Pieces of Pizza

Make 3 pizzas, 1 with 4 slices, 1 with 6 slices, and 1 with 8 slices. If I have 6 friends over, how many slices will each get?

Do you think everyone got a fair share of pizza?

Grade Levels Pre-K-2

Pieces of Pizza

Make 3 pizzas, 1 with 4 slices, 1 with 6 slices, and 1 with 8 slices. If I have 6 friends over, how many slices will each get?

Do you think everyone got a fair share of pizza?

Context

We are investigating fractions and learning how to problem-solve cutting circles into equal parts.

The problem allows students to investigate division and fractions. It shows students' understanding of number sense. It introduces an element of ethics if students address how fair shares might be meted out.

What This Task Accomplishes

This task asks students to find a total and divide among a group. It offers a concrete example of addition, division and fractions. They are also asked to think about the issue of fair sharing.

What the Student Will Do

Students cut out the three pizzas of different numbers of slices represented by different colored paper. Most students then allocated the pieces by giving each friend one slice at a time. Some students worked in larger units. One tried using a formula.

Some students made the connection between different size slices of pizza of different sized children possibly making even division unfair.

Time Required for Task

45 minutes

Interdisciplinary Links

This task can be used during a social studies unit on groups and sharing.

Teaching Tips

Using manipulatives in this problem is very important. It allows students to work on addition and fractions using concrete materials.

Suggested Materials

- Paper
- Pencil
- Material to cut and make pieces of pizza with different numbers of slices

Possible Solutions

If the pizza slices are divided evenly, each friend will receive three pieces of pizza. Some students noted that this might not be fair because not all students are the same size. No students thought that the pieces of pizza might be a different size.

Benchmark Descriptors

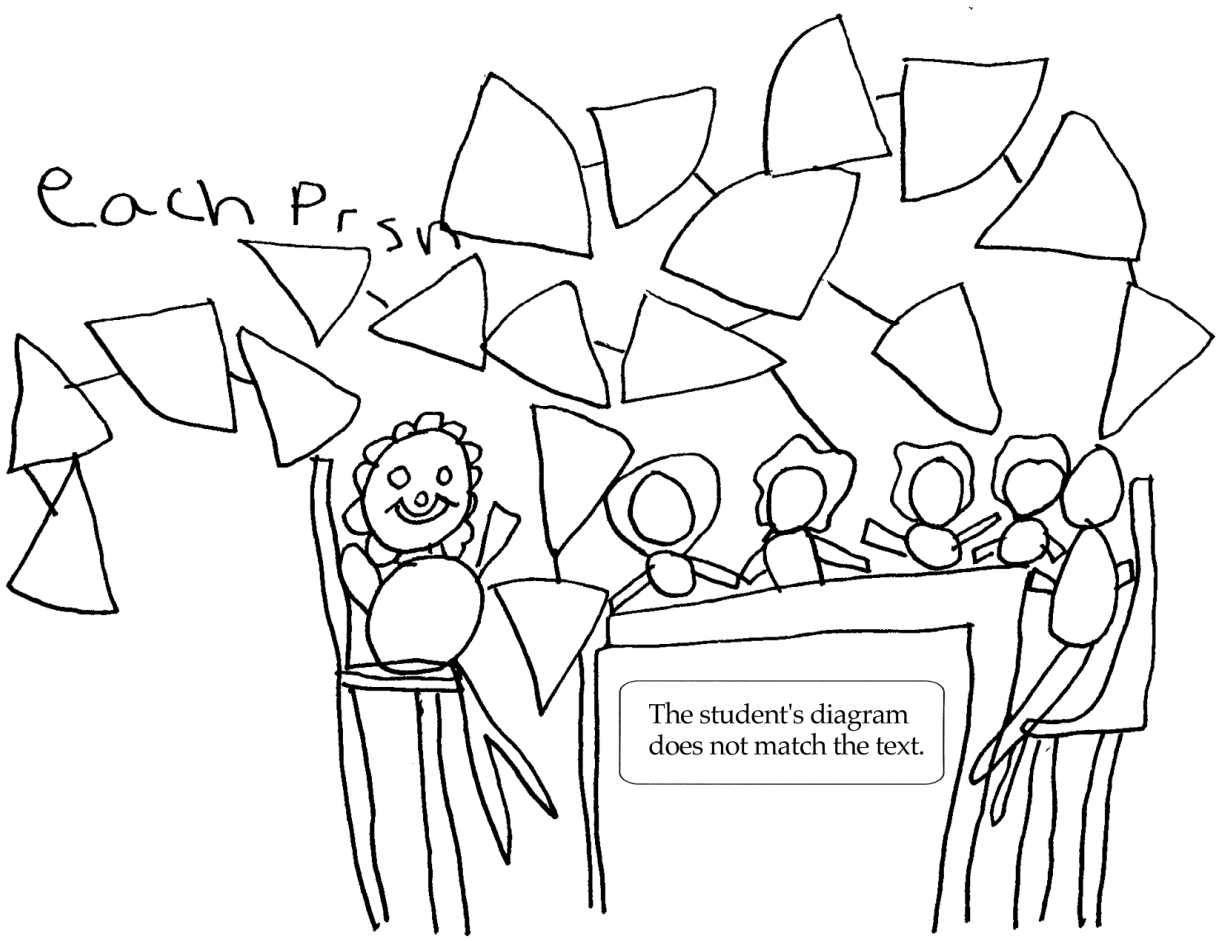
Novice
A Novice would not have a solution. The student might not know how to start the problem or would use a strategy that did not lead to a solution. In this particular case, the student has a solution. Some friends received two pieces and some received four pieces. There is no evidence of the reasoning that led to this solution. These are not fair shares unless the student mentions that the pieces or the friends are of different sizes. The use of mathematical representation is appropriate. Because the student had a strategy, this might be between Novice and Apprentice.

