

The following examples of student work illustrate achievement at the mathematics standards for years 5, 6, and 7.

Points of View

This activity was part of a technology unit on responding to people's needs after a disaster. The students identified the need for stable shelters that can be quickly assembled, and so they explored modular housing in which individual modules are combined to create living spaces. This activity also had links to achievement objectives for Geometry from the mathematics and statistics learning area in *The New Zealand Curriculum*.

Points of View

Make a modular home to meet the needs of an imaginary family.

Draw a plan for your home, using 2-D drawings to show different views (e.g., front, top or plan, and side views).

Make sure that your plan is clear enough so that your partner will be able to make a model of the home, using cubes.

After they have made the model, check it's correct before they make a 3-D drawing of it.



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

Points of View

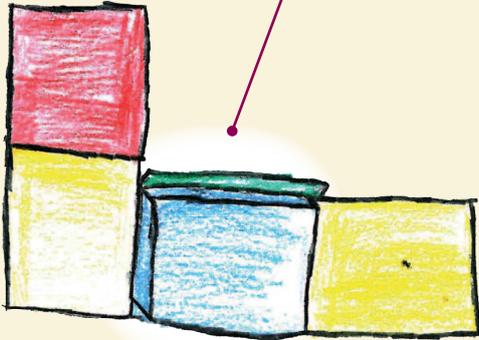
<p>New Zealand Curriculum: Level 3 <i>In solving problems and modelling situations, students will:</i></p>	<p>Mathematics Standard: By the end of year 5</p>
<p><i>Geometry and Measurement</i></p> <ul style="list-style-type: none"> represent objects with drawings and models (shape) 	<p><i>Geometry and Measurement</i></p> <ul style="list-style-type: none"> draw plan, front, and side views of objects

Theo designed a five-module house with cooking, sleeping, and bathing areas. He drew a plan for his partner and wrote notes to go with the plan.

My house has 5 Modules
 there are 4 on the bottom Floor
 and 1 one on the second
 Floor. It goes: a row of 3 and
 another one in the middle and
 then the end is two modules
 high. It looks like this: →

Theo used positional language to describe his house: "bottom", "second", "row", "middle", "end", and "high".

Theo used a thin green frame to show that the green block is behind the blue one. Although his drawing was essentially a two-dimensional front view, this three-dimensional element helped his partner to fully understand his plan.



Discussion

This task provides some of the evidence needed to show that Theo is achieving at early curriculum level 3 and the year 5 standard in Geometry. He has demonstrated that he is able to draw a basic view of an object and use appropriate language to communicate additional information.

Points of View

New Zealand Curriculum: Level 3

Mathematics Standard: By the end of year 6

In solving problems and modelling situations, students will:

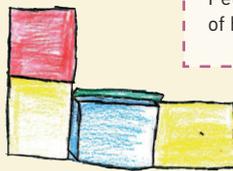
Geometry and Measurement

- *represent objects with drawings and models (shape)*

Geometry and Measurement

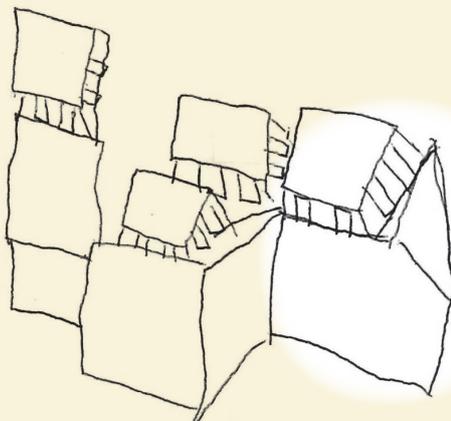
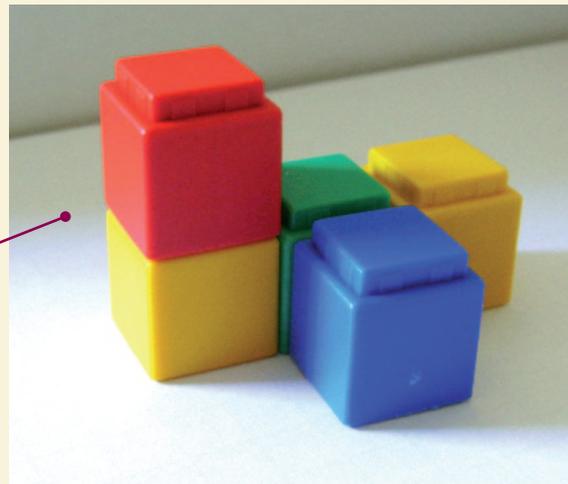
- *draw or make objects, given their plan, front, and side views*

My house has 5 Modules
there are 4 on the bottom floor
and 1 one on the second
floor. It goes in a row of 3 and
another one in the middle and
then the end is two modules
high. It looks like this: →



Peter read the plan
of his partner, Theo.

