

Creating questions for quality Mathematics assessment — Australian Curriculum v9.0

Guide

February 2026

This guide will assist teachers and communities of practice to use the resources in the *Creating questions for quality Mathematics assessment — Australian Curriculum v9.0* toolkit effectively.



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Purpose

This guide, along with the accompanying slideshow presentations, template, year level examples and learning activities, is designed to support individual teachers and communities of practice to create questions that vary in complexity and familiarity for quality Mathematics assessment.

The *Creating questions for quality Mathematics assessment — Australian Curriculum v9.0* toolkit is aligned with Version 9.0 of the Australian Curriculum: Mathematics, and supports educators to design assessment that is valid, accessible and reliable.

About the toolkit

Quality supervised assessments and examinations in Mathematics have questions with different levels of complexity and familiarity. The *Creating questions for quality Mathematics assessment — Australian Curriculum v9.0* toolkit supports curriculum leaders and teachers to facilitate professional conversations and build a shared understanding of how quality questions are designed. The resources in the toolkit are suitable for primary and secondary leaders and for teachers at every career stage.

The toolkit consists of the following resources:

- *Creating questions for quality Mathematics assessment — Australian Curriculum v9.0: Guide* (this document)
- *Creating questions for quality Mathematics assessment — Australian Curriculum v9.0: Reflection sheet*
- *Understanding the Mathematics standards elaborations: Quality assessment design for Prep–Year 10* (slideshow presentation)
- *Using complexity and familiarity to create questions in Mathematics: Supervised assessments for Prep–Year 6* (slideshow presentation)
- *Using complexity and familiarity to create questions in Mathematics: Examinations for Years 7–10* (slideshow presentation)
- *Applying practical strategies to analyse and create questions in Mathematics: Using complexity and familiarity in assessment for Prep–Year 6* (slideshow presentation)
- *Applying practical strategies to analyse and create questions in Mathematics: Using complexity and familiarity in assessment for Years 7–10* (slideshow presentation)
- *Template: Using complexity and familiarity to create questions in Mathematics*
- *[Year level] Mathematics: Using complexity and familiarity to create questions in Mathematics* (year level example resources for Prep–Year 10).

How to use this guide and associated resources



For individual teachers

This guide provides an overview of the toolkit and outlines resources to support understanding of quality question design. By engaging with the activities and resources, such as reviewing relevant year level examples and reflecting on adjustments for your practice, you can strengthen your ability to create valid, accessible, reliable Mathematics questions tailored to your context.

While communities of practice benefit from shared discussion, individual teachers are encouraged to engage in the process and may choose to engage with colleagues to enrich their reflections.



For communities of practice

This guide and associated resources offer a structured approach to collaborative professional development. Use the slideshow presentations to facilitate discussions during staff meetings, faculty meetings or professional learning sessions. The presentations, template and year level examples support a consistent and comprehensive approach to designing quality Mathematics questions across your school. Working together enables shared insights, common strategies, and a culture of continuous improvement.

Additional resources

The following additional resources provide valuable support for teachers and communities of practice, assisting them to understand and implement quality assessment practices.

Understanding K–12 assessment

The *Understanding K–12 assessment* policy outlines the Queensland Curriculum and Assessment Authority (QCAA)'s position on assessment across all year levels. It provides a foundation for building assessment literacy and supports quality teaching, learning, assessment and reporting. The policy can be accessed on the [K–12 policies and resources page](#).

P–10 assessment literacy online learning courses

The [P–6 and 7–10 assessment literacy online learning courses](#) and leaders' toolkit are accessed via the Learning Hub on the [QCAA Portal](#). The courses are designed to support teachers and school leaders in developing assessment programs that provide Queensland students with the best opportunities to demonstrate what they know and can do.

P–10 Mathematics standards elaborations

The QCAA developed [standards elaborations](#) to help teachers make consistent, comparable and defensible judgments about student achievement on a five-point scale. The Mathematics standards elaborations support teachers to effectively design and construct quality assessment that is aligned with the Australian Curriculum v9.0: Mathematics.

Understanding the sessions

Schools may choose different strategies to use with the *Creating questions for quality Mathematics assessment — Australian Curriculum v9.0* toolkit to maximise benefits for staff and students. The following session outlines are provided as a guide to support initial conversations and direct teacher thinking toward effective use of the resources.

Session 1: Using complexity and familiarity to create questions

Learning goal

To develop skills required to create questions in quality supervised assessments and examinations for the Australian Curriculum v9.0: Mathematics.

Success criteria

You will know you have been successful when you can:

- identify how the attributes of quality assessment are incorporated in question design
- use the QCAA standards elaborations to review questions that vary in complexity and familiarity
- document reflections to contribute to a shared approach.

Guiding question

How are complexity and familiarity used to create questions in quality Mathematics assessment?

Intended audience

Individual teachers and teacher communities of practice.

