ILLUSTRATING THE MATHEMATICS STANDARDS

The following examples of student work illustrate achievement at the mathematics standards for years 1 and 2.

Grocery Bonanza

The task in this illustration was used by a teacher in a year 1–2 class to link a mathematics activity to a school fund-raiser. The students had brought grocery items to school for the fund-raiser.

The task relates to achievement objectives for Number, Geometry, and Statistics from the mathematics and statistics learning area in *The New Zealand Curriculum.*

Grocery Bonanza

Everyone in the class has brought groceries to school for a school fund-raiser. You and your partner have a box of these groceries, with lots of different shapes and sizes.

1. *Choose 3 different groceries from your box and discuss their shape with your partner.*
2. **a.** *Sort your box of groceries.*

   b. *Explain how you sorted them.*
3. *Show the results of your sorting in a display.*

Some features of students' work used to make judgments in relation to the mathematics standards are described below.

Grocery Bonanza

New Zealand Curriculum: Level 1	*Mathematics Standard: After one year at school*
In solving problems and modelling situations, students will:	
Number and Algebra • *use ... counting ... strategies with whole numbers ... (number strategies)* *Geometry and Measurement* • *sort objects by their appearance (shape)* *Statistics* • *conduct investigations using the statistical enquiry cycle:* – *... answering questions* – *... sorting and counting ... category data* – *discussing the results (statistical investigation)*	*Number and Algebra* • *apply counting-all strategies* *Geometry and Measurement* • *sort objects and shapes by a single feature and describe the feature, using everyday language* *Statistics* • *investigate questions by using the statistical enquiry cycle (with support), ... counting category data*

Molly chose a can, a bottle, and a box and discussed them with her partner, using everyday language and words for basic shapes.

This can's got a circle lid because it goes round.

This bottle is straight, and it stands up. It's kind of thin ... and it has a pointy top.

This box is a square. It has big sides.

Molly then put the items from the box into groups. She sorted them by shape. Then she pointed to each group and explained why they were the same.

I sorted them into three shapes. I've got cans, bottles, and boxes. The cans are all round ...

The teacher asked Molly, "Can you tell me how many groceries are in each group? Which group has the most?"

1, 2, 3, 4, 5, 6 bottles.
1, 2, 3, 4, 5, 6, 7, 8, 9 cans.
1, 2, 3, 4, 5, 6, 7 boxes. So the cans is the biggest group.

Molly counted her groups by counting from one, using the materials.

Discussion

This task provides some of the evidence needed to show that Molly is achieving at early curriculum level 1 and at the year 1 standard in Number, Geometry, and Statistics. She has demonstrated that she recognises and can describe some basic shapes. She is able to sort objects by a single feature and to count category data. She is able to count all the objects in a set, which suggests that she is working at the Counting All stage of the Number Framework.

Grocery Bonanza

New Zealand Curriculum: Level 1	*Mathematics Standard: After two years at school*
In solving problems and modelling situations, students will:	
Number and Algebra • *use a range of counting [and] grouping strategies with whole numbers ... (number strategies)* *Geometry and Measurement* • *sort objects by their appearance (shape)* *Statistics* • *conduct investigations using the statistical enquiry cycle:* – *... answering questions* – *gathering, sorting and counting, and displaying category data* – *discussing the results (statistical investigation)*	*Number and Algebra* • *apply counting-on, counting-back, skip-counting and simple grouping strategies to combine ... whole numbers* *Geometry and Measurement* • *sort objects and shapes by different features and describe the features, using mathematical language* *Statistics* • *investigate questions by using the statistical enquiry cycle (with support), gathering, displaying, and/or identifying similarities and differences in category data*

Wiremu described two boxes and some marshmallow eggs to his partner.

Wiremu used mathematical language, such as rectangle, oval, and triangle, to describe the shapes of his groceries.

The tissue box has 6 sides, and they are all rectangles. The chocolate box has 2 triangles at each end and 3 sides in the middle that are rectangles. The eggs are oval and have wrappers around them.

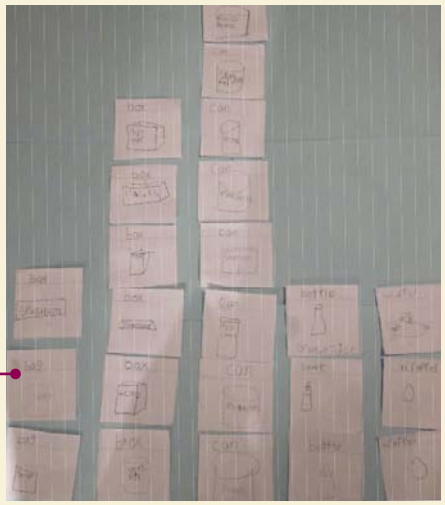
The teacher asked, "How many cans altogether?"

There are 2, 4, 6, 8, so there are 2 more cans than boxes.

Wiremu used a skip-counting strategy and comparative language.

I've sorted them by their shapes – bags, boxes, cans, bottles, and wrappers. There are big cans and little cans – I've sorted them by how tall they are.

Wiremu sorted by two features, shape and height.



Wiremu sorted the groceries into groups. He drew pictures of the items in each group and made them into a pictograph.

The teacher asked Wiremu to imagine taking away 3 cans: "How many cans would there be left?"

Um, 8, ... 7, 6, 5 ...5 cans left

Wiremu counted back as he imaged the objects.

8, 9, 10, ... 20, 21, 22, 23. There are 23 altogether.

The teacher noted that Wiremu used the materials to help him "count on" the total number of groceries because the numbers were too large for him to track in his head.

Discussion

This task provides some of the evidence needed to show that Wiremu is achieving at curriculum level 1 and the year 2 standard in Number, Geometry, and Statistics. He has demonstrated that he can sort by different features and describe the features, using mathematical language. He is able to display and identify similarities and differences in category data. He has also demonstrated that he can apply skip-counting, counting-on, and counting-back strategies. This suggests that he is working at the Advanced Counting stage of the Number Framework.