Classroom-Ready

RICH MATH TASKS

TASKS

GRADES 2-3

Engaging Students in Doing Math

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CORWIN **Mathematics**

Thank you

FOR YOUR INTEREST IN CORWIN

Please enjoy this complimentary excerpt from Classroom-Ready Rich Math Tasks, Grades 2-3, by Beth McCord Kobett, Francis (Skip) Fennell, Karen S. Karp, Desiree Harrison and Barbara Ann Swartz.

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CORWIN

Task 31
Sharing Cookies

Equal shares: partitioning circles and squares

TASK

Sharing a Cookie

Figure 10.1 Sharing a Giant Cookie

Source: Jamalrani/iStock.com

How can a giant cookie be shared between two, then three, then four people (see Figure 10.1)? Explain how to name the parts of the cookie in words and with numbers.

Task adapted from a classic task based on the children's book *The Doorbell Rang* by Pat Hutchins.

TASK PREPARATION

• This task can be used as an introduction to the standard.

• The task will take place in three rounds:

  » Pairs share their one giant cookie among the two friends.

  » Pairs share their one giant cookie among the two friends *and* the teacher (so share among three people).

  » Pairs couple with another pair to make a group of four to share another giant cookie.

LAUNCH

1. Pose the following question about Figure 10.2: "Which one is not like the others? Why?"

Mathematics Standard

• Partition circles and rectangles into two, three, or four equal shares, 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 shares of identical wholes need not have the same shape.

Mathematical Practices

• Reason abstractly and quantitatively.

• Use appropriate tools strategically.

Vocabulary

• equal shares
• partition
• half/halves
• third/thirds
• fourth/fourths

Materials

• Giant Circle Cookie student page, set of three for half of the student pairs in the class

• Giant Square Cookie student page, set of three for the other half of the pairs in the class

• paper (e.g., construction paper, chart paper) to create a poster for each pair and for creating a vocabulary anchor chart

• Today I Learned student page, one for each student (for the Close)

Figure 10.2 Sharing Food
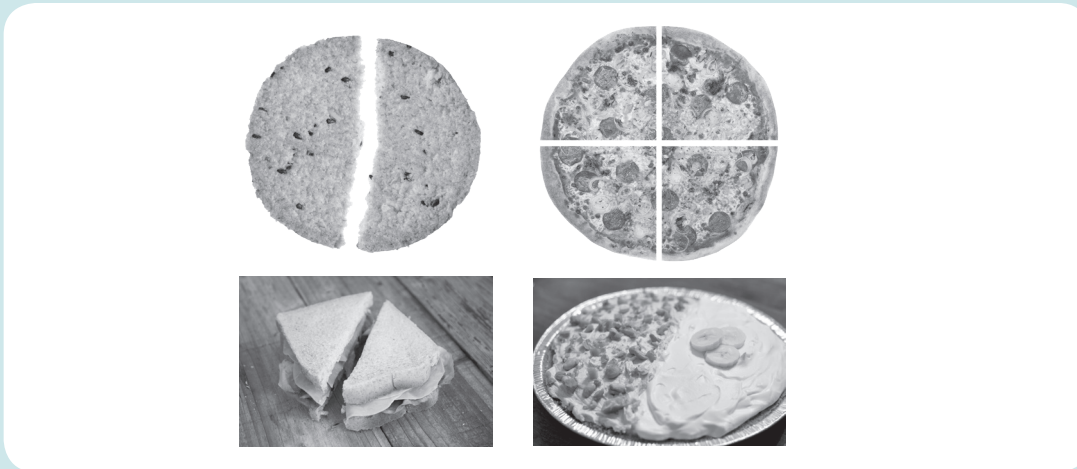
2. Encourage the students to notice how the regions are partitioned into equal-sized pieces. Encourage the students to describe what they see.

3. Segue into the task by asking, "What if someone in your family made *one* giant cookie to share?"

FACILITATE

1. Arrange students into pairs.

2. Give half of the student pairs 3 Giant Circle Cookies and the other half 3 Giant Square Cookies to represent the "giant cookie." They will use 1 circle/square for each round of the task.

3. *Round 1*: Student pairs will first decide how to share their giant cookie between the two of them. Once they decide on how to share it so that each person gets an equal amount, they can cut it and glue it onto their poster. Ask:

   » How did you decide how to cut the cookie?

   » What would be the name of one piece of the cookie? Introduce the vocabulary *half* or *halves* and record the corresponding notation: $\frac{1}{2}$ or $\frac{1}{2} + \frac{1}{2} = \frac{2}{2}$.

