms of manageability, Victoria noted that the revised curriculum has been refined but South Australia did not clearly indicate a position. The NCEC, however, expressed the strong view that further reduction is needed.

Overall, South Australia and Victoria indicated more support for the revised curriculum than the NCEC, which strongly indicated more refinement is needed in some aspects. Victoria also noted that an "appropriate balance" has not yet been struck between "fundamental mathematics knowledge and skills and applied approaches such as problem-solving".

7.2 Major themes and subthemes

The themes that were most prominent in participating jurisdictions' feedback were *introductory elements* (commented on by 8 jurisdictions), *clarity* (commented on by 9 jurisdictions), *implementation* (commented on by 8 jurisdictions), *manageability* (commented on by 7 jurisdictions), and *inclusive content* (commented on by 7 jurisdictions).

In relation to the *introductory elements*, most jurisdictions felt that the introductory elements had improved but some suggested further improvements:

> *"The research that underpins this revised version is obvious and it sets our students up for the 21st century, with attention to new areas of mathematical endeavour including computational thinking." (Tasmania)*

> *"When compared to the current Australian Curriculum: Mathematics (AC:M), the rationale has been updated to reflect the importance of specific mathematical skills to STEM and other contemporary curriculum considerations. However, the emphasis on the importance of students being able to transfer mathematical skills, knowledge and understanding to familiar and unfamiliar contexts has been lost." (Queensland)*

In relation to *clarity,* most regarded the achievement standards as clearer, but there was also a pattern in feedback indicating that language tends to be overly complex (academic and/or inaccessible specialist terms). Generally, while improvements were noted in some aspects, the clarity of content descriptions and overall language is regarded as needing further improvement.

> *"The language is often overly complex. The use of long compound sentences in the content descriptors make them more difficult to comprehend." (New South Wales)*

> *"The language used is more complex than necessary with inconsistent terminology." (Western Australia)*

> *"The Space Content Descriptors and Achievement Standards were very "wordy" and academic-speak." (ISA)*

In terms of *manageability*, while Queensland, Victoria, and ISA noted that some aspects of content have been reduced, there was a sense that more decluttering is needed.

> *"... ACARA has refined the proposed content in Mathematics. The total number of content descriptions has been reduced by about five per cent." (Victoria)*

> *"Overall, there has been no decluttering of the content." (Queensland)*

> *"... this subject area has not been refined nor decluttered." (ISA)*

Also within the theme of *manageability*, there was a sense that the core concepts may not be beneficial.

> *"The 'Core concepts' may well be an unwanted and possibly an unneeded distraction for teachers." (Tasmania)*

> *"... the addition of 13 new Core Concepts emphasises the perception that significantly more content has been added to the curriculum being consulted on." (New South Wales)*

> *"The core concepts complicate the Mathematics Curriculum and there remains overlap between the core concepts and the embedded proficiencies." (South Australia)*

While implementation issues are out-of-scope of the Review, it is notable that this was the theme that attracted the third highest number of comments. Much of this was related to the need for professional development to support non-specialist teachers given a sense that the subject is more complex and demanding. Other commentary around implementation support related to the incorporation of Indigenous cultures and knowledges.

> *"There is a recognition that there will be a need for focused professional learning to ensure that Key considerations such as 'exploring' computational thinking and mathematical modelling are unpacked and that teachers feel confident and competent to teach this in their classrooms." (Tasmania)*

> *"... some content elaborations in support of this cross-curriculum priority may be perceived as culturally insensitive (e.g. AC9M9A05_E3) or may require considerable planning and background teaching to confidentially and respectfully engage with in classrooms (e.g. AC9M10ST01_E7 and AC9M7N08_E7)." (Queensland)*

Another leading sub-theme was that various learning area specific content has improved/should remain:

> *"Overall the revised content elaborations are more comprehensive and more closely aligned to the content descriptions." (Victoria)*

> *"Emphasis on exploration, experimentation, investigation, modelling and computational thinking." (ISA)*

> *"Most of the revised content elaborations provide authentic and meaningful illustrations of how the content could be delivered. They clarify understanding of the revised content descriptions and provide teachers with suggestions and relevant illustrations of mathematical strategies." (Queensland)*

Within the subtheme of *age-appropriateness*, there was a sense that aspects of the Mathematics learning area are too demanding at times.

> *"The year level descriptions are clearly described but pitched too high for the majority of students. The cognitive demand of the year level descriptions is well beyond students." (Western Australia)*

> *"Problems remain with the age-appropriateness of content at some year levels, particularly in the strands of Probability and Statistics." (New South Wales)*

Another pattern in commentary related to the embedding of the proficiencies in the content descriptions and achievement standards. This was seen as an improvement by all respondents with the exception of Western Australia.

> *"The embedding of the proficiencies in both the content descriptions and achievement standards is seen as an improvement on the current version of the curriculum." (Tasmania)*

> *"Embedding the Proficiency strands into the content descriptions and achievement standards has provided some clarity for teachers in how to implement the proficiencies in teaching, learning and assessment." (Queensland)*

> *"The CDs in the proposed curriculum are longer and more detailed. They provide greater clarity, and incorporate the proficiency strands, which is an improvement." (Victoria)*

> *"The inclusion of the proficiencies (Fluency, Understanding, Reasoning and Problem) into the content of the Australian Curriculum is an improvement." (South Australia)*

> *"The attempt to embed the current proficiency strand verbs into the content descriptions are inconsistent and misleading and diminish the role of the proficiencies." (Western Australia).*

An overview of individual jurisdictions' positive feedback as well as perceived aspects for further improvement is provided in Appendix G.

7.3 Summary

In total, there were 9 submissions from jurisdictional stakeholders in relation to the learning area of Mathematics. The key themes were *introductory elements* (commented on by 8 jurisdictions), *clarity* (commented on by 9 jurisdictions), *implementation* (commented on by 8 jurisdictions), *manageability* (commented on by 7 jurisdictions), and *inclusive content* (commented on by 7 jurisdictions). Generally, jurisdictions appear to agree that more decluttering is needed to achieve manageability. Queensland and Western Australia offered particularly detailed suggestions in relation to this theme.

