Numeracy general capability

Understanding Numeracy

Numeracy is one of seven general capabilities in the Australian Curriculum. The other general capabilities are:

- Critical and creative thinking
- Digital literacy
- Ethical understanding
- Intercultural understanding
- Literacy
- Personal and social capability.

The comprehensive development of numeracy requires discipline-specific numeracy skills in all learning areas. By embedding numeracy in Mathematics across Prep to Year 10, schools can equip their students with the numeracy knowledge, skills, behaviours and dispositions they need now and for the future.

Definition of numeracy

'Students become numerate as they develop the knowledge and skills to use mathematics confidently across learning areas at school and in their lives more broadly. Numeracy encompasses the knowledge, skills, behaviours and dispositions that students need to use mathematics in a wide range of situations. It involves students recognising and understanding the role of mathematics in the world and having the dispositions and capacities to use mathematical knowledge and skills purposefully' (ACARA 2010 to present).

Numeracy progression

The Numeracy progression provides evidence-based indicators of typical levels of numeracy development across several elements and sub-elements (see table below). The indicators describe observable behaviours that identify increasingly complex ways students use understandings and skills of key numeracy concepts. These indicators provide a 'comprehensive view of numeracy learning' (ACARA 2010 to present) and how it develops over time.

The levels in the progression provide a logical sequence for numeracy development. However:

- students may not pass through every level in the progression, and they might display indicators from multiple levels
- there is no uniform alignment between progression level number and year level of schooling
- the 'number of progression levels is determined by the research evidence and is not the same for each sub-element' (ACARA 2010 to present).

Students can display indicators within sub-elements regardless of their year level. For example, a student in Year 7 could display indicators at Level 9 in Number and place value, Level 5 in Understanding geometric properties and Level 7 in Interpreting and representing data.

Structure

The Numeracy progression is organised around three elements and fourteen sub-elements as shown in the table below.

Element	Sub-elements
Number sense and algebra	• Number and place value • Counting processes • Additive strategies • Multiplicative strategies • Interpreting fractions • Proportional thinking • Number patterns and algebraic thinking • Understanding money
Measurement and geometry	• Understanding units of measurement • Understanding geometric properties • Positioning and locating • Measuring time
Statistics and probability	• Understanding chance • Interpreting and representing data

For each sub-element, the progression lists detailed indicators for levels of numeracy development.

Accompanying the progression is:

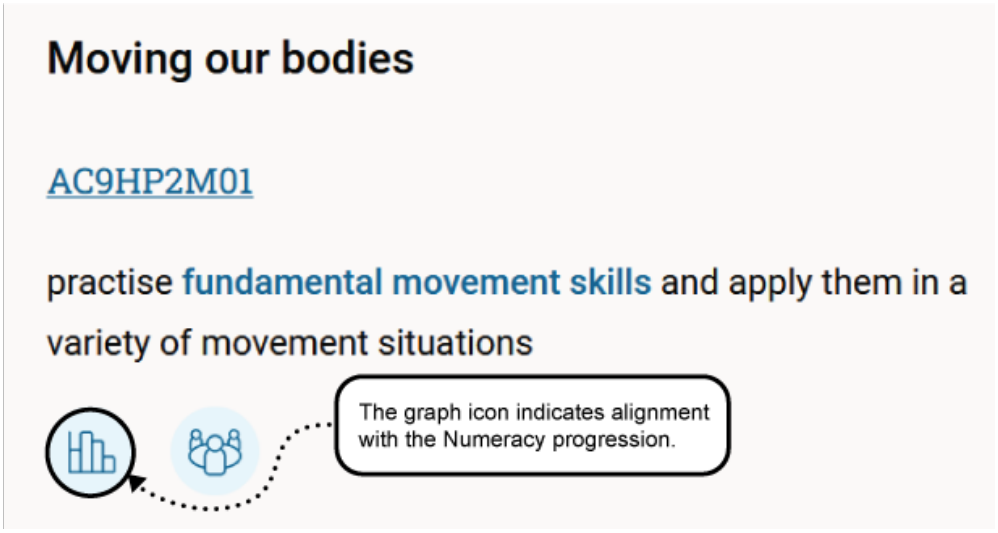
- 'Understand this general capability: Numeracy', including definition of numeracy, information about the progression, structure, and key connections to learning areas
- 'Numeracy: Glossary', available as a download
- 'Numeracy: Comparative information', showing differences between Version 8.4 and Version 9.0.

