Year 8 Mathematics

ACiQ | v9.0

Australian Curriculum v9.0: Using complexity and familiarity to create questions in Mathematics

The QCAA Mathematics standards elaborations use complexity and familiarity to describe the discernible differences between performance levels. Complexity and familiarity are described in the standard elaborations Notes section — Table 2. This resource provides examples of questions with different levels of complexity and familiarity for Year 8.

Aspect of the achievement standard	Related content description/s	Examples of evidence	Mathematical proficiencies
Students apply algebraic properties to rearrange, expand and factorise linear expressions.	**Algebra** • create, expand, factorise, rearrange and simplify linear expressions, applying the associative, commutative, identity, distributive and inverse properties AC9M8A01	• applying algebraic properties to – rearrange linear expressions – expand linear expressions	Fluency
They graph linear relations and solve linear equations with rational solutions and one-variable inequalities, graphically and algebraically.	**Algebra** • graph linear relations on the Cartesian plane using digital tools where appropriate; solve linear equations and one-variable inequalities using graphical and algebraic techniques; verify solutions by substitution AC9M8A02	• graphing linear relations • solving linear equations with rational solutions and one-variable inequalities, graphically and algebraically	Fluency

Complexity annotations	Complex unfamiliar questions (A or equivalent)	Familiarity annotations	Complexity annotations	Complex familiar questions (B or equivalent)	Familiarity annotations	Complexity annotations	Simple familiar questions (C or equivalent)	Familiarity annotations
Students write an expression (prior Year 7 learning) before rearranging and simplifying to solve a linear equation. Interpretation is required to develop a response.	Ash is five years older than Shayne. Ash will be twice as old as Shayne in three years time. How old are Ash and Shayne now? Give clear mathematical reasoning for your solution.	All the information to solve the problem is not immediately identifiable. The required procedure is not clear from the way the problem is posed. The context is unfamiliar to students as it was not the main focus in the teaching and learning program.	Students make connections between mathematical concepts. They are required to expand, simplify and rearrange equations to solve linear equations. Some interpretation is required to develop a response.	Solve the following equation: $4(2x + 1) = 5 - 3(x - 7)$	All the information to solve the problem is identifiable. The required procedure is clear from the way the problem is posed. The context is familiar to students as it was a focus in the teaching and learning program.	Students expand, rearrange and simplify linear expressions. The question is broken into parts.	Expand and simplify the following linear expressions: a. $4(x + 6) + 10$ b. $7(3x - 7) - 2x + 14$ c. $3(2x + 1) - 4(2x - 3)$	All the information to solve the problem is identifiable. The required procedure is clear from the way the problem is posed. The context is familiar to students as it was a focus in the teaching and learning program.