Appendix A – Questionnaire

Consultation survey questions
For the learning areas and subjects

Introduction

The learning area survey gives you the opportunity to provide feedback on the proposed changes to any of the following learning areas and subjects.

- Mathematics
- Mathematics
- Mathematics
- Humanities and Social Mathematicss (HASS)
    - HASS Foundation – Year 6
    - History Years 7–10
    - Geography Years 7–10
    - Civics and Citizenship Years 7–10
    - Economics and Business Years 7–10
- Health and Physical Education
- Technologies
    - Digital Technologies
    - Design and Technologies
- The Arts
    - The Arts Foundation – Year 6
    - Dance Years 7-10
    - Drama Years 7-10
    - Media Arts Years 7-10
    - Music Years 7-10
    - Visual Arts Years 7-10
- Languages
    - French
    - Japanese
    - Chinese
    - Italian

The survey has 3 sections.

1. **Background information:**

The survey begins by gathering some demographic information and asking you to nominate the levels, and the specific subjects (where relevant) that you wish to comment on.

2. **General questions**

This is the main part of the survey. In this section you will be asked to respond to a number of statements about the different elements of the consultation curriculum:

- *Introductory elements* - the rationale, aims, organisation of the learning area, key connections and key considerations

- *Curriculum elements* - the level descriptions, achievement standards, content descriptions and content elaborations.

There is also a section called *Overall feedback*, where you will be asked to respond to some overall statements related to the terms of reference for the Review.
You will also be invited to add any general comments about what has improved and what needs further refinement.

3. Year/band level specific feedback

This section is optional and you can comment on as many levels as you wish. You will be able to add any comments about what has improved and what needs further refinement for the particular levels you select.

Section 1: Background information questions

Please select which levels you are giving feedback on (Note: options will vary depending on what learning area and subject survey you complete).

- Foundation - Year 6 curriculum
- Years 7 - 10 curriculum
- Foundation - Year 10 curriculum

Please indicate if you are answering the survey as an individual or as a group.

☐ Individual

Individual response follow up questions

In which state or territory are you based?

- Australian Capital Territory
- New South Wales
- Northern Territory
- Queensland
- South Australia
- Tasmania
- Victoria
- Western Australia
- National
- Other

Which CATEGORY best describes you?

- Primary teacher*
- Secondary teacher*
- F-12 teacher*
- School leader – Primary*
- School leader – Secondary*
- School leader – F-12*
- Academic
- Parent*
- Student*
- Employer / Business
- Other

**If you select this category as an individual or group you will be asked 2 additional questions.*

In which sector is your school?

- Government
- Catholic
- Independent

What best describes your school's location?

- Metropolitan
- Regional
- Remote

☐ Group

Group response follow up questions

In which state or territory are you based?

- Australian Capital Territory
- New South Wales
- Northern Territory
- Queensland
- South Australia
- Tasmania
- Victoria
- Western Australia
- National
- Other

Which CATEGORY best describes you?

- School*
- Professional association
- University faculty
- Education authority
- Parent organisation
- Community organisation
- Other

Please indicate the NAME of the group or institution below. (Note: Schools will not be asked to supply the school name).

_____

Describe the membership of your group.

_____

Number of members/people represented in this response (approx.). Please use numerical values.

_____

Section 2: General feedback

Indicate your level of agreement with the following statements.

Introductory elements

Rationale

	Strongly agree	Agree	Disagree	Strongly disagree	*Don't know*
The rationale is clear about the importance of the learning area/subject	☐	☐	☐	☐	☐

Aims

	Strongly agree	Agree	Disagree	Strongly disagree	*Don't know*
The aims identify the major learning that students will demonstrate	☐	☐	☐	☐	☐

Organisational structure

	Strongly agree	Agree	Disagree	Strongly disagree	*Don't know*
The strands/sub-strands provide a coherent organisational structure	☐	☐	☐	☐	☐
The strands/sub-strands and core concepts are clear about what is important in the learning area/subject	☐	☐	☐	☐	☐

Key connections

	Strongly agree	Agree	Disagree	Strongly disagree	*Don't know*
The key connections section identifies the most relevant general capabilities	☐	☐	☐	☐	☐
The key connections section identifies the most relevant cross-curriculum priorities	☐	☐	☐	☐	☐
The key connections section identifies the key opportunities to connect with other learning areas.	☐	☐	☐	☐	☐

Key considerations

	Strongly agree	Agree	Disagree	Strongly disagree	*Don't know*
The key considerations section provides important information for planning teaching and learning	☐	☐	☐	☐	☐

Curriculum elements

Year/band level descriptions

	Strongly agree	Agree	Disagree	Strongly disagree	*Don't know*
The year/band level descriptions provide a clear overview of the learning that students should experience at the year/band level	☐	☐	☐	☐	☐

Achievement standards

	Strongly agree	Agree	Disagree	Strongly disagree	*Don't know*
The achievement standards clearly describe the expected quality of learning students should typically demonstrate by the end of the year/band	☐	☐	☐	☐	☐
The achievement standards adequately reflect a clear developmental progression.	☐	☐	☐	☐	☐
The learning described in the achievement standards aligns with the essential content students should be taught.	☐	☐	☐	☐	☐

Content descriptions

	Strongly agree	Agree	Disagree	Strongly disagree	*Don't know*
The content descriptions specify the essential knowledge, understanding and skills that should be learned.	☐	☐	☐	☐	☐
The content descriptions make it clear to teachers what should be taught.	☐	☐	☐	☐	☐
The amount of content can be covered in each year/band. *Note: If you answer disagree or strongly disagree to this statement you will be given this follow up question (see below).*	☐	☐	☐	☐	☐
What content should be removed or what revisions are needed to make the content more manageable in the learning area/subject curriculum?					

