

Cover Sheet for Math-ese
December 9, 2006
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The lesson plans that I created for this meeting fits the objectives from the Math-ese Workshop and the Topic of the Day – “Using R & R to Teach Mathematics”.

The objectives of my lesson plans include developing a higher-level knowledge of math content for the public schools; develop strategies for teaching reading comprehension of math problems, and to incorporate literacy into my math lesson. I hope my peers will find them useful. Through these activities I have analyzed the student’s achievement data and it has increased my reflective practices.

We used several activities to develop math strategies for locating, analyzing, and using data and numbers through both of these lesson plans. Each lesson can be adapted in a number of ways to fit the level of learners in the classroom. The ‘12 Days of Christmas’ uses a chart and a table, while The Doorbell Rang uses just a chart. Both lessons use manipulatives in various places. Depending on how you read The Doorbell Rang it can be used for various grade levels also.

My students benefited from both these lesson plans. I used them to review and re-enforce their math skills since we’ve been working across the math curriculum in various ways.

Name: Bonnie Miller

Grade Level/Subject: 2nd Grade Math

Topic: The Doorbell Rang – Fractions, Graphs and an Introduction to Division

Objectives (P.A.S.S.):

Standard 2: Number Sense – The student will use numbers and number relationships to acquire basic facts.

1. Place Value
 - a. Demonstrate [using concrete objects, pictures, and numerical symbols] fractional parts including halves, thirds, and fourths.

Standard 5: Data Analysis – The student will demonstrate an understanding of data collection, display and interpretation.

1. Collect, sort, organize, and display data in charts, bar graphs, and tables.
2. Summarize and interpret data in charts, bar graphs, and tables.

Instruction

1. Introduction:

Write fractions on the board [$1/12^{\text{th}}$, $1/6^{\text{th}}$, $1/4^{\text{th}}$, $1/2$]. Ask if the students would like to have $1/12^{\text{th}}$ of something like a pizza or would they rather have $1/6^{\text{th}}$ or $1/4^{\text{th}}$ or maybe even $1/2$ of something? Some may already know that $1/2$ is the largest size/amount. Don't discuss which is largest at this time.

2. Materials needed:

1. The Doorbell Rang – by: Pat Hutchins; Mulberry Books - ISBN: 0-688-09234-9
2. Mini [Bite Size] Cookies or Crackers – 12 for each student or per group.
3. Paper plate, napkin or paper towel to put cookies on. 1 for each student and extra for dividing the cookies on when divided into groups.
4. Manipulatives - if you don't use cookies/crackers
5. Pencil and paper or Dry Erase boards/markers

3. Instructional process:

1. Divide students into groups – works best if the group size is a divisor of 12. Each student needs a paper and pencil [or Dry Erase] to record the numbers and fractions. Label 4 columns across the top of the paper - spread them out –'kids'; 'cookies'; 'fraction'; 'pie graph'.

2. Distribute 12 cookies to each group or student with the extra paper towels.
3. Read first page of the book. Have the students divide the cookies. Let them try to divide them evenly into 2 groups. Ask how many is in each group? What fraction describes the groups? $[1/2]$. Draw the pie graph. Then read the next 2 pages to check.
4. Read the next page of the book. Let them try to divide the cookies evenly into 4 groups. Ask the previous 2 questions. $[1/4]$. Draw pie graph. Read the next two pages to check.
5. Read the next page and divide the cookies. [6 even groups] Follow up with the same 2 questions. $[1/6]$. Draw pie graph and read next 2 pages. Check.
6. Read the next 2 pages and divide the cookies. [one in each group] Repeat the questions. $[1/12]$. Draw pie graph and read the next 3 pages. Check.
7. Ask the students who they think just 'rang and rang' the doorbell? Is it more family or friends at the door? How many more? Can they divide the cookies anymore? Should they eat their cookie before they open the door?
8. Read the rest of the book. Were they expecting Grandma at the door? How did she change the cookie numbers? Do they have to divide the cookies again? At the end of the story the doorbell rang again. Who do they think it is? Are there enough cookies?
9. Discuss the fractions you wrote on the board. Ask the students which one they would like to have now – $1/2$ or $1/12^{\text{th}}$? Ask them to look at their graphs. What happened to size of the pieces as the bottom number of the fraction got larger? Draw a pie graph on the board for each fraction. Have the students check to make sure their pie graph matches the one on the board.

4. Closure:

Give each student a napkin. Divide the cookies up evenly in the groups or make sure that all the students have some cookies to eat and enjoy! Ask them to look at their paper- what fraction of the cookies did they eat? $1 = 1/12^{\text{th}}$; $2 = 1/6^{\text{th}}$; $3 = 1/4^{\text{th}}$, $6 = 1/2$. If each student got 12, you might have them save some for later.

Assessment:

Assess participation in the group as well as their papers for accuracy. Dry erase boards might be used instead of paper to make this activity more fun. Visually monitor the student's progress after they divide the cookies.

Modifications/Accommodations:

You can stop and start the story where you feel it works best for you, if this is an introductory lesson maybe from doorbell to doorbell. Since mine are more on the same level, I let them divide the cookies first, and then I had them check when I read the part of the story that told how the cookies were going to be divided.

Lower level learners may not be able to divide the cookies or the pie chart equally, especially when they have to show $1/12^{\text{ths}}$. Encourage them to do the best they can. They can also be paired with a partner that might help them.

Hint: Have them draw a circle and label it like a clock- have them connect the opposite numbers for the $1/12^{\text{ths}}$.

Upper level learners can assist or monitor lower level learners.

Reflection:

My students like this one since food was involved. They had a little trouble drawing the $1/12^{\text{ths}}$ circle, so I finally thought of the clock hint included above. Worked great!! We had already done some fraction activities so this one wasn't too difficult, but they did have to think a minute to figure it out, so it was a review lesson for them. It didn't take long to do it and they couldn't wait to eat the cookies. One of my students said he didn't like Oreo's, but amazingly, that didn't keep him from eating his and saving the rest for later.