

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

Sharing Pizzas

This activity was one of several used by a teacher of years 5 and 6 as part of their work on fractions. The activity relates to achievement objectives for number strategies and number knowledge from the mathematics and statistics learning area in *The New Zealand Curriculum*.

Sharing Pizzas



At the school fair, five children buy eight pizzas. They agree to take home equal shares. How much will each child take home?

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



Sharing Pizzas

New Zealand Curriculum: Level 3

In solving problems and modelling situations, students will:

Number and Algebra

- use a range of additive and simple multiplicative strategies with fractions ... (number strategies)
- know fractions ... in everyday use (number knowledge)

Mathematics Standard: By the end of year 6

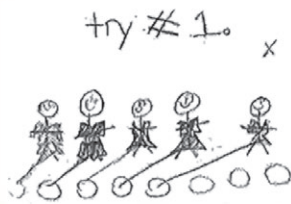
Number and Algebra

- apply additive and simple multiplicative strategies flexibly to:
 - find fractions of ... quantities

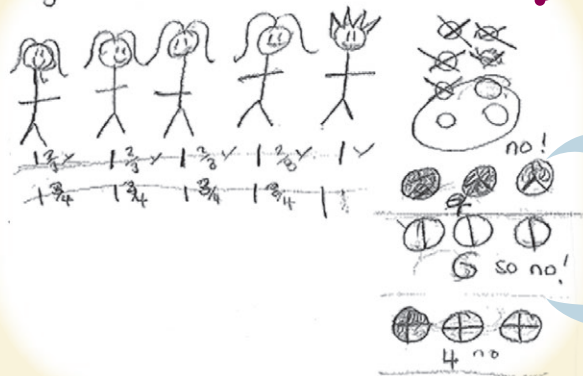
Try 1: Claire used a Number Framework stage 1 strategy (one-to-one matching) as a starting point and continued to use diagrams to scaffold her thinking (1 pizza each and 3 pizzas to be divided).



Try 2: Claire used a guess-and-check additive strategy that involves understanding of fractions. She added simple fractions, understood how many thirds are in 3 pizzas, and used basic multiplication facts.



try # 2.

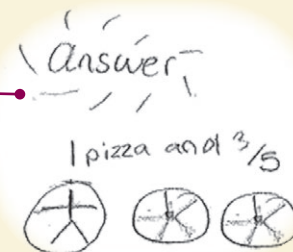


I've divided the pizzas into thirds - so far I've got 8 thirds for 4 people, but that only leaves 1 third for the fifth person. So that doesn't work.

Try 3: Claire revisited division of pizzas from her first try. Then she reminded herself that halves, thirds, and quarters didn't work.



Next she tried fifths. Her comment shows that she understands that $\frac{1}{5} + \frac{1}{5} + \frac{1}{5} = \frac{3}{5}$.



They can each take one-fifth from each of the pizzas left. So each child can take home one pizza and three-fifths of another pizza.

Discussion

This activity provides some of the evidence needed to show that Claire is achieving at curriculum level 3 and the year 6 standard in Number. She has demonstrated that she can apply additive and simple multiplicative strategies flexibly. This suggests that she is working at the Advanced Additive stage of the Number Framework.

Sharing Pizzas

New Zealand Curriculum: Level 4

In solving problems and modelling situations, students will:

Number and Algebra

- understand addition and subtraction of fractions ...
- apply simple linear proportions ... (number strategies and knowledge)

Mathematics Standard: By the end of year 7

Number and Algebra

- apply additive and multiplicative strategies flexibly to whole numbers ...



① Chop each pizza into fifths and give each child one piece from each pizza.

Each child will get $\frac{8}{5}$ or $1\frac{3}{5}$

Rangi divided 1 by 5 (1 pizza by 5 children) to get fifths and then multiplied $\frac{1}{5}$ by 8.

Rangi converted an improper fraction ($\frac{8}{5}$) into a mixed fraction ($1\frac{3}{5}$).

Discussion

This activity provides some of the evidence needed to show that Rangi is achieving at early curriculum level 4 and the year 7 standard in Number. He has demonstrated that he is able to apply additive and multiplicative strategies flexibly to whole numbers. The strategies that he uses involve linking division to answers with mixed fractions and show that he has an understanding of the sharing concept in division. (However, he didn't demonstrate understanding of the concept of quotient in division, such as 3 pizzas shared among 5 people would result in $\frac{3}{5}$ each.) This suggests that he is working at the Advanced Multiplicative stage of the Number Framework.