

Equal Snacks

We are going to practice dividing snack foods in different ways so they can be shared equally by all members of our class. This will help you all prepare for your turns on the snack committee. You will work in groups of 3 or 4. Your snack food and napkins are in your work area.

First, your group will need to select people to do the following jobs:

- Someone to show the mathematics your group used to divide up your snack food. This needs to be recorded on the mathematics paper. Be sure to record all the mathematics your group uses to solve this problem.
- Someone to write an explanation of how your group divided up your snack food. This write-up needs to show that your group understands the problem, how you solved it and the decisions you made as you worked on it. Be sure to use appropriate and accurate mathematical language and to write it clearly so it can be followed easily by other members of the class.
- Someone to draw a diagram to show how your group divided up your snack food.
- Someone to give an oral report that explains what you did, how you did it and why you did it that way.

Exemplars

After you have selected your jobs from the list above; figure out exactly how many people need to share the snack food. How many adults and students are in the room today? How much food do you have to share?

Exemplars

Equal Snacks

Suggested Grade Span

3-5

Task

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Alternate Versions of Task

More Accessible Version:

Since this is a cooperative group activity, no modifications should be necessary. If necessary, you could assign a more easily dividable snack to those with challenges.

More Challenging Version:

Students who require more of a challenge could be asked to determine the cost per serving of each snack. To do this you would need to provide the cost of each snack.

Exemplars

Context

Because students were responsible for preparing shared snacks, this mathematics problem became very authentic for my students.

It required that they organize themselves to work cooperatively. One student wrote in his/her journal, "It was hard because we got very confused in the beginning because people were yelling in my face." It became a very real experience for many students.

What This Task Accomplishes

This task challenges students to work effectively in teams as well as individually. It assesses their capacity to plan ahead, solve real problems and apportion shares. It also affords students the opportunity to report their results.

What the Student Will Do

Students organize themselves into teams and determine which roles each student will take. They perform the jobs outlined above, including deciding how much there is to share among how many students and teachers and then cooperatively and individually report their results.

Time Required for Task

1-2 hours

Equal Snacks can be completed in one period, although a second period can be devoted to self-evaluation and reporting results.

Interdisciplinary Links

This task can be linked to discussions of health and nutrition. It can also be used to underline the importance of cooperative activity and group work.

Teaching Tips

The Equal Snack task can be very open, or, if you prefer, more clearly defined. For example, it is possible to include the following kinds of directions.

After you have selected your jobs, figure out exactly how many people need to share the snack food. How many adults and students are in the room? Then use the materials provided to divide up your snack food as evenly as you are able so that each person will receive a fair share. If you are doing raisins or peanuts, you will need to weigh out the amounts for each person using the balance and gram stackers. If your group is dividing up apples or oranges, you will need to use the knife and cutting board. Be sure to plan before you cut. Arrange the food on the napkins at your station.

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On the other hand, you could take a very open approach and merely ask the students to form groups and prepare the snack, with none of the intermediate steps or cautions outlined. There is wide latitude for variation here depending on your goal and the nature of the class. Each group will need its own work area.

Suggested Materials

- Uneven number of apples
- Uneven number of oranges
- 1 box of graham crackers
- 1 canister of raisins
- 1 bag of peanuts
- 1 container of instant lemonade
- 1 standard measuring cup
- Assorted plastic cups of varying sizes
- 1 large package of paper napkins
- Cutting knives
- Cutting boards
- Plastic baggies or plastic gloves
- 2 primer balances
- Gram weights
- 1 large spoon
- 1 gallon pitcher
- Sponge or dish cloth for clean-up
- Large white lined paper
- Small white lined paper
- Math paper
- White drawing paper
- Calculators
- Pencils

Possible Solutions

This is an open problem. Solutions will reflect the number of people in the class and the material available. An important element will reflect on students' ability to organize to "solve" this problem.

More Accessible Version Solution:

None

More Challenging Version Solution:

Students should take the total cost of the snack and divide it by the number of servings. This will probably require the interpretation of decimal place values.

Equal Snacks

Exemplars

Task Specific Assessment Notes

Novice

There is no evidence of planning ahead when cutting the oranges. Students simply cut their oranges into eight pieces rather than determining how many shares were necessary.

Apprentice

Students have a partially useful strategy. Students divided, but did not plan ahead as to what was the most appropriate division or what to do with the extra halves. They could have used 12 apples or divided the extra halves into sixths. Mathematical representation is present, but not thought out.

Practitioner

Students implemented a strategy, which led to an appropriate solution. They used a guess, checked and refined approach. They might have done a better job of planning, dividing the weight of the raisins by the number of people in the class. However, their approach was successful.

Expert

Students in charge of peanuts planned ahead and implemented a very effective strategy. They divided the weight of the peanuts by the number of people in the class. They then used a scale to apportion shares of peanuts.