Content elaborations

	Strongly agree	Agree	Disagree	Strongly disagree	*Don't know*
The content elaborations provide useful illustrations and suggestions on how to plan and teach the content.	☐	☐	☐	☐	☐
The content elaborations provide a range of contexts that support teachers to meaningfully integrate the general capabilities and cross-curriculum priorities	☐	☐	☐	☐	☐

Overall feedback

	Strongly agree	Agree	Disagree	Strongly disagree	*Don't know*
The introductory sections provide important information.	☐	☐	☐	☐	☐
The quality of content descriptions has been improved.	☐	☐	☐	☐	☐
The quality of achievement standards has been improved.	☐	☐	☐	☐	☐
The quality of content elaborations has been improved.	☐	☐	☐	☐	☐
Curriculum content has been refined, realigned and decluttered.	☐	☐	☐	☐	☐
The revised Australian Curriculum in the learning area/subject is an improvement on the current version.	☐	☐	☐	☐	☐

Optional comments:
If you would like to provide feedback about general aspects of the revised learning area/subject that **have improved,** please use the comments box.

If you would like to provide feedback about general aspects of the revised learning area/subject curriculum that **need further improvement,** please use the comments box.

Section 3: Band/level specific feedback (optional)

Would you like to give feedback on a specific year or band level?

- Yes
- No

If you answer No, you will be asked to SUBMIT the survey.
If you answer Yes, you will be asked which year or band levels you would like to provide feedback on.
Then you will be invited to provide specific feedback in comments boxes for the following 2 questions.

Please add your comments about aspects of the revised learning area/subject for band/level curriculum that **have improved.** If you comment on specific content descriptions or elaborations please reference the code number.

Please add your comments about aspects of the revised learning area/subject for band/level curriculum that **need further improvement.** If you comment on specific content descriptions or elaborations please reference the code number.

Appendix B – Changes to survey statements in reporting

Question labels that were changed in the reporting are listed below.

Wording in questionnaire	Wording in report
The strands/sub-strands and core concepts are clear about what is important in the learning area	The strands/sub-strands and core concepts are clear about what is important
The key connections section identifies the key opportunities to connect with other learning areas	The key connections identify the key opportunities to connect with other LAs
The key considerations section provides important information for planning teaching and learning	The key considerations provide important information for teaching and learning
The year level descriptions provide a clear overview of the learning that students should experience at the year level	The year level descriptions provide a clear overview of learning at year levels
The achievement standards clearly describe the expected quality of learning students should typically demonstrate by the end of the year	The achievement standards clearly describe the expected quality of learning
The learning described in the achievement standards aligns with the essential content students should be taught	The achievement standards align with essential content students should be taught
The content descriptions specify the essential knowledge, understanding and skills that should be learned	The content descriptions specify the essential knowledge, understanding & skills
The content elaborations provide useful illustrations and suggestions on how to plan and teach the content	The content elaborations provide useful illustrations and suggestions
The content elaborations provide a range of contexts that support teachers to meaningfully integrate the general capabilities and cross-curriculum priorities	The content elaborations support teachers to meaningfully integrate GCs and CCPs

Appendix C – Code frame

A code frame to code the open-ended feedback was co-designed with ACARA. Based on scrutiny of documentation of the proposed curriculum revisions, survey materials and preliminary survey responses, along with ongoing consultation with ACARA, the following themes, and subthemes were established as a code frame.

The themes and subthemes of the code frame which apply to all learning areas are described in this section. The structure of main themes and subthemes is below. A *Various other learning area specific content…* category is assigned to 3 of the main themes. This category captures a wide variety of opinions and suggestions that respondents expressed in each learning area under the main theme and outside the subthemes of the respective main theme. The category should be interpreted as an 'other' category under the respective main theme. It does not represent a homogenous subtheme that can stand meaningfully by itself.

Theme/Subtheme
Introductory elements: This theme encapsulates views regarding the introductory elements of the curriculum. These subthemes are as follows:
The rationale/aims have improved
The rationale/aims need further improvement
The strand/sub-strands/core concepts have improved
The strand/sub-strands/core concepts need further improvement
The key connections have improved
The key connections need further improvement
Content has improved/should remain: This theme reflects views about the improvements to the curriculum, based on the proposed revisions, along with comments about content that should remain as part of the revisions. These subthemes are as follows:
General views that content has improved
Content has better alignment with rationale/aim of learning area
Content has better alignment with who we want our children to become
The level of emphasis on Indigenous cultures and perspectives is appropriate
Various other LA specific content that has improved or should remain
Content should be added: This theme captures comments which express a desire for further content to be added. The subthemes are as follows:
General views that additional or new content should be added
Additional or new content should be added for better alignment with rationale/aim of learning area
Additional or new content should be added for better alignment with who we want our children to become (e.g., confident, knowledgeable, skilled)
There should be more emphasis on Indigenous cultures and perspectives
Various other LA specific content that should be added
Content should be removed: This theme captures comments which reflect views about content that should be removed from the curriculum. The subthemes are as follows:
General views that there is content that should be removed
Content should be removed it is not aligned with rationale/aim of the learning area
Content should be removed that is not aligned with who we want our children to become (e.g., confident, knowledgeable, skilled)
There is too much emphasis on Indigenous cultures and perspectives
Various other LA specific content that should be removed

