CONSTRUCTING TASK: PIZZAS MADE TO ORDER

Adapted from a Learning Task by Cara Coker, Floyd County, GA
Suggested Time for Task: 1-2 class periods

Students will fill pizza orders by representing the ordered ingredients on
the appropriate fractional parts of a pizza cut-out.

STANDARDS FOR MATHEMATICAL CONTENT

MCC3.NF.1 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*.

MCC3.NF.3 Explain equivalence of fractions in special cases, and compare fractions by
reasoning about their size.
Understand two fractions as equivalent (equal) if they are the
   a. The same size or the same point on a number line.
   b. Recognize and generate simple equivalent fractions, e.g., 1/2 = 2/4, 4/6 = 2/3). Explain
   why the fractions are equivalent, e.g., by using a visual fraction model.
   c. Express whole numbers as fractions, and recognize fractions that are equivalent to whole
   numbers. *Examples: Express 3 in the form 3 = 3/1; recognize that 6/1 = 6; locate 4/4 and 1
   at the same point of a number line diagram.*
   d. Compare two fractions with the same numerator or the same denominator by reasoning
   about their size. Recognize that comparisons are valid only when the two fractions refer to
   the same whole. Record the results of comparisons with the symbols >, =, or <, and justify
   the conclusions, e.g., by using a visual fraction model.

STANDARDS FOR MATHEMATICAL PRACTICE

   1. Make sense of problems and persevere in solving them.
   2. Reason abstractly and quantitatively.
   3. Construct viable arguments and critique the reasoning of others.
   4. Model with mathematics.
   5. Use appropriate tools strategically.
   6. Attend to precision.
   7. Look for and make use of structure.
   8. Look for and express regularity in repeated reasoning.

BACKGROUND KNOWLEDGE

   Before the activity, be sure the children understand the concept of equal parts. Practice
with the student's methods to divide various shapes into fractional pieces. Have students
practice drawing lines to divide squares, rectangles, triangles, and circles into halves, fourths,
eighths.

COMMON MISCONCEPTIONS

Students do not understand there are many fractions less than 1. Students do not understand fractions can be greater than 1.

ESSENTIAL QUESTIONS

- What is a fraction?
- How can I represent fractions of different sizes?
- What relationships can I discover about fractions?
- What does the numerator of a fraction represent?
- What does the denominator of a fraction represent?
- What is a real-life example of using fractions?

MATERIALS

- Give Me Half! By Stuart J. Murphy (or another book about the concept of fractions).
- Scissors
- Glue or paste
- Crayons
- One large sheet of black paper
- One half sheet of brown paper
- Small pieces of various colored paper including red, white, green, yellow, black
- Pizza Order Directions – One per child

GROUPING

Individual Task

NUMBER TALKS

By now number talks should be incorporated into the daily math routine. Continue utilizing the different strategies in number talks and revisiting them based on the needs of your students.

TASK DESCRIPTION, DEVELOPMENT AND DISCUSSION

Part I
To assess prior knowledge, brainstorm with students about food that is divided into equal pieces. Possible suggestions may include a chocolate bar, apple pie, pizza, and an orange. Read aloud and discuss, *Give Me Half!* By Stuart J. Murphy (or another book about the concept of fractions).

Part II (SMP 1, 2, 4, 5)

To begin the lesson, give students a half sheet of brown paper. Instruct them to draw and cut out a circle from the brown paper. Then give each child a Pizza Order. Instruct the students to use their pencil to divide their circles into the fractional part used in the Pizza Order (fourths or eights). Then have the students trace over their pencil lines with a dark crayon. Next, give students small sheets of the colored paper (red, white, green, yellow, black). Instruct students to cut pieces of the colored paper to represent the pizza toppings. The toppings should be glued onto the appropriate number of pizza slices.

After the toppings have been successfully glued to the brown circle, give each student a sheet of black construction paper. Have the students glue their pizzas and Pizza Order Directions to the paper.

FORMATIVE ASSESSMENT QUESTIONS

- What fraction of your pizza is covered with peppers?
- What topping covers most of your pizza?
- Are black olives covering more or less than half your pizza?
- How did you divide your pizza into equal parts?
- How many equal parts did you need? How did you know?
- If your whole pizza was divided into fourths, how many slices did you cover with toppings? How would you write this as equivalent fractions? (4/4 = 1)
- If your pizza is covered with 1/8 mushrooms and 3/8 green peppers, does it have more mushrooms or green peppers? How do you know? (Encourage students to explain in terms of the pizza size and by comparing numerators in the fraction.)
- Some of you covered 4/8 of your pizzas with pepperoni. Can you name equivalent fractions for 4/8?
- Were any pizzas covered with ½ cheese? Why did your Pizza Order ask for 2/4 cheese?
- Do you see any other examples of equivalent fractions on the pizzas?

DIFFERENTIATION

Extension
- Have students create additional pizzas using more challenging fractional parts such as thirds, sixths, tenths. Increase the number of toppings. Have some sections contain more than one topping.

Intervention
- Provide ready-cut circles and if necessary, draw dotted lines for students to trace as they divide their pizzas into fractional parts. Have students complete Pizza Orders using fractions containing only common denominators.
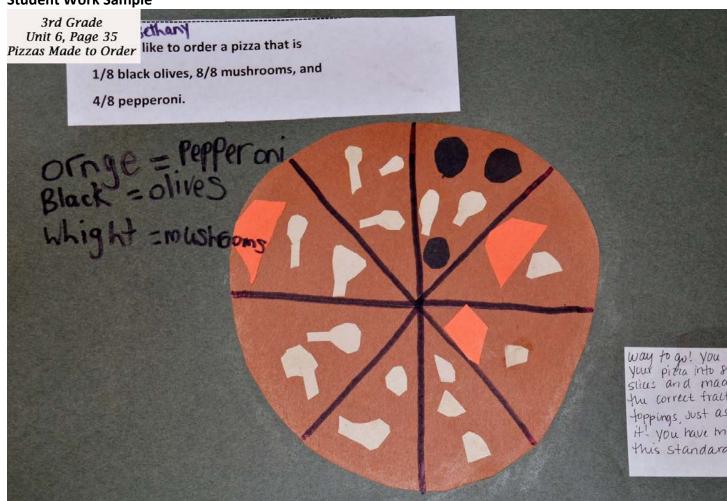
TECHNOLOGY RESOURCES

http://mrnussbaum.com/pizza_game/index.html

http://www.bgfl.org/bgfl/custom/resources_ftp/client_ftp/ks2/maths/fractions/index.htm

http://www.primarygames.com/fractions/2a.htm

Student Work Sample

PIZZAS MADE TO ORDER: PIZZA ORDER DIRECTIONS

Adapted from a lesson by Cara Coker, Floyd County, GA

I would like to order a pizza that is 1/8 green peppers, 8/8 pepperoni, and 3/8 mushrooms.

I would like to order a pizza that is
¼ mushrooms, 2/4 cheese, and ¼ pepperoni.

I would like to order a pizza that is
1/8 black olives, 8/8 mushrooms, and
4/8 pepperoni.

I would like to order a pizza that is
¼ mushrooms, ¼ black olives, and
½ pepperoni.

I would like to order a pizza that is
¼ cheese, ¼ black olives, ¼ pepperoni, and
¼ green peppers.