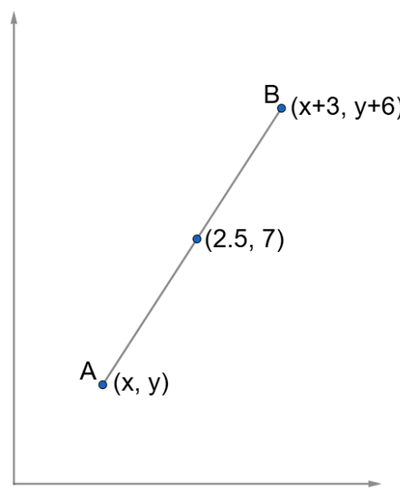
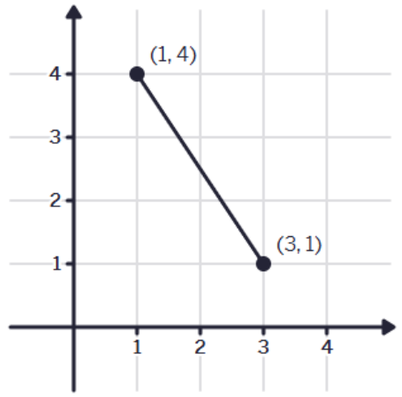
Year 9 Mathematics

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 9.

Aspect of the achievement standard	Related content description/s	Examples of evidence	Mathematical proficiencies
They find the distance between 2 points on the Cartesian plane, and the gradient and midpoint of a line segment.	**Algebra** • find the gradient of a line segment, the midpoint of the line interval and the distance between 2 distinct points on the Cartesian plane AC9M9A03	• finding the distance between 2 points on the Cartesian plane • finding the gradient of a line segment • finding the midpoint of a line segment	Fluency
They apply formulas to solve problems involving the surface area and volume of right prisms and cylinders.	**Measurement** • solve problems involving the volume and surface area of right prisms and cylinders using appropriate units AC9M9M01	• applying formulas to solve problems involving the surface area of right prisms	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 make connections between the distance between 2 points on the Cartesian plane and formulas to solve problems involving the surface areas of right prisms. Interpretation is required to develop a response.	You may use a calculator to respond to this question. Jamie is designing a container. The container will be a triangular prism with the corners of the triangular cross section at (2, 1), (6, 4) and (2, 4). The container will be 10 units high. The container is an open box with no lid. Jamie is going to make the container from a sheet of silver. The silver costs $2.81 per square cm. Determine the cost of the silver for the container. 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 teaching and learning. Formulas have been explicitly taught and given to students in the assessment.	Students make connections between mathematical concepts. They are required to reason to determine the coordinates of A from the midpoint of a line segment. Some interpretation is required to develop a response.	The midpoint of the line segment below has coordinates (2.5, 7).  Determine the coordinates of A.	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. Formulas have been explicitly taught and given to students in the assessment.	Students find the distance between 2 points on the Cartesian plane, and the gradient of a line segment. The question is broken into parts.	You may use a calculator to respond to this question.  For the line segment above, determine: a. the gradient b. the distance between the two points, round your answer to 1 decimal place.	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. Formulas have been explicitly taught and given to students in the assessment.