Alignment with the Australian Curriculum learning areas

The Numeracy progression levels align to year levels in the Australian Curriculum: Mathematics v9.0 (see 'Understand this general capability: Numeracy') and contain additional fine-grained descriptions of relevant Mathematics content descriptions. According to the Australian Curriculum: Mathematics v9.0, Mathematics 'develops the numeracy capabilities that all students need in their personal, work and civic lives, and provides the fundamentals on which mathematical specialties and professional applications of mathematics are built' (ACARA 2010 to present).

In addition, numeracy is fundamental to other learning areas and all teachers can support students with the discipline-specific numeracy demands of the learning areas in which they teach.

Where content in the Australian Curriculum is aligned to the Numeracy progression, a graph icon has been used. The example below comes from Years 1 and 2 Health and Physical Education. By clicking on the graph icon, teachers can discover detail about the numeracy knowledge, skills and dispositions underpinning the learning area content description.



Using the progression

'By providing a comprehensive view of numeracy learning, the progression gives teachers a conceptual tool that can assist them to develop targeted teaching and learning programs for students who are working at, above or below year level expectations' (ACARA 2010 to present).

The Numeracy progression can be used to support students in navigating the numeracy demands of all learning areas. While the progression details **what** numeracy knowledge, skills and dispositions can be taught, schools decide **how** to teach, plan, program, assess or report.

Use of the progression can support students:

- working below year-level expectations by assisting teachers — independently or in collaboration (e.g. with health professionals) — to identify areas of specific numeracy need
- at year-level expectations by assisting teachers to add depth and richness to students' numeracy learning
- above year-level expectations by assisting teachers to identify aspects of numeracy that might extend the students' numeracy development.

Planning to use the Numeracy progression

Schools embed authentic opportunities to engage with the Numeracy general capability based on factors such as school priorities, cohorts of students, and capacities of students in a class. This involves planning learning opportunities that specifically target numeracy knowledge, skills, and dispositions that are relevant to specific learning areas and appropriate for students.

Planning for individuals and groups of students

When planning and delivering a unit of work, teachers select relevant aspects of the learning area context, achievement standard and content descriptions to be addressed (referred to below as the curriculum content). The Numeracy progression can be used in conjunction with the curriculum as a resource to:

- identify the current numeracy capacity of individual students and groups of students, and whether they might benefit from specific numeracy support, consolidation and enrichment or extension
- embed aspects of the Numeracy general capability by assisting teachers to identify connections between the curriculum content and the progression

- select several relevant indicators from elements and sub-elements that will be explained, modelled and practised
- select and sequence activities within the teaching and learning plan that will support students to develop the targeted knowledge, skills and dispositions of the Numeracy progression. These activities could include:
  - establishing clear and explicit learning goals
  - making meaningful connections to students' prior knowledge, skills and dispositions
  - modelling the focus indicator/s using examples drawn from models, think-aloud demonstrations and guided practice
  - providing opportunities for students to practise the relevant knowledge, skills or dispositions, and providing feedback to students about their progress toward the learning goals.

Planning learning for all students

Although the Numeracy learning progression will be used mainly to support specific students, the detail provided in the progression could also be used to assist teachers in all learning areas when planning numeracy opportunities in familiar and unfamiliar contexts for all students. This supports students to recognise that numerate people apply mathematical ideas in a wide range of situations. For example:

- Under the Number sense and algebra element, Number and place value sub-element, teachers will find specific indicators that will support students to recognise, read, order and interpret large and small numbers. Number and place value provides a foundation for students to process, communicate and interpret numerical information in a variety of contexts.
- Teachers can use the Numeracy learning progression to support the development of numeracy demands and opportunities within their learning areas by:
  - thinking about their curriculum program and considering elements and sub-elements that reflect the concepts, skills and strategies students need to achieve the standard
  - evaluating the numeracy demands of the teaching and learning sequence they plan to use with students
  - considering numeracy opportunities within a task that may be unfamiliar to students and therefore could require explicit teaching
  - identifying teaching starting points from the numeracy indicators
  - making decisions about potential differentiation for specific students and groups of students.

More information

For advice about embedding the general capabilities, please see the QCAA resource *Embedding the general capabilities*.

If you would like more information on the general capabilities, please visit the QCAA website at https://www.qcaa.qld.edu.au/p-10/aciq/version-9/general-capabilities. Alternatively, email the K–10 Curriculum and Assessment Branch at australiancurriculum@qcaa.qld.edu.au.