Evidenced-based content: This theme captures comments about the extent to which the curriculum is seen as being based on evidence/science. The subthemes are as follows:
The included content appears evidence-based
The included content does not appear to be sufficiently based on evidence and/or needs to be more informed by science/evidence
Inclusive content: This theme captures comments about the extent to which the content is considered appropriate and inclusive for students. The subthemes are as follows:
The curriculum content is inclusive of diverse learners' interests and capabilities
The curriculum content does not adequately accommodate and enable teaching for diverse learners' interests and capabilities.
There are concerns around the age-appropriateness of content
Manageability (amount of content): This theme reflects comments about the extent to which the curriculum is seen as being manageable or cluttered with content. The subthemes are as follows:
Decluttering of content evident, the amount of content is more manageable
Still too much content/further decluttering needed
Sequencing of content: This theme reflects views about the suitability of the developmental progression of content. The subthemes are as follows:
The sequencing of content has improved
The sequencing of content needs further improvement
Achievement standards: This theme reflects views about the suitability of the achievement standards. The subthemes are as follows:
Achievement standards align with content descriptions
Achievement standards need better alignment with content descriptions
Clarity: This overarching theme encompasses the readability and ease of understanding the documentation. The subthemes are as follows:
The overall language of the curriculum is clearer and/or easier to understand
The overall language of the curriculum could use further revision to be clearer and/or easier to understand
The wording of the content descriptions is clearer and/or easier to understand
The wording of the content descriptions could use further revision to be clearer and/or easier to understand
The wording of the achievement standards is clearer and/or easier to understand
The wording of the achievement standards need further clarity
The wording of introductory elements (rationale, aims, key connections) is clearer and/or easier to understand
The wording of introductory elements (rationale, aims, key connections) could use further revision to be clearer and/or easier to understand
Implementation (out of scope): This theme captures comments that raise issues around implementation. Whilst these comments are technically out of scope of the terms of reference of the Review, they were considered predominant enough in the responses to be coded. The subthemes are as follows:
Pedagogy - this overarching theme encompasses feedback about how children should be taught
Assessment - this theme encompasses feedback on delivering assessment to students according to achievement standards and curriculum contents.
Support for implementation
Other: Any comments that could not be captured in the themes above, were coded here.

	Sub-themes indicating improvement		Sub-themes indicating further refinements

Appendix D – Groups participating in the survey

Group name provided in on-line survey
Australian Association of Christian Schools
Australian Maths Trust (AMT)
Canberra Mathematical Association
Catholic Education Cairns
Catholic Education South Australia
Catholic Education Tasmania
Darling Downs South West Consultation Group
Darling Downs South West Education Department
Department of Education Tasmania, Lead Numeracy Coaches
Department of Education Tasmania, Maths/Numeracy Officers
Financial Basics Foundation
Independent Schools Queensland
Mathematical Associations of South Australia
Mackay Catholic Education - Diocese of Rockhampton
Macquarie Park District Office
Mathematical Association of NSW
Primary Mathematics Association of South Australia
Steiner Education Australia
Stronger Smarter Institute
The Mathematical Association of Western Australia
Top Ten Mathematics
Windaroo Valley State High School
reSolve: Maths by Inquiry

Appendix E – Themes from open-ended survey feedback

Table E1: Content that should be removed or revisions needed to make content more manageable, Mathematics survey respondents

Theme/Subtheme	Number of respondents	Percent of total
Introductory elements	**66**	**10.1%**
The rationale/aims have improved	0	0.0%
The rationale/aims need further improvement	10	1.5%
The strand/sub-strands/core concepts have improved	1	0.2%
The strand/sub-strands/core concepts need further improvement	49	7.5%
The key connections have improved	0	0.0%
The key connections need further improvement	11	1.7%
Content has improved/should remain	**5**	**0.8%**
General views that content has improved	0	0.0%
Content has better alignment with rationale/aim of learning area	2	0.3%
Content has better alignment with who we want our children to become	0	0.0%
The level of emphasis on Indigenous cultures and perspectives is appropriate	0	0.0%
Various other learning area specific content that has improved or should remain	3	0.5%
Content should be added	**29**	**4.4%**
General views that additional or new content should be added	2	0.3%
Additional or new content should be added for better alignment with rationale/aim of learning area	0	0.0%
Additional or new content should be added for better alignment with who we want our children to become (e.g., confident, knowledgeable, skilled)	2	0.3%
There should be more emphasis on Indigenous cultures and perspectives	0	0.0%
Various other learning area specific content that should be added	26	4.0%
Content should be removed	**131**	**20.0%**
General views that there is content that should be removed	44	6.7%
Content should be removed as it is not aligned with rationale/aim of learning area	17	2.6%
Content should be removed that is not aligned with who we want our children to become	5	0.8%
There is too much emphasis on Indigenous cultures and perspectives	2	0.3%
Various other learning area specific content that should be removed	87	13.3%
Evidence-based content	**14**	**2.1%**
The included content appears evidence-based	0	0.0%
The included content does not appear to be sufficiently based on evidence and/or needs to be more informed by science/evidence	14	2.1%
Inclusive content	**76**	**11.6%**
The curriculum content is inclusive of diverse learners' interests and capabilities.	0	0.0%
The curriculum content does not adequately accommodate and enable teaching for diverse learners' interests and capabilities.	23	3.5%
There are concerns around the age-appropriateness of content	59	9.0%
Manageability (amount of content)	**137**	**20.9%**

Decluttering of content evident, the amount of content is more manageable	0	0.0%
Still too much content/further decluttering needed	137	20.9%
Sequencing of content	**96**	**14.7%**
The sequencing of content has improved	0	0.0%
The sequencing of content needs further improvement	96	14.7%
Achievement standards	**11**	**1.7%**
Achievement standards align with content descriptors	0	0.0%
Achievement standards need better alignment with content descriptors	11	1.7%
Clarity	**97**	**14.8%**
The overall language of the curriculum is clearer and/or easier to understand	0	0.0%
The overall language of the curriculum could use further revision to be clearer and/or easier to understand	46	7.0%
The wording of the content descriptions is clearer and/or easier to understand	3	0.5%
The wording of the content descriptions could use further revision to be clearer and/or easier to understand	52	8.0%
The wording of the achievement standards is clearer and/or easier to understand	0	0.0%
The wording of the achievement standards need further clarity	21	3.2%
The wording of introductory elements (rationale, aims, key connections) is clearer and/or easier to understand	1	0.2%
The wording of introductory elements (rationale, aims, key connections) could use further revision to be clearer and/or easier to understand	3	0.5%
Implementation (out of scope)	**78**	**11.9%**
Pedagogy – this overarching theme encompasses feedback about how children should be taught	54	8.3%
Assessment – this theme encompasses feedback on delivering assessment to students according to achievement standards and curriculum contents	19	2.9%
Support for implementation (e.g., professional development, teacher training, resources such as planning advice and resources, classroom resources)	13	2.0%
Other	**9**	**1.4%**

Comments were provided by 285 respondents. Percentages are based on all 654 Mathematics survey respondents.