Apprentice
The student has a partial solution, which is "correct", each friend had three pieces to share. The representation is appropriate and the answer is clear. The answer is incomplete because the student does not answer whether or not fair shares were received by the friends.

Practitioner
This student's solution shows that s/he understands the problem and uses an appropriate strategy to arrive at a conclusion. The representation and explanation are clear.

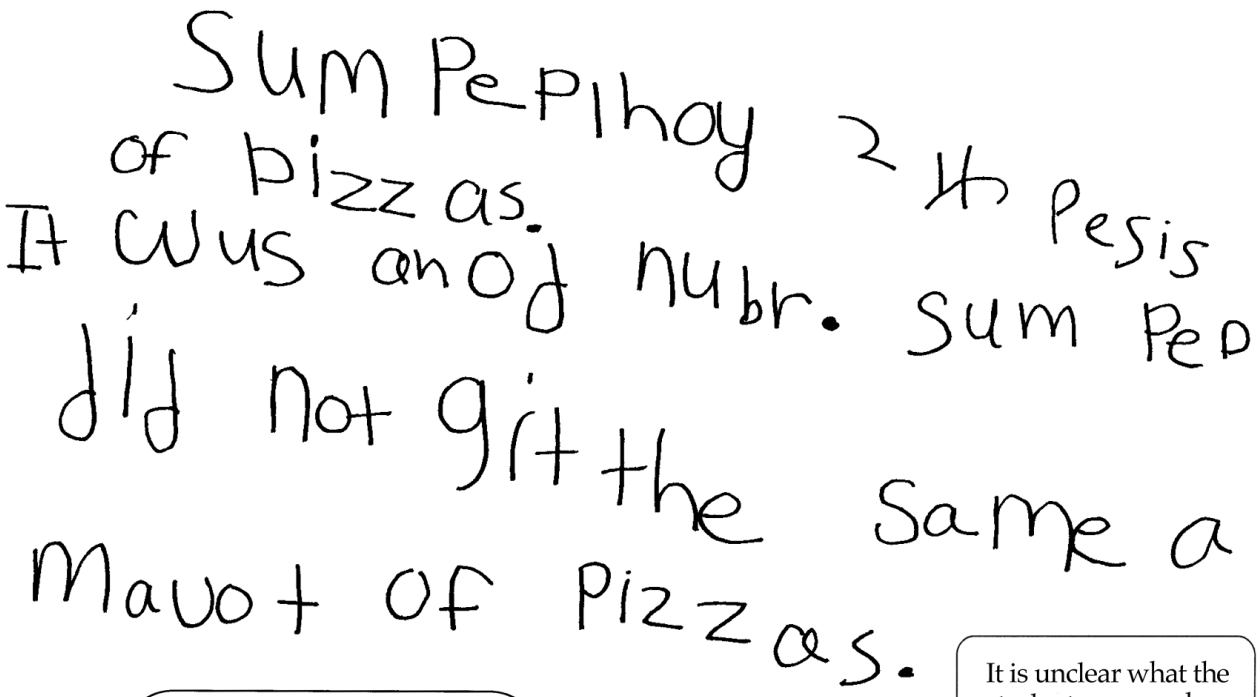
Expert
This solution shows a deep understanding of the problem, an appropriate strategy and clear explanation. It is an Expert solution because the student identified a useful extension. S/he pointed out that it might not be even because not all pieces were the same size. There were other Experts who said that even though each person received three pieces, the friends were of different sizes and, therefore, these were not fair shares.