   » Encourage students to use *half* or *halves* and notation $\frac{1}{2}$ or $\frac{1}{2} + \frac{1}{2} = \frac{2}{2}$ in their explanation and write their thinking on a poster to share how they partitioned their cookie into equal parts.

ACCESS AND EQUITY

Introducing precise language and notation within a meaningful context helps students make meaningful connections to and understand the mathematics involved. Encourage the students to describe how they partitioned the cookie using fraction language and notation.

4. *Round 2*: Ask, "How much of the cookie would each of us get if I joined your group?"

   » Student pairs will then decide how to share their "giant cookie" equally among the three people. Once they decide on how to share it, they can cut it and glue it onto

their poster. Elicit student thinking through questions so that you can build on their intuitions. If they are having trouble getting started, consider showing them a circular cookie cut vertically into three parts and one cut like a "peace sign" (see Figure 10.3).

Figure 10.3 Cookie Divided Into Thirds Using Peace Sign
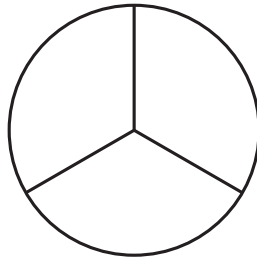
» Ask the whole class, "What is the fraction name for each piece of cookie created?" Introduce the vocabulary *third* or *thirds* and record the corresponding notation $\frac{1}{3}$ or $\frac{1}{3} + \frac{1}{3} + \frac{1}{3} = \frac{3}{3}$.

Encourage students to use *third* or *thirds* and the notation $\frac{1}{3}$ or $\frac{1}{3} + \frac{1}{3} + \frac{1}{3} = \frac{3}{3}$ in their explanation and write their thinking on a poster to share how they partitioned their cookie.

5. *Round 3*: Pair those who had a circle cookie with those who had a square cookie to create groups of four. First, have each pair present their posters to the other pair and ask them to compare the halves and thirds of a circle to the halves and thirds of the square.

   » **Observe** students' posters and how they are explaining their thinking about sharing the cookies between two and three people.

   » **Interview.** As you observe the student groups, ask:

      » What is the same and what is different about the pieces of cookies you created on your posters?

   » **Hinge Question.** If you were hungry, would you rather have $\frac{1}{3}$ or $\frac{1}{2}$ of the giant cookie? Why?

      » Consider soliciting a few volunteers from different groups to share their thinking with the class.

6. Explain that students will work as a group of four to first share the circle cookie and then share the square cookie among the four friends. The four students should agree on how to share their giant cookie among the four people. Once they decide on how to share the giant cookie, students can cut it and glue the pieces onto their respective posters.

7. Ask, "What is the fraction name for each piece of the cookie you created?" Introduce the vocabulary words *fourth* or *fourths* and record the corresponding notation $\frac{1}{4}$ or $\frac{1}{4} + \frac{1}{4} + \frac{1}{4} + \frac{1}{4} = \frac{4}{4}$.

8. Encourage students to use *fourth* or *fourths* and notation $\frac{1}{4}$ or $\frac{1}{4}+\frac{1}{4}+\frac{1}{4}+\frac{1}{4}=\frac{4}{4}$ in their explanation and write this on their poster to share how they partitioned their cookie.

Note: Consider using the Observation and Interview (small group) tools for monitoring and recording student responses (see Appendix B).

CLOSE: MAKE THE MATH VISIBLE

1. Bring the class back together and select a few groups to share their thinking about how they partitioned their cookies. Record students' ideas on the board.

2. Ask students if each of the partitions in Figure 10.4 shows fourths and how they know they are fourths.

Figure 10.4 Different Partitions of Fourths
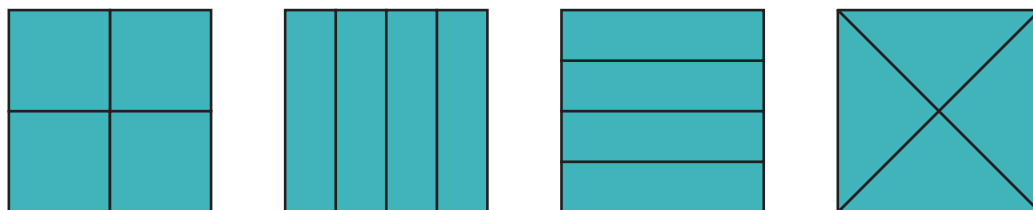
3. Have students *Think-Pair-Share* before soliciting volunteers to share with the class. Record students' ideas on the board.