Table E2: Aspects that have improved/need further improvement, Mathematics survey respondents

Theme/Subtheme	Number of respondents	Percent of total
Introductory elements	**162**	**24.8%**
The rationale/aims have improved	5	0.8%
The rationale/aims need further improvement	20	3.1%
The strand/sub-strands/core concepts have improved	65	9.9%
The strand/sub-strands/core concepts need further improvement	104	15.9%
The key connections have improved	20	3.1%
The key connections need further improvement	19	2.9%
Content has improved/should remain	**77**	**11.8%**
General views that content has improved	27	4.1%
Content has better alignment with rationale/aim of learning area	7	1.1%
Content has better alignment with who we want our children to become	9	1.4%
The level of emphasis on Indigenous cultures and perspectives is appropriate	16	2.4%
Various other learning area specific content that has improved or should remain	41	6.3%
Content should be added	**49**	**7.5%**
General views that additional or new content should be added	3	0.5%
Additional or new content should be added for better alignment with rationale/aim of learning area	3	0.5%
Additional or new content should be added for better alignment with who we want our children to become (e.g., confident, knowledgeable, skilled)	6	0.9%
There should be more emphasis on Indigenous cultures and perspectives	0	0.0%
Various other learning area specific content that should be added	40	6.1%
Content should be removed	**66**	**10.1%**
General views that there is content that should be removed	38	5.8%
Content should be removed as it is not aligned with rationale/aim of learning area	1	0.2%
Content should be removed that is not aligned with who we want our children to become	3	0.5%
There is too much emphasis on Indigenous cultures and perspectives	9	1.4%
Various other learning area specific content that should be removed	22	3.4%
Evidence-based content	**11**	**1.7%**
The included content appears evidence-based	3	0.5%
The included content does not appear to be sufficiently based on evidence and/or needs to be more informed by science/evidence	8	1.2%
Inclusive content	**57**	**8.7%**
The curriculum content is inclusive of diverse learners' interests and capabilities.	3	0.5%
The curriculum content does not adequately accommodate and enable teaching for diverse learners' interests and capabilities.	38	5.8%
There are concerns around the age-appropriateness of content	23	3.5%
Manageability (amount of content)	**116**	**17.7%**
Decluttering of content evident, the amount of content is more manageable	10	1.5%
Still too much content/further decluttering needed	110	16.8%

Sequencing of content	**64**	**9.8%**
The sequencing of content has improved	16	2.4%
The sequencing of content needs further improvement	52	8.0%
Achievement standards	**25**	**3.8%**
Achievement standards align with content descriptors	15	2.3%
Achievement standards need better alignment with content descriptors	10	1.5%
Clarity	**163**	**24.9%**
The overall language of the curriculum is clearer and/or easier to understand	36	5.5%
The overall language of the curriculum could use further revision to be clearer and/or easier to understand	72	11.0%
The wording of the content descriptions is clearer and/or easier to understand	45	6.9%
The wording of the content descriptions could use further revision to be clearer and/or easier to understand	36	5.5%
The wording of the achievement standards is clearer and/or easier to understand	18	2.8%
The wording of the achievement standards need further clarity	38	5.8%
The wording of introductory elements (rationale, aims, key connections) is clearer and/or easier to understand	0	0.0%
The wording of introductory elements (rationale, aims, key connections) could use further revision to be clearer and/or easier to understand	4	0.6%
Implementation (out of scope)	**108**	**16.5%**
Pedagogy – this overarching theme encompasses feedback about how children should be taught	69	10.6%
Assessment – this theme encompasses feedback on delivering assessment to students according to achievement standards and curriculum contents	17	2.6%
Support for implementation (e.g., professional development, teacher training, resources such as planning advice and resources, classroom resources)	39	6.0%
Other	**59**	**9.0%**

Comments were provided by 344 respondents. Percentages are based on all 654 Mathematics survey respondents.

Appendix F – List of organisations who submitted feedback via email[9]

Organisation Name
Aboriginal and Torres Strait Islander Mathematics Alliance (ATSIMA)
Academy of the Social Sciences in Australia
Act for Kids
ACT Japanese Teachers Network
ACT Principals Association (ACTPA)
Adelaide High School
Adolescent Success
Anglican Church Diocese of Sydney
Art Education Australia
Art Education Victoria
Arts Education Academic Group at the University of Melbourne, Graduate School of Education
Asia Education Teachers' Association
Associated Christian Schools
Ausdance Dance Education Committee
Australasian Fire and Emergency Services Authorities Council
Australasian Institute of Mining and Metallurgy (AusIMM)
Australasian Performing Right Association Limited - Australasian Mechanical Copyright Owners Society (APRA AMCOS)
Australasian Society for Physical Activity (ASPA)
Australia Council for the Arts
Australia's National Research Organisation for Women's Safety
Australia's National Research Organisation for Women's Safety
Australian Academy of Technology and Engineering (ATSE)
Australian Association for Religious Education
Australian Association for Research in Education (AARE) Special Interest Group (SIG) for Health and Physical Education
Australian Association for Teaching of English (AATE)
Australian Association of Christian Schools (AACS)
Australian Business & Community Network
Australian Centre for Career Education
Australian Christian Lobby
Australian Competition & Consumer Commission
Australian Competition and Consumer Commission (ACCC)

[9] This list includes all organisations which self-identified in the email submissions across all learning areas, general capabilities and cross-curriculum priorities.