Novice



Pieces of Pizza

Novice

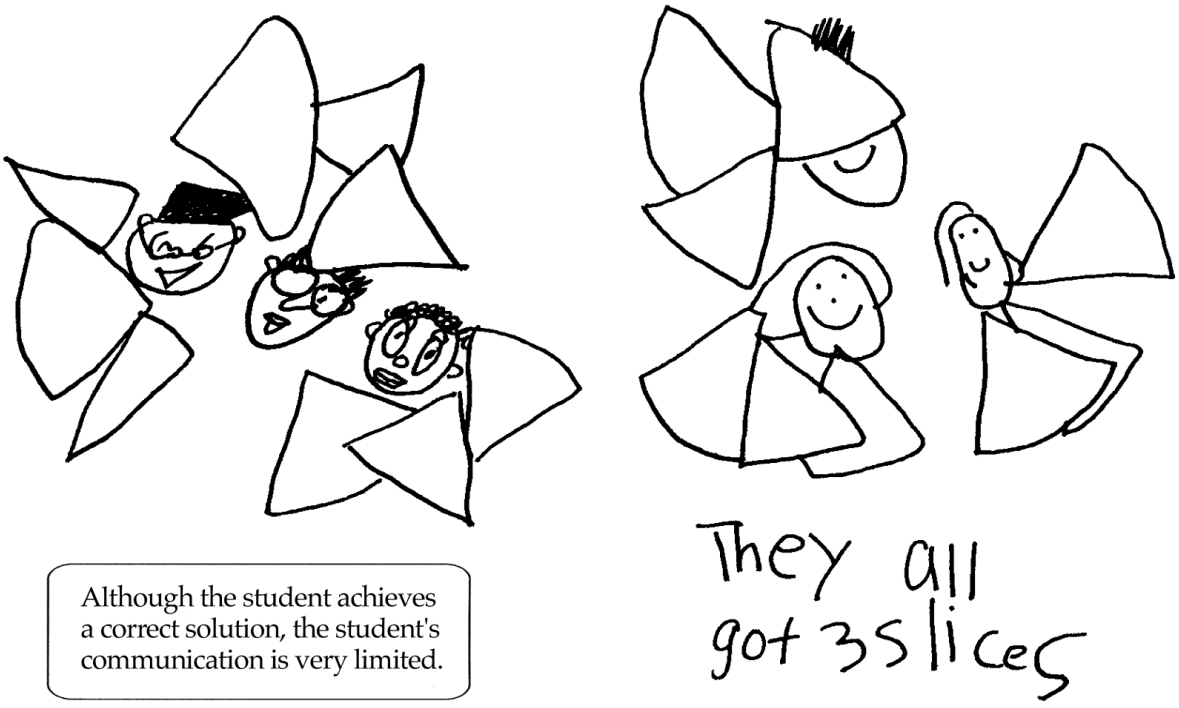


The student seems to have difficulty arriving at a solution.

It is unclear what the student means when s/he says "it was an odd number".