Required resources

The required resources for Session 1 are:

- *Creating questions for quality Mathematics assessment — Australian Curriculum v9.0: Reflection sheet*
- one of the following slideshow presentations
 - *Using complexity and familiarity to create questions in Mathematics: Supervised assessments for Prep–Year 6*
 - *Using complexity and familiarity to create questions in Mathematics: Examinations for Years 7–10.*

Complementary resources

Complementary resources for Session 1 are:

- Mathematics standards elaborations for each year level
- *Understanding the Mathematics standards elaborations: Quality assessment design for Prep–Year 10* (slideshow presentation).

This slideshow presentation is designed to **complement** the main presentation (*Using complexity and familiarity to create questions in Mathematics*). It provides deeper insight into how the standards elaborations underpin quality assessment design.

Suggestions for use:

- **New to the standards elaborations** — consider using the complementary slideshow presentation before the main session to build foundational understanding.
- **Already familiar with the standards elaborations** — consider using it after the main session to extend thinking or revisit key ideas with a more analytical lens.

Time required

Approximately 30 minutes.

Procedure



For individual teachers:

1. Ensure you are familiar with the QCAA Mathematics standards elaborations. See 'Complementary resources' (above) for further guidance.
2. Download the reflection sheet.
3. Engage with the slideshow presentation.
4. Identify how the attributes of quality assessment are incorporated in question design.
5. Reflect on how QCAA standards elaborations support effective question design in Mathematics.
6. Document your reflections and strategies using the reflection sheet.
7. **Optional:** Share your reflections with a colleague or in a team meeting to deepen your understanding through professional conversation.



For communities of practice:

1. Ensure teachers are familiar with the QCAA Mathematics standards elaborations. See 'Complementary resources' (above) for further guidance.
2. Provide teachers with a copy of the reflection sheet.
3. Facilitate the slideshow presentation.
4. Guide discussion on how the attributes of quality assessment are incorporated in question design.
5. Encourage individual, and then small group reflection on how the QCAA standards elaborations support effective question design in Mathematics.
6. Allow time for teachers to document their reflections and strategies using the reflection sheet.
7. **Optional:** Conclude with a group discussion on
 - a. How can questions be adjusted to enhance accessibility for students in our context?
 - b. How does engaging in professional conversations enhance the reliability of quality Mathematics assessment?

Session 2: Applying practical strategies to analyse and create questions

Learning goal

To apply practical strategies for analysing and creating questions in quality supervised assessments and examinations that are aligned with the Australian Curriculum v9.0: Mathematics.

Success criteria

You will know you are successful when you can:

- use QCAA resources to guide question design
- apply understanding of complexity and familiarity descriptors to analyse and create questions
- review and refine questions for validity, accessibility, and reliability.

Guiding question

How can we apply our understanding of complexity and familiarity to analyse and create questions in Mathematics?

Intended audience

Individual teachers and teaching communities of practice.

Required resources

The required resources for Session 2 are:

- *Creating questions for quality Mathematics assessment — Australian Curriculum v9.0: Reflection sheet*
- one of the following slideshow presentations
 - *Applying practical strategies to analyse and create questions in Mathematics: Using complexity and familiarity in assessment for Prep–Year 6*
 - *Applying practical strategies to analyse and create questions in Mathematics: Using complexity and familiarity in assessment for Years 7–10*
- *Template: Using complexity and familiarity to create questions in Mathematics*
- *[Year level] Mathematics: Using complexity and familiarity to create questions in Mathematics* (year level example resources for Prep–Year 10).

Time required

Slideshow presentation: approximately 15 minutes.

Reviewing year level example resources and using the template: at least 30 minutes.

Procedure



For individual teachers:

1. Engage with the slideshow presentation to explore strategies for analysing and creating questions.
2. Locate and review relevant year level example resources, focusing on the example questions and annotations.
3. Reflect on adjustments you would make to suit your students' needs and context.
4. Document your reflections and strategies using the reflection sheet.
5. Open the template and follow the steps outlined to create your own questions for your year level.
6. Share and discuss your example questions informally with colleagues, identifying opportunities to strengthen the validity, accessibility and reliability of the questions.

Set goals for next steps: Using the information from discussions, recorded reflections and school-created questions, set goals for further opportunities to create questions for quality Mathematics assessment.



For communities of practice:

1. Facilitate the slideshow presentation with your team.
2. Provide teachers with relevant year level example resources, focusing on the example questions and annotations.
3. Ask teachers to reflect individually on adjustments they would make to suit their students' needs.
4. Collaboratively discuss and identify adjustments to suit your students' needs and context.
5. Encourage teachers to document their reflections and strategies using the reflection sheet.
6. Distribute the template and allow time for teacher to create questions for their year level, individually or in small groups.
7. Share and discuss the created questions as a community of practice, identifying opportunities to strengthen the validity, accessibility and reliability of the questions.

Set goals for next steps: Using the information from discussions, recorded reflections and school-created questions, set goals for further opportunities to create questions for quality Mathematics assessment.