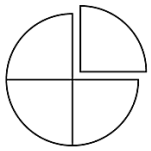
PERFORMANCE TASK: Hands on Fractions



Approximately 1-2 days

STANDARDS FOR MATHEMATICAL CONTENT

MCC1.G.3 Partition circles and rectangles into two and four equal shares, describe the shares using the words *halves*, *fourths*, and *quarters*, and use the phrases *half of*, *fourth of*, and *quarter of*. Describe the whole as two of, or four of the shares. Understand for these examples that decomposing into more equal shares creates smaller shares.

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

Students should be able to identify equal and not equal parts. Students should be able to recognize a whole as parts put together.

ESSENTIAL QUESTIONS

- How can we divide shapes into equal parts?
- How can we be sure that we have equal parts?
- What do ½ and ¼ look like?

MATERIALS

- Dry erase boards/markers OR paper and markers
- Pattern blocks (enough for half of your class for warm-up activity)
- 1 spinner page per group or student depending on grouping
- Plastic knives
- Play dough or clay
- Laminated shape mats-2 sets (or activity page placed in clear sleeve)
- *Full House* by Dayle Ann Dodds
- File folders, one per student to keep
- Crayons

GROUPING

Large group, small group or partners, individual

TASK DESCRIPTION, DEVELOPMENT AND DISCUSSION

Part I
Read *Full House* by Dayle Ann Dodds or another story involving fractions. Have students work with a partner to represent (one with a dry erase board and the other with pattern blocks) the fractions in the story as you read. Students should hold up their dry erase boards as you read to informally check their representations as the other students show the fraction with pattern blocks. After each turn to make a fraction, have partners switch materials to show their understanding of fractions.

Part II
Tell students that they are going to use playdough to make food to be divided in to equal parts. Tell them that, for this situation, the playdough is a math tool and should be used as a mathematician would use it.

Then, explain that each student will choose a food card and make the food from play dough. They will spin the spinner to see how many guests are coming to eat their snack. Based on that number, students will cut the food into equal parts. They will then name the fraction for that part. For example, a student would choose the apple card and form an apple out of play dough. They will then spin the spinner. If they land on 2, they will cut their apple into two pieces and identify each part of the whole (½ and ½).

Part III
Tell students that they will get to order and make a pizza with a partner to show their understanding of fractions. Assign or have students select a partner for this activity. Explain to students that they will use their folders as "pizza boxes" to draw their partner's pizza in, made to order. Each pair will take turns ordering a pizza giving only three orders. For example, Tonya

and Ross are partners. Ross opens his file folder and blocks Tonya from seeing his drawing of her pizza as she calls out the orders to him. Once he is finished drawing her pizza, he will show her the pizza for her to check his work. Remind students to use math language when giving orders such as, *"I would like cheese on the whole pizza, pepperoni on half, and bell peppers on a fourth of my pizza."* Once the students complete the pizza to their partner's satisfaction, they switch roles and repeat the activity. Students should be encouraged to represent their partner's pizza a variety of ways (the pizza in the shape of a circle or rectangle; pizza toppings separated or layered).

Part IV

Allow partners to share their pizzas with the whole class and to compare them. Lead students to discuss how each student interpreted their partner's orders. *Did students layer the pepperoni and green peppers, or keep them separate? Did some students layer all of the toppings on the same side?* Discuss variations and have students justify their creations.

FORMATIVE ASSESSMENT QUESTIONS

- Are students identifying all parts as a fractional piece of the whole?
- Are students using terms "quarter of, ¼, ½, etc?"
- Are students correctly identifying each fractional part?

DIFFERENTIATION

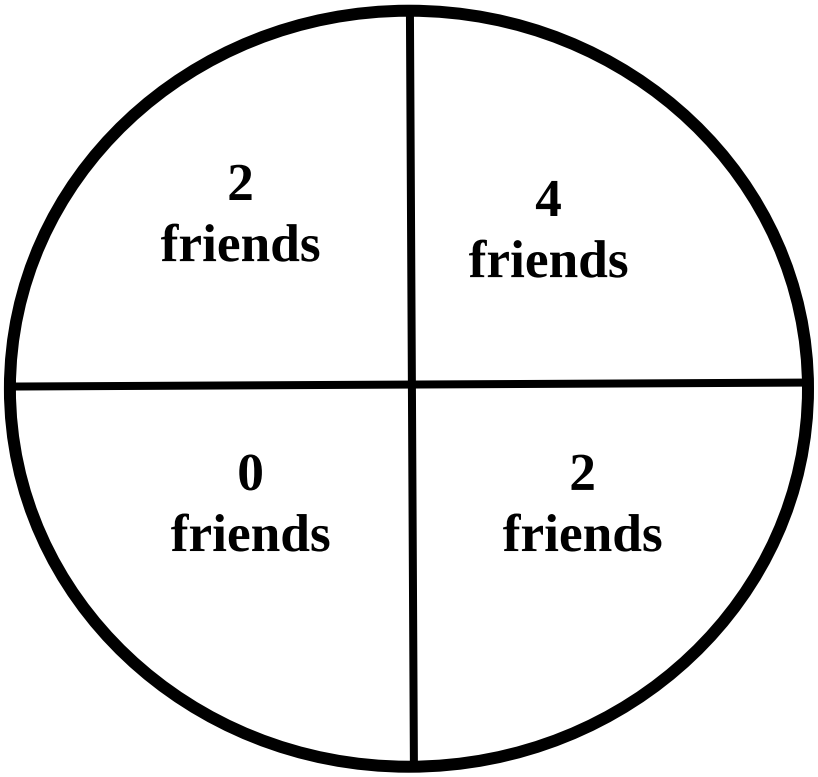
Extension

- Have students view PowerPoint of real life scenes to recreate and identify the fractional parts. http://www.tpsnva.org/teaching_materials/learning_experience/print.php?experiences_key=4353
- "More, Less, or Equal to One Whole" (Van de Walle, Activity 9.3, page 258) Students will be given a collection of fractional parts and indicate the kind of fractional part they have. Then they will decide if the collection (there should be several collections for this task) is equal to one whole, less than one whole, or more than one whole.

Intervention

- Give students a paper plate that has been divided (by drawing a line down the middle and across) in to fourths. Give them simplified directions of the task, such as:
    - Apply sauce and cheese to the whole pizza.
    - Put pepperoni on 1/4 of the pizza.
    - Sprinkle olives on half of the pizza.
    - Put green peppers on ¼ of the pizza

Hands on Fractions Spinner



Hands on Fractions