Let Them Eat Cake
Amy Gervasi

## CONTENT AND TASK DECISIONS

**Grade Level(s):  2nd and 3rd**

**Description of the Task:** Students will explore the concept of fractions by partitioning cakes into equal parts based upon the number of students at their "party" table.

**Indiana Mathematics Content Standards:**

2.G.5: Partition circles and rectangles into two, three, or four equal parts; describe the shares using the words halves, thirds, half of, a third of, etc.; and describe the whole as two halves, three thirds, four fourths. Recognize that equal parts of identical wholes need not have the same shape.

3.G.4: Partition shapes into parts with equal areas. Express the area of each part as a unit fraction of the whole (1/2, 1/3, 1/4, 1/6, 1/8).

3.NS.3: Understand a fraction, 1/b, as the quantity formed by 1 part when a whole is partitioned into b equal parts; understand a fraction, a/b, as the quantity formed by a parts of size 1/b. [In grade 3, limit denominators of fractions to 2, 3, 4, 6, 8.]

3.NS.8: Compare two fractions with the same numerator or the same denominator by reasoning about their size based on the same whole. Record the results of comparisons with the symbols >, =, or

**Indiana Mathematics Process Standards:**
PS.1: Make sense of problems and persevere in solving them.
PS.2: Reason abstractly and quantitatively.
PS.3: Construct viable arguments and critique the reasoning of others.
PS.4: Model with mathematics.
PS.5: Use appropriate tools strategically.

**Mathematics Content Goals:** Students will understand that when we partition a whole, the size and the number of parts are dependent upon the size of the whole.

**Language Objectives**: Students will write the results of their partitioning of the cakes and what patterns or problems they encountered during the activity. Students may also use pictures and symbols to represent their observations.

**Materials**: 3 rectangular sheet cakes of different dimensions (homemade or store-bought), 3 tables, paper plates for each student, plastic knives, plastic forks for each student, Math Journals, and the mentor text *The Lion's Share* by Matthew McElligott

**THE LESSON**

**Before:**
- Student Actions
  1. Invite students to listen to a story about a birthday party for the king of the jungle, Lion.
  2. Turn and talk to your partner. What are you curious about in our story today?
  3. As a whole group, ponder and discuss the teacher's questions.


- Teacher Actions
  1. Read aloud the first half of *The Lion's Share*.
  2. Ask: What did you notice in the story today? Did you see any math in our tale? If so, what did you see? What problem or problems emerged in the text? Do you feel like the animals cut the cake fairly? Why or why not? Support your opinion with facts from the story.
  3. Say:"Come one, come all to the greatest, and yummiest, party in school! Today let's eat cake! You will pick at which table you would like to sit today. The choice is yours! However, you must keep the challenge in mind as you decide."
  4. Display the class cake challenge on the whiteboard or on an anchor chart. Make sure the challenge remains on display during the lesson.
  5. The Challenge: "If the cake on the table I sit at is to be shared out equally when I sit down, which would be the best table to sit at?"
  6. Encourage students to record in their Math Journals their initial thoughts directly after they make their decision. "Make a note or two of the reason(s) for your choice."

**During:**
- Student Actions:
  1. Students will line up outside the classroom.
  2. One at a time students will choose a table at which to sit.
  3. Encourage students to record in their Math Journals their initial thoughts directly after they make their decision. "Make a note or two of the reason(s) for your choice."
  4. Students will wait patiently and observe carefully as every student is given the opportunity to choose a cake table. Note: no cake is to be eaten until everyone is positioned around the tables.
  5. Students will collaborate with their group to create and record a plan for cutting their cake. Students will write or draw their group plan in their Math Journals.

- Teacher Actions:
  1. Ask the challenge question again: "If the cake on the table I sit at is to be shared out equally when I sit down, which would be the best table to sit at?

  2. Invite each student into the "party room" one child at a time. If you have a large class, consider setting up two groups of three cake tables, on separate sides of your room.

  3. After the students choose their party spot, travel among your groups asking open-ended questions about fairness, equal parts, and patterns. Ask: So what did you think as more people came to your table? How might you share the cake with your friends? What should you consider before you cut the cake?

  4. Invite students to make a plan for cutting their group's cake.

5. Invite one student to cut the cake at each table.

**After:**
- Student Actions
  1. Observe your actual cake piece and those of your friends.
  2. Write down one final thought about this activity.
  3. Students will orally share their findings and wonderings with the class.
  4. Eat your cake!

- Teacher Actions
  1. Ask: What surprised you about the outcome of cutting your cake? What do you think may have affected your result? Did you choose well in the beginning? Why or why not? What new thought do you have now? How will that idea change your actions if we were to do another activity like this one? Would your idea work for you every time? How could you test your idea to find out?

  2. Summarize the students' conclusions and celebrate these ideas by putting the information on an anchor chart.

**ASSESSMENT**

- Students will complete an exit slip.

Name: _____

Ms. Serafino eats one half of a pizza. Mrs. Gervasi eats one half of her pizza, too. Ms. Serafino eats more. How is this possible? Explain your answer.

**Challenge**

Looking for an even greater challenge?  A fun twist on this lesson would be to place a different number of cakes on each table.

Resource: www.nrich.org