Exemplars

Great Pizza Dilemma

I am planning on having 5 friends over for a pizza party. I bought 3 pizzas (all the same size) for the party. One was divided into 4 equal parts, the second was divided into 6 equal parts and the third pizza was divided into 8 equal parts. Is there any possible way I can show how to share these pieces so that each one of us gets the same amount? If not, show how much each person gets.

Be sure to explain your reasoning clearly. Use any fraction pieces that are in the classroom or that you might like to make yourself.

Grade Levels 3 - 5

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Context

The benchmarks were taken from a fourth grade class. They had just started studying fractions and were renaming equivalent fractions. I was intrigued when I saw work from a first grade class and wanted to see how fourth graders approached this problem.

What This Task Accomplishes

As I saw students solving this problem, I could detect those students that looked at the whole problem and those that started immediately to get involved with the details. A flexible mind that can step back from the task will probably solve the problem more easily. This problem gets kids to start thinking and working with fractions even with limited formal experience.

What the Student Will Do

Most students will start drawing pizza pies. My kids had a hard time in the beginning working with my rectangular fraction pieces, but got use to them when they thought of them as rectangular pizza pies. Many students counted the number of pieces and divided by six (number of people). Many then realized that the shares were not equal and wanted to know whether "same amount " meant number of pieces or size.

Time Required for Task

45 minutes

Interdisciplinary Links

Any social studies unit on groups and sharing.

Teaching Tips

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As students ask about the "same size" question, I let them think about it and make a decision on their own. I feel this is really part of the problem.

Suggested Materials

- Fraction pieces
- Compass (to make circles)
- Rulers

Possible Solutions

The size of the pieces is important. Each person gets 1/2 a pie. That can be divided in two ways: Two people each getting 1/4, two people each getting 4/8, two people each getting 3/6. Another solution could be four people each getting 1/8 + 1/8 + 1/4 and two people sharing the sixths.

Benchmark Descriptors

Novice

This student divided the pieces equally, but did not consider the size of the pieces.

Apprentice

This student realizes each person should get the same amount of pizza, but also wants each person to get the same number of pieces.

Practitioner

This student understands that each person should get half a pizza. The solution shows the student has a broad understanding of the problem and the major concepts necessary for its solution.

Expert

This student shows a deep understanding of the problem and was able to find a second solution. S/he even generalizes the problem.