Organisation Name
Australian Computer Society (ACS)
Australian Council for Educational Leaders
Australian Council for Health, Physical Education and Recreation New South Wales (ACHPER NSW)
Australian Council of Art and Design Schools (ACUADS)
Australian Council of Engineering Deans (ACED)
Australian Council of State School Organisations (ACSSO)
Australian Councils for Computers in Education (ACCE)
Australian Earth Science Education (AusEarthEd)
Australian Education Union
Australian Fedearl Police
Australian Federation of SPELD (Specific Educational Learning Difficulties) Associations (AUSPELD)
Australian Geography Teachers Association (AGTA)
Australian Historical Association (AHA)
Australian Insitute for Progress (AIP)
Australian Institute for Disaster Resilience
Australian Institute of Geoscientists
Australian Institute of Geoscientists
Australian Literacy Educators Association (ALEA)
Australian Mathematical Sciences Institute
Australian Maths Trust
Australian National Flag Association
Australian Network of Government Languages Schools
Australian Parents Council
Australian Professional Teachers Association (APTA)
Australian Psychological Society (APS)
Australian Publishers Association
Australian Science Teachers Association
Australian Society for Music Education New South Wales (ASME)
Australian Society for Music Education Queensland (ASME)
Australian Society for Music Education South Australia (ASME)
Australian Taxation Office
Australian Teachers of Media
Australian Technology Teacher Educators Network (ATTEN)
Australian Tertiary Outdoor Education Network
Be You - Beyond blue
BHP Billiton
Bloom-ED
Bravehearts

Organisation Name
Burwood Presbyerian Church
Business Council of Co-operatives and Mutuals
Business Educators Australasia
Canberra Academy of Languages
Canberra Declaration
Catholic Education Diocese of Parramatta
Catholic Education South Australia (CESA)
Catholic Education, Archdiocese of Canberra and Goulburn
Catholic School Parents Australia
Catholic Women's League Australia
Catholic Women's League Australia-New South Wales Inc
Catholic Women's League Victoria and Wagga Wagga Inc
Christian Democratic Party
Christian Schools Australia (CSA)
Christian SRE (Special Religious Education) NSW
Commissioner for Children and Young People
Cool Australia
Council for the National Interest
Covenant Christian School
Daniel Morcombe Foundation
Democracy Matters
Department for Education South Australia
Department of Education of Tasmania
Design and Technologies Teacher Association (DATTA)
Domestic Violence Resource Centre Victoria (DVRCV)
Domestic Violence Victoria (DV Vic)
Drama Australia
Drama Queensland
Einstein First project
Ending Violence Against Women Queensland (EVAWQ)
Engineers Australia
eSafety
Executive Council of Australian Jewry
Faculty of Education, Monash University
Faculty of Education, University of Tasmania
Family Planning Alliance Australia
Family Planning Alliance Australia (FPT), Tasmania
Family planning New South Wales

Organisation Name
Family Voice Australia
Florey Electorate SA
Gaven State School
Gender Research Network, University of Newcastle
Geography & History Teachers Association NT
Geography Teachers Association NSW and ACT
Geological Society of Australia (GSA)
Geoscience Australia
Geoscience Pathways Project (GPP)
GetUp
Grok Academy
Health and Wellbeing Queensland
Healthy Greater Bendigo
Hindu Council of Australia
History Teachers Association of Victoria
Home Economics Institute of Australia (Queensland) (HEIA)
IncludeHer Movement
Indigenous Eye Health
Indonesian Teachers' Association of South Australia
Information and communication technology (ICT)Educators NSW
Institute for Judaism and Civilization
Institute of Australian Geographers (IAG)
Institute of Public Affairs
Isolated Children's Parents' Association of Australia
It's time we talked
Kodály Queensland
Language Testing Research Centre (LTRC)
Learning By Doing
Lutheran Education Australia
Making Up Lost Time In Literacy Pty Ltd (MultiLit)
Mareeba State School
Mathematics Advisory Board
Mathematics team in the Department of Education of Tasmania
Maths Association of Victoria (MAV)
Maum Meditation Centre Incorporated
Melbourne Graduate School of Education The University of Melbourne

Organisation Name
Melbourne School of Population and Global Health - The University of Melbourne
Menzies Research Centre
Modern Language Teachers' Association of South Australia
Multicultural Education and Languages Committee (MELC)
Multilit
National Advocates for Arts Education (NAAE)
National Alliance of Christian Leaders
National Association of Services against Sexual Violence (NASASV)
New South Wales Council of Churches
Northern Territory's Department of Education
Office of the Victorian Information Commissioner (OVIC)
Office of the Women in STEM Ambassador
OneSchool Global Australia
ORIGO Education
Our Watch
Outdoors New South Wales and Australian Capital Territory
Outdoors Queensland
Physical Literacy Special Interest Group (PL SIG)
Primary Mathematics Association of South Australia (PMA)
Qld Special Education Curriculum Cluster
Queensland Association of Mathematics Teachers
Queensland Association of Special Education Leaders (QASEL)
Queensland Ballet
Queensland Department of Education
Queensland Economic Teachers Association
Queensland Family and Child Commission (QFCC)
Queensland Global Citizenship Education Network (QGCEN)
Queensland History Teachers' Association
Queensland Private Enterprise Centre
Queensland Society for Information Technology in Education (QSITE)
Queensland Society for Information Technology in Education Inc. (QSITE)
Ramsay Centre for Western Civilisation
Reconciliation Australia
Royal Geographical Society of Queensland (RGSQ)
Royal Historical Society of Victoria (RHSV)
Royal Society of St George
Rule of Law Education

Organisation Name
School of Education and Professional Studies, Griffith University
School of Education and Tertiary Access at University of the Sunshine Coast
School of Languages SA
Science & Technology Australia
Science of Language and Reading Lab ((SOLAR Lab)
Science Teachers' Association of Queensland (STAQ)
Social and Citizenship Education Association of Australia (SCEAA)
Social and Citizenship Educators Association of Queensland (SCEAQ)
South Australian English Teachers Association
Speech Pathology Australia
St Clare's College
Steiner Education Australia
Student representative group - Adelaide High School
Suicide Prevention Australia
Tasmanian Art Teachers Association (TATA)
Tasmanian Association for the Gifted
Tasmanian Society for Information Technology in Education (TASITE)
Teach Us Consent
Teacher Earth Science Education Programme (TESEP)
Tertiary History Educators Australia (THEA)
The Arts Education Academic Group at the University of Melbourne
The Arts Education Academic Group at the University of Melbourne, Graduate School of Education
The Australian Association for Adolescent Health
The Centre for Inclusive Education (C4IE)
The eSafety Commissioner
The Hutchins School Tasmania
The Institute of Technology Education (iTE)
The Mareeba State School
The Mathematical Association of Western Australia
The Minerals Council of Australia (MCA)
The Queensland Government’s Department of Tourism
The Queenwood School for Girls
The Tasmanian Association for the Teaching of English (TATE)
The Tasmanian Society for Information Technology in Education (TASITE)
The University of New South Wales Tax Clinic
True Relationships & Reproductive Health
University of Queensland
University of Tasmania