Peter made a model of the
house represented in the
plan. Theo checked the
model and confirmed it
matched the plan.



Peter then drew the model. He drew
the tops and sides of the blocks,
including the recessed edges, which
indicates that he is beginning to take
account of 3 dimensions in his drawing.

*It's hard to get the corners right
when I try to get the edges in ...*

Discussion

This task provides some of the evidence needed to show that Peter is achieving at curriculum level 3 and the year 6 standard in Geometry. He has demonstrated that he is able to make an object, given its front view, and he has attempted a drawing that represents the 3 dimensions of the object.

Points of View

New Zealand Curriculum: Level 4

In solving problems and modelling situations, students will:

Geometry and Measurement

- relate three-dimensional models to two-dimensional representations, and vice versa (shape)

Mathematics Standard: By the end of year 7

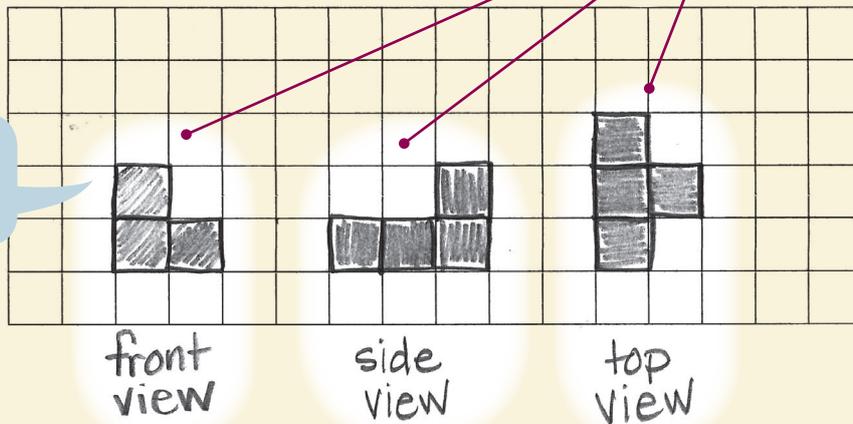
Geometry and Measurement

- draw plan, front, side, and perspective views of objects

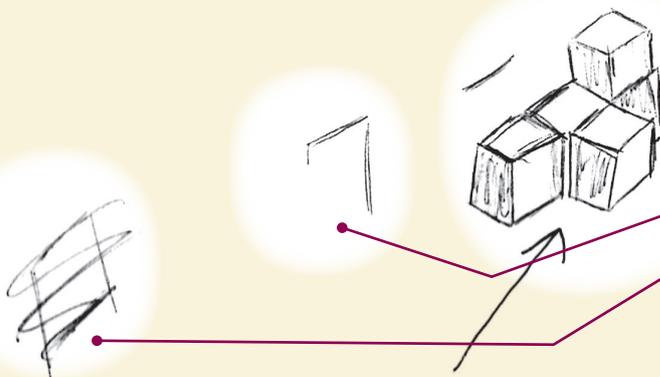


Caitlyn chose to work by herself rather than with a partner. She designed a house using 5 modules.

Caitlyn then drew a plan for her house on grid paper. She accurately drew front, side, and top (plan) views, using each square on the grid to represent one module in the building.



I learned how to do this with Lego models last year.



Finally, Caitlyn created a perspective drawing of her house. She made two attempts to start as she oriented herself to the task. In her third attempt, she successfully captured the three dimensions of the building.

Discussion

This task provides some of the evidence needed to show that Caitlyn is achieving at early curriculum level 4 and the year 7 standard in Geometry. She has demonstrated that she is able to draw accurate projections (plan, front, and side views) and a perspective view of a 3-dimensional object.