# **ILLUSTRATING THE MATHEMATICS STANDARDS**



The following examples of student work illustrate achievement at the mathematics standards for years 3 and 4.

## Are We Ready?

The task used in this illustration was part of a year 3–4 social sciences unit on how people cope in natural disasters. After listening to podcasts of children's stories about the Christchurch earthquakes, one student asked: "What would happen if we had an earthquake and had to stay at school?"

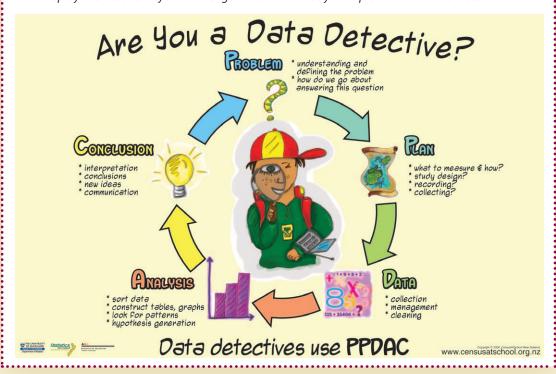
After class discussion, the teacher set the following task on what supplies would be needed if everyone had to stay at school in an emergency.

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

### Are We Ready?

Work in small groups to:

- brainstorm what emergency supplies the school should have in case everyone
  has to stay overnight
- 2. check to see if these things are in the school
- 3. display the results of your investigation and be ready to explain them to the class.



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

# AFTER THREE YEARS AT SCHOOL

## **ILLUSTRATING THE MATHEMATICS STANDARD**



## Are We Ready?

### New Zealand Curriculum: Level 2

### Mathematics Standard: After three years at school

In solving problems and modelling situations, students will:

#### Statistics

- conduct investigations using the statistical enquiry cycle:
  - posing and answering questions
  - gathering, sorting, and displaying category and wholenumber data
  - communicating findings based on the data (statistical investigation)

#### Statistics

- investigate questions by using the statistical enquiry cycle (with support):
  - gather and display category and simple whole-number data
  - interpret displays in context

The teacher asked each group to brainstorm a list of emergency supplies and to find out if the school had these items.

The teacher supported the students to brainstorm what was needed by drawing on the children's stories in the podcasts.

Hayley's group decided on a list of water, food, blankets, and bandages as the necessary items. It's not just if we have them — like TICK or CROSS. We have to find out how much ... We have water bottles but maybe not enough. We have to count them.

Problem

Each group presented their findings, and the class then decided on a plan for contributing to the emergency supplies.

Conclusion



Hayley's comments helped to identify the type of data to be collected.

The students gathered their data. They counted the 5-litre bottles (20) in the library. They

found 1 blanket in the sickbay and 2 boxes of plasters in the

classroom but no food.

We are not ready, because we would be hungry and cold. But we would have lots of water to drink. And we could make bandages from the curtains in the library if it was serious.

Hayley interpreted what the findings meant in terms of the original questions. The teacher supported Hayley and her group to display their data as a pictograph.



### **Discussion**

This task provides some of the evidence needed to show that Hayley is achieving at early curriculum level 2 and the year 3 standard in Statistics. She has demonstrated that, within a small group context and with teacher support, she is able to investigate a question by using the statistical enquiry cycle. She is able to gather and display category data and interpret the display in the context of the problem. She participated in her group presentation by adding her conclusion.

# BY THE END OF YEAR 4

## **ILLUSTRATING THE MATHEMATICS STANDARD**



### Are We Ready?

### New Zealand Curriculum: Level 2

### Mathematics Standard: By the end of year 4

In solving problems and modelling situations, students will:

#### Statistics

- conduct investigations using the statistical enquiry cycle:
  - posing and answering questions
  - gathering, sorting, and displaying category and wholenumber data
  - communicating findings based on the data (statistical investigation)

#### Statistics

- investigate questions by using the statistical enquiry cycle independently:
  - gather and display category and simple whole-number data
  - interpret displays in context

The teacher asked each group to brainstorm a list of emergency supplies and to find out if the school had these items

The class discussed each sheet, and the teacher recorded the conclusions reached.

The class as a whole developed a plan to get each family to donate a blanket and a canned food item

The group interpreted the data independently of the teacher. Camille presented her group's findings.

We decided that we are not ready to feed everyone because there is only 1 frozen sausage and slice of bread for each person and maybe half a biscuit. Food is important because, in an emergency, you need energy. So we need more food like muesli bars or noodles. But we have enough water and toilet paper. And each room has a first aid kit.

Camille was able to summarise the findings and relate these back to the original question.

Camille's group drew on the class notes from the podcasts to make a list based on what the children had needed after the Christchurch earthquakes.

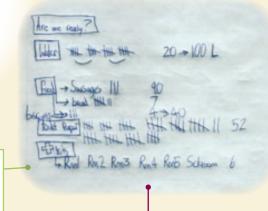
A list of water, food, toilet paper, and first aid kits was the group's consensus.







- the 5-litre bottles of water in the library
- the frozen sausages and loaves of bread in the hall kitchen and biscuits in the staffroom
- the rolls of toilet paper in the cleaner's cupboard
- the first aid kit in each classroom and in the sickbay.



The teacher noted that Camille took a leading role in her group, helping them to work independently to gather and display their data. She recorded the raw data with tally marks and (for water, sausages, and biscuits) calculated the actual total volume or number, not just the number of bottles or packets.

### **Discussion**

This task provides some of the evidence needed to show that Camille is achieving at curriculum level 2 and the year 4 standard in Statistics. She has demonstrated that, working within a small group, she is able to investigate a question using the statistical enquiry cycle independently. She is able to gather and display category data and interpret the display in context.