Organisation Name
University of Western Australia
Victorian Commercial Teachers Association (VCTA)
Victory Life Centre
Visual Arts and Design Educators Association New South Wales (VADEA NSW)
Voiceless Limited
Water Services Association of Australia
Wellbeing SA
Western Australia Health Promoting Schools Association.
Western Australian Primary Principals' Association (WAPPA)
Whitlam Institute
Women's Health East
Women's Health Goulburn North East
Young Women's Christian Association of Canberra (YWCA Canberra)

Appendix G – Overview of individual jurisdictional feedback

Tasmania

Tasmania's position on the changes to Mathematics is predominantly positive. There is strong agreement that the revised version is an improvement on the current version, and that the revised curriculum is regarded as underpinned by research.

Positive feedback

The teaching of problem solving is strongly supported by Tasmania. A focus on problem solving aligns with the Department's Strategic Plan, Numeracy Framework, and early years pedagogical approach. It is noted that problem solving involves purposeful planning, student centredness, explicit teaching and ongoing feedback and assessment. The benefits of problem solving are not only cognitive or academic, but also emotional, attitudinal, and psychological.

Aspects that need further revision and/or consideration

- Further specificity is required in several areas. For example, language of comparison should include 'difference', 'more or less' as well as explicitly mention and elaborate on 'equivalence'.
- The 'Core concepts' may well be an unwanted and possibly an unneeded distraction for teachers. The most significant changes relate to the 'Key considerations'. These could be much more visible in graphics and the preamble of the document.
- The algebraic demands for all students especially in Years 9 and 10 are viewed as too high for 'all' students. For example, the solving of quadratic equations at Years 9 and 10.
- Mathematics requires significant time to "teach for deep understanding of foundational concepts".
- Concerns were also raised around whether the changes would create issues around ensuring equitable access to technology.

Queensland

Positive feedback

- The proposed changes to the introductory sections provide important information about the intent of Mathematics.
- The Rationale articulates the importance of the Mathematics learning area within the Australian Curriculum (AC) and the importance of Mathematics to all students' lives.
- Aims are aligned with the Rationale.
- Key connections section highlights links with the GCs and clarifies how to embed GCs and CCPs, as well as highlighting opportunities for integrated learning with other learning areas.
- Most revised content elaborations provide authentic and meaningful illustrations of how the content could be delivered, clarify understanding, and provide suggestions.
- Removing proficiencies as strands and embedding them into the content descriptions and achievement standards will likely increase teacher engagement with the proficiencies and support more consistent application of the proficiencies in teaching and assessment.
- Grouping the achievement standard content according to strands provides clarity.
- The 6-strand structure is welcomed.

- Most revised content elaborations in Foundation to Year 6 provide authentic and meaningful illustrations of how the content could be delivered. There are authentic opportunities to recognise and explore the Aboriginal and Torres Strait Islander Histories and Cultures cross-curriculum priority.

Aspects that need further revision

- More content decluttering is needed; it is felt that the revised version is not more manageable. Potential demands on teachers are noted. Suggestions for further decluttering are provided.
- It is preferred to retain the current sub-strands.
- The quality of Achievement standards needs further improvement. It is felt that the demand in each year level has increased due to more content and increased cognitive demand. British Columbia and Singapore are recommended as benchmarks in Mathematics and it is noted that more is demanded of Australian students than in those 2 jurisdictions. Specific examples are provided. Some language and terminology is ambiguous and difficult to access. Possible solutions are provided.
- Content descriptions and Achievement standards need more alignment. Some examples are given.
- Overall, readability needs to be improved.
- Digital technologies should be removed from the Achievement standard for reasons of equity.
- The sub-strand for Money and financial mathematics should be included – this view is also reflected in the qualitative survey feedback.
- The core concepts need to provide more clarity about their purpose. Specific suggestions are provided.
- Key connections could link more explicitly to Asia and Australia's engagement with Asia.
- Year level descriptions need more clarity. Specific suggestions are provided.
- Content descriptions need more clarity. Suggestions for resolving ambiguity are provided.
- The explicit inclusion of critical processes of mathematical reasoning and problem-solving content will require significant work at whole school, year level and unit level. Professional development will be needed.
- Some Content descriptions in relation to the Aboriginal and Torres Strait Islander Histories and Cultures cross-curriculum priority may be culturally insensitive.

Victoria

Positive feedback

- The proposed changes are generally supported.
- Content has been refined and reduced.
- CDs and Achievement Standards provide more clarity and helpful detail.
- Incorporating the proficiency strands in the CDs is supported.
- Alignment between Achievement standards and CDs has improved.
- Content elaborations are more comprehensive and aligned to CDs.
- Indigenous perspectives are well represented.
- Some representation of Sustainability CCP.
- Reasonable representation of Digital literacy and Critical and creative thinking GPs.

Aspects that need further revision

- There is not yet a balance between fundamental mathematics knowledge and skills and applied approaches such as problem-solving.
- The model illustrating the conceptual framework needs more clarity.
- A revised glossary is needed.
- The core concept documents used to curate content should be published to support teachers' professional learning.
- Support materials are needed in relation to First People's perspectives.

New South Wales

Positive feedback

- No specific positive feedback was provided.