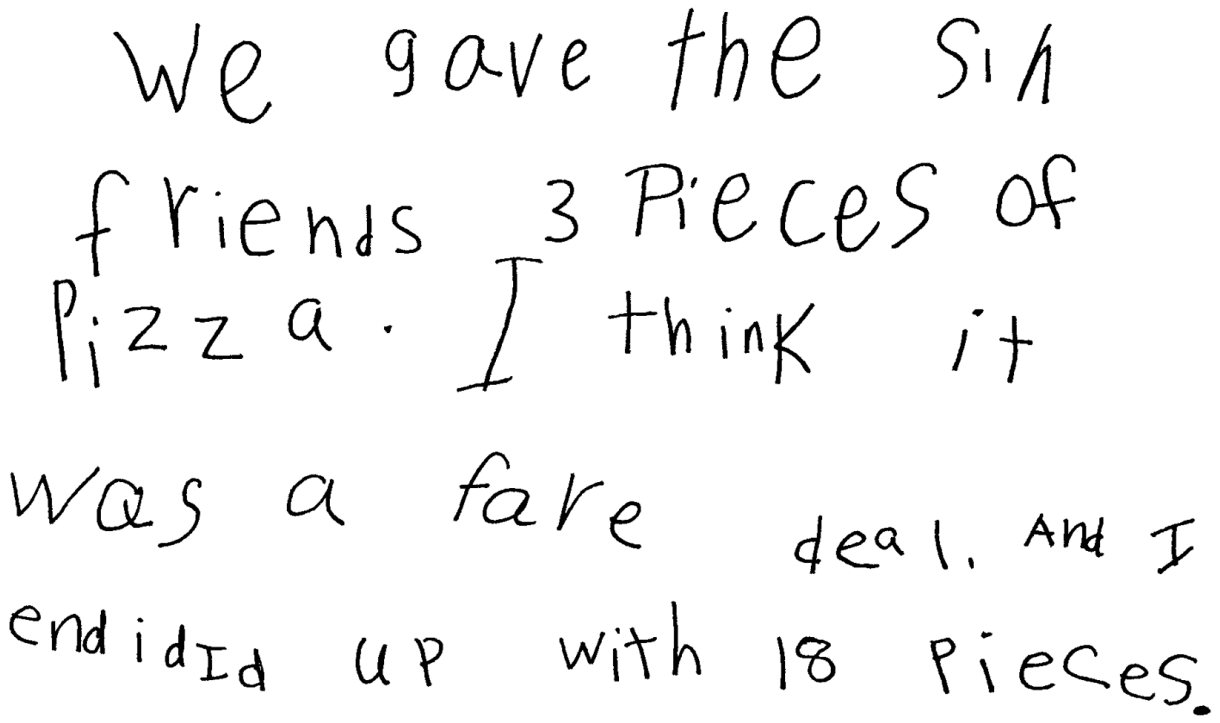
Pieces of Pizza

Apprentice



Although the student achieves a correct solution, the student's communication is very limited.

