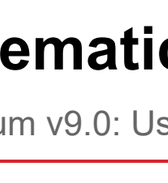
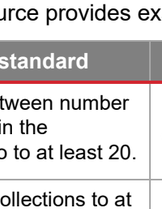
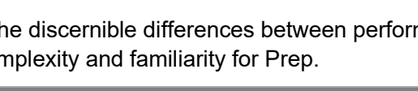
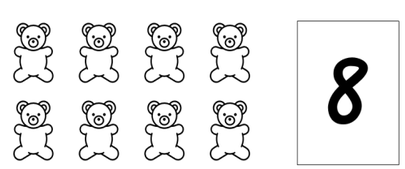
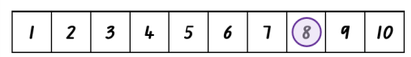
Prep Mathematics

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 Prep.

Aspect of the achievement standard	Related content description/s	Examples of evidence	Mathematical proficiencies
Students make connections between number names, numerals and position in the sequence of numbers from zero to at least 20.	**Number** • name, represent and order numbers including zero to at least 20, using physical and virtual materials and numerals AC9MFN01	• making connections between number names, numerals and position in the sequence of numbers from zero to at least 20	Understanding
Students compare the size of collections to at least 20.	**Number** • quantify and compare collections to at least 20 using counting and explain or demonstrate reasoning AC9MFN03	• comparing the size of collections to at least 20	Reasoning

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 ways of representing numbers (i.e. number names and physical materials), quantifying, and comparing collections for a purpose. Students explain their thinking. Interpretation is required to develop a response.	Teacher questions: *I need 12 pencils. Which cup should I use? Tell me what you are thinking.* Teacher provides two cups of pencils. One cup contains 10 pencils, and a second cup contains 15 pencils. Cup 1  Cup 2  Student uses counting to quantify each cup of pencils. Connections are made between representations and number names. Student compares the two collections, identifies which cup to select and explains their thinking.	All the information to solve the problem is not immediately identifiable as Cup 1 has less than 12 pencils and Cup 2 has more than 12 pencils. The required procedure is not clear from the way the problem is posed. The context is unfamiliar to students as comparisons of collections for this purpose was not a focus in the teaching and learning program.	Students make connections between ways of representing numbers (i.e. number names and physical materials), quantifying, and comparing collections. Students explain their thinking. Some interpretation is required to develop a response.	Teacher questions: *Which collection has the most counters? Tell me how you know.* Teacher provides physical representations to compare (see examples below). *Collection 1* *Collection 2*  Student uses counting to quantify each collection. Connections are made between representations and number names. Student compares the two collections, identifies which has the most counters and explains their thinking.	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 represent a number in different ways using a range of physical materials. They make connections between number names, numerals and position in the sequence of numbers.	Teacher questions: *Show me different ways to represent 8.* Teacher provides a variety of representations, including physical materials and numerals (see examples below).   Student uses physical materials (teddy counters), a counter on a number track, and a number card.	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.