Aspects that need further revision

- Language is often too academic e.g., 'stochastic reasoning' at Year 4 and Year 5.
- Language is often too complex. Long compound sentences in the content descriptions detract from comprehension; some concepts and definitions are unclear or open to debate.
- Some content is not age appropriate, particularly in Probability and Statistics. Specific examples are given e.g., more refinement to the development of learning using a stronger evidence base for Statistics; multiplication facts in Year 4; linear equations in Year 8.
- The curriculum should focus on content rather than strategies or pedagogy.
- It is felt that the Core concepts are not clearly connected to the content.
- Adding 13 new Core Concepts appears to have added significantly more content.
- Dividing into 6 strands requires more information about how to make connections within and across the learning area.

South Australia

Positive feedback

- Including the proficiencies is an improvement.
- The division of the strands is welcomed.
- Aims are clear and readable.
- The rationale is clear.
- Level descriptions are clear and concise.

Aspects that need further revision

- The core concepts appear to overlap with existing proficiencies and the language is complex.
- Some Content descriptions remain wordy and hard to understand.
- While the Rationale is clear, it is still wordy.
- Some terminology needs clarity e.g. fluency; computational thinking, 'natural numbers'.
- Literacy should also include references to oral language, reading and writing to record mathematical thinking, and could be used to formulate responses.
- More alignment is needed between Content descriptions and Achievement standards.

- Some Content descriptions remain wordy and laden with complex terminology. Examples are provided in relation to several year levels.
- Some Content descriptions need to include more specificity, such as examples, to ensure teachers understand expectations. Specific suggestions are provided.

Northern Territory

Positive feedback

- The NT was very positive about the revised Mathematics curriculum.
- Re-sequencing content has improved the conceptual and logical progression of learning from F-10.
- Duplication has reduced with content removed or consolidated.
- Separating the strands to 6 will enable greater connections to occur within and between all strands.
- Mathematical language aligns with international standards.
- Greater emphasis on problem solving and reasoning is welcomed.

Aspects that need further revision

- More decluttering is needed e.g., the realignment of concepts in number has caused overcrowding in the later years.
- It is suggested that some concepts are developmentally relevant.
- More explicit links to the National Numeracy Learning Progressions are recommended.
- Financial literacy should be more visible in the achievement standards and content descriptions.

Western Australia

Positive feedback

WA has indicated which aspects should be retained by occasionally stating so expressly and at other times by implication i.e., by not suggesting a change.

Aspects that need further revision

- Content descriptions.
    - Some terminology needs greater clarity e.g., number names, familiar, virtual materials, model v represent. Specific examples are provided in relation to each content descriptor.
    - Some language is too wordy. Suggestions are provided for ways various content descriptions could be simplified, combined, or reduced.
    - Some Content descriptions are regarded as too demanding for some year levels. Specific examples are provided.
    - Some elements are missing from Content descriptions. Specific examples are provided e.g., 2-dimensional and 3-dimensional at Year 1.
    - Some Content descriptions, which appear to be covered elsewhere, could be removed e.g., AC9M3ST01, AC9M7ST01.
    - In several year levels, it is suggested to delete “including financial contexts”.
    - In several year levels, questions are raised about which digital tools are appropriate.
    - There is concern that inclusion of proficiency words in the content description implies that only that proficiency applies to the content.

- Achievement standards.
    - Overall, the language needs to be simpler.
    - Some aspects are too demanding for some year levels.
    - More clarity around expectations is needed, at times. Specific examples are provided in relation to each year level.
    - Some elements of Achievement standards are not aligned with Content descriptions and/or terminology is used inconsistently. Specific examples are provided in relation to each Year level.
    - The computational thinking statements do not follow a clear developmental sequence over the years, and it is unclear how to assess this skill.

Independent Schools Australia

Positive feedback

- A separate Foundation year is welcomed.
- Embedding proficiencies into Content descriptions and Achievement standards has simplified the structure.
- Content elaborations have improved.
- Language and expectations are less ambiguous.
- Sequencing of content between year levels has improved.
- Embedding computational thinking, reasoning and investigating concepts in the Content descriptions is welcomed.

Aspects that need further revision

- Expectations appear to have increased.
- Some skills and concepts are seen as not developmentally appropriate e.g., metacognitive reasoning in Year 7 as opposed to Year 9.
- The curriculum content does not appear to have been reduced, which is a significant concern.
- Content descriptions appear to be longer and more complex. The language is often vague and uses a lot of jargon.

National Catholic Education Commission

Overall, there have been improvements in clarity around what to teach but little to no reduction of the content.

Positive feedback

- Stakeholders were largely positive about the introductory elements.
- The Aims are positively received.
- Embedding proficiency strands into the content descriptions and achievement standards has provided clarity for teachers and are regarded as essential for deep learning.
- The key connections make it clear that mathematics is the core learning area for numeracy development. This is well supported by teachers.
- Key considerations assist teachers to clearly identify the 4 problem-solving processes.

- The proposed 10A curriculum is challenging and provides a suitable pathway for students aspiring to Methods and Specialist mathematics in Senior.
- The elaborations are clearer and align more clearly with the content descriptions.

Aspects that need further revision

- The curriculum is still unmanageable and has not been reduced. There is insufficient time to cover the content.
- Cognitive demand and rigour has increased, often inappropriately.
- Core concepts need more clarity, in places.
- Di Siemon's 'Big ideas of number' is recommended for incorporation to assist with differentiation, planning and assessment.
- Clarity around some terms is needed e.g., computational thinking and algorithms; 'a range of methods'.
- It is strongly felt the quality of the achievement standards has not improved. More alignment between content descriptions and language/cognitive verb choices is needed.
- It is strongly felt that the quality of content descriptions has not improved. Language is wordy and statements are lengthy, making them overly complicated.
- The increased use of mathematical terminology and the prescription of skills and processes emphasising mathematical reasoning and problem-solving will require more planning time for all teachers but especially early career, non-specialist teachers and those in multi-age settings.
- In F – 6, the sub-strand content for money and financial mathematics needs to be re-emphasised.
- In 7 – 10, while some changes are supported, specific areas of concern are identified.
- Clear examples, especially in regard to First Nations Peoples' activities including a well-resourced list of suggestions/background knowledge, are required.

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AUSTRALIA

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