Practitioner

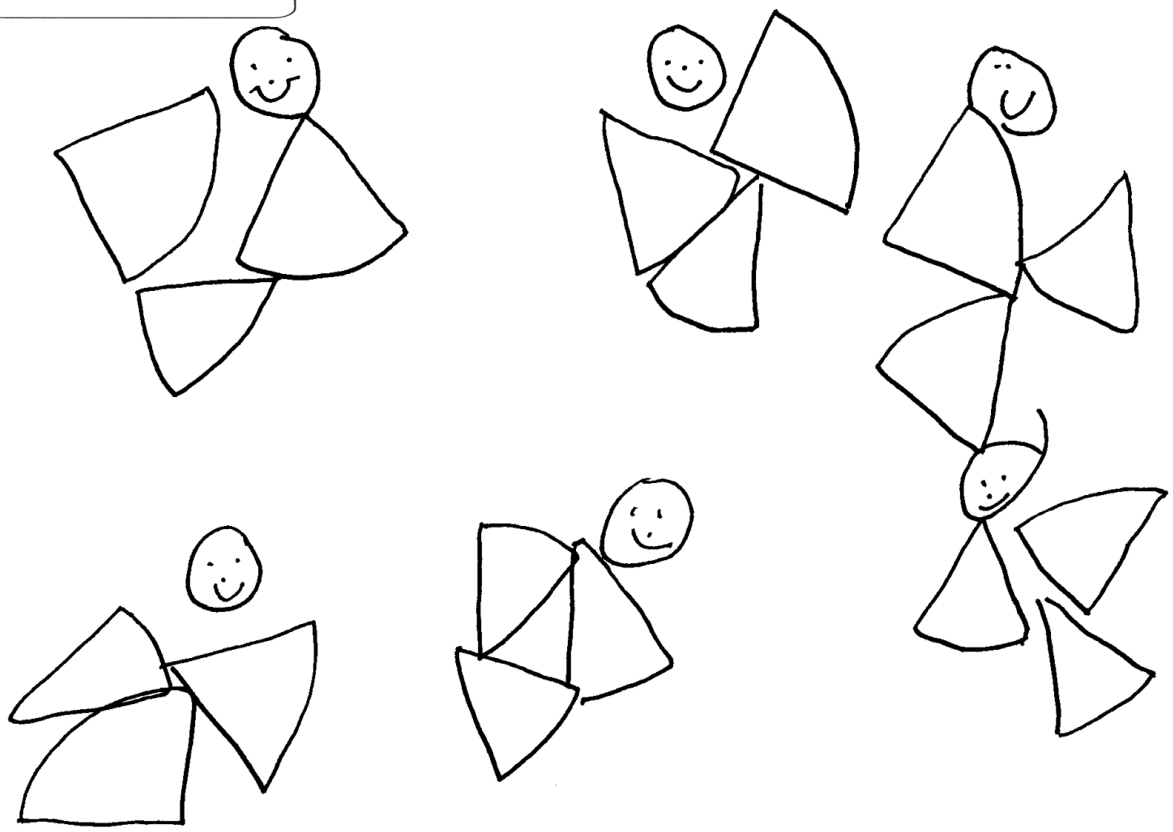


The student finds a solution which is "fair" in one aspect.

The student attempts to communicate verification of his/her solution.

Practitioner

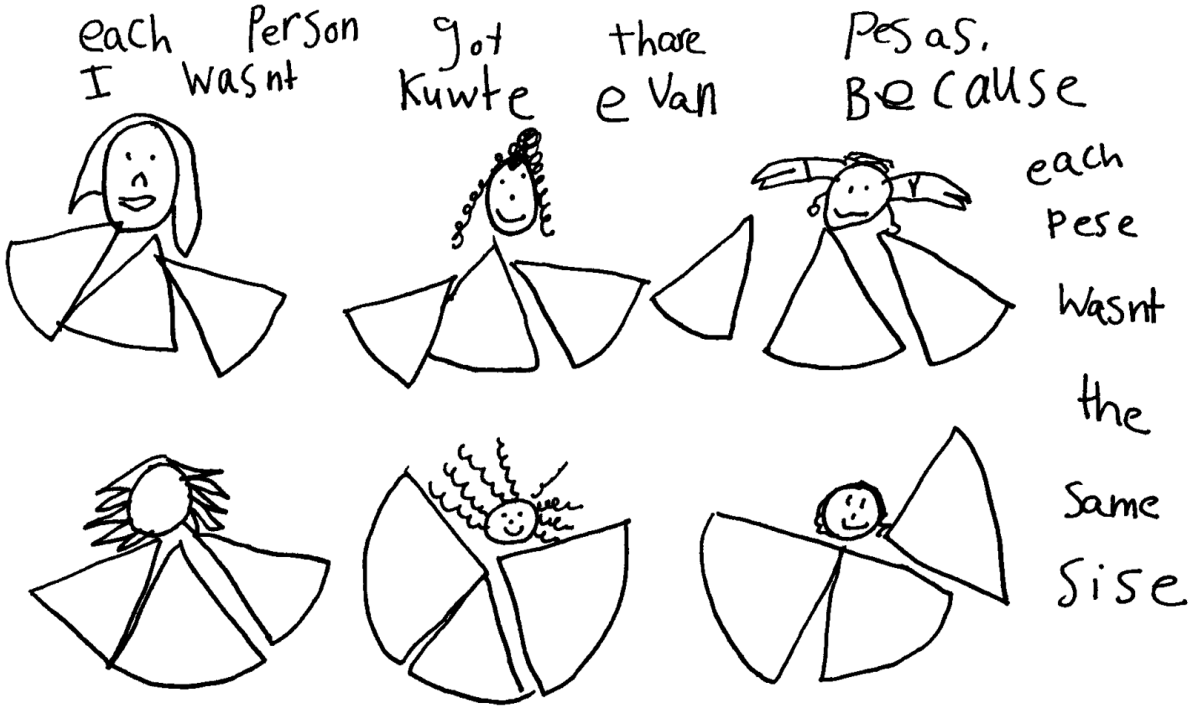
The student uses a diagram to communicate the solution.



Expert

The student creates a diagram of the solution.

The student uses math language to communicate.



The student shows a deep understanding of fractions.