4. Explain that when a shape is partitioned into fractions, the pieces are divided into equal-sized pieces—they don't have to be the same shape.

5. Ask students to complete the Today I Learned student page with the following sentence stems to share their learning from today's lesson: "Today I learned . . ., I realized . . ., or I was surprised by . . ."
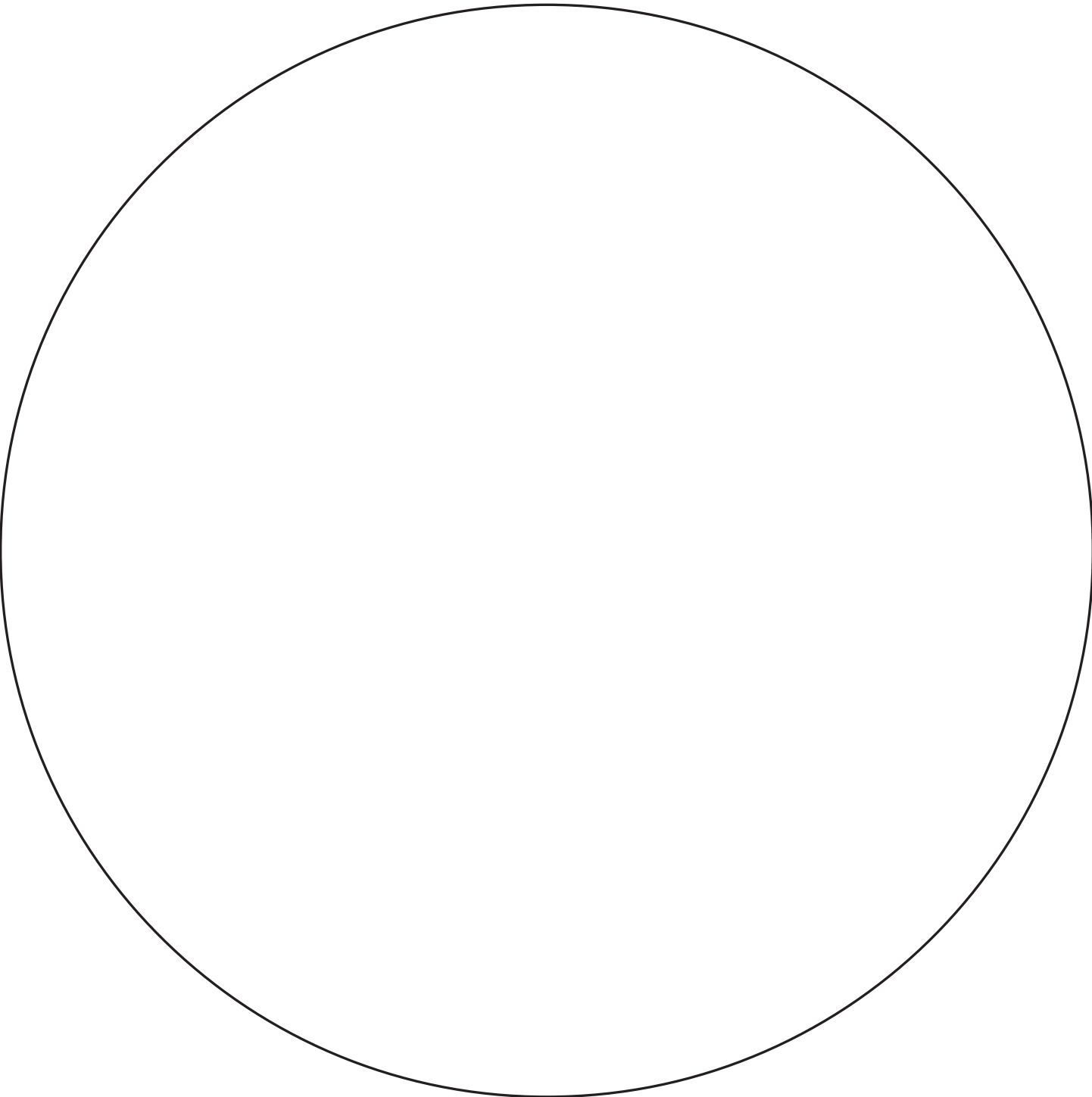
ALTERNATE LEARNING ENVIRONMENT

Use an online whiteboard to display these various representations of one fourth and use wait time, along with small-group discussion within video conferencing tools, to talk about these representations.

POST-TASK NOTES: REFLECTION & NEXT STEPS

Task 31: Giant Square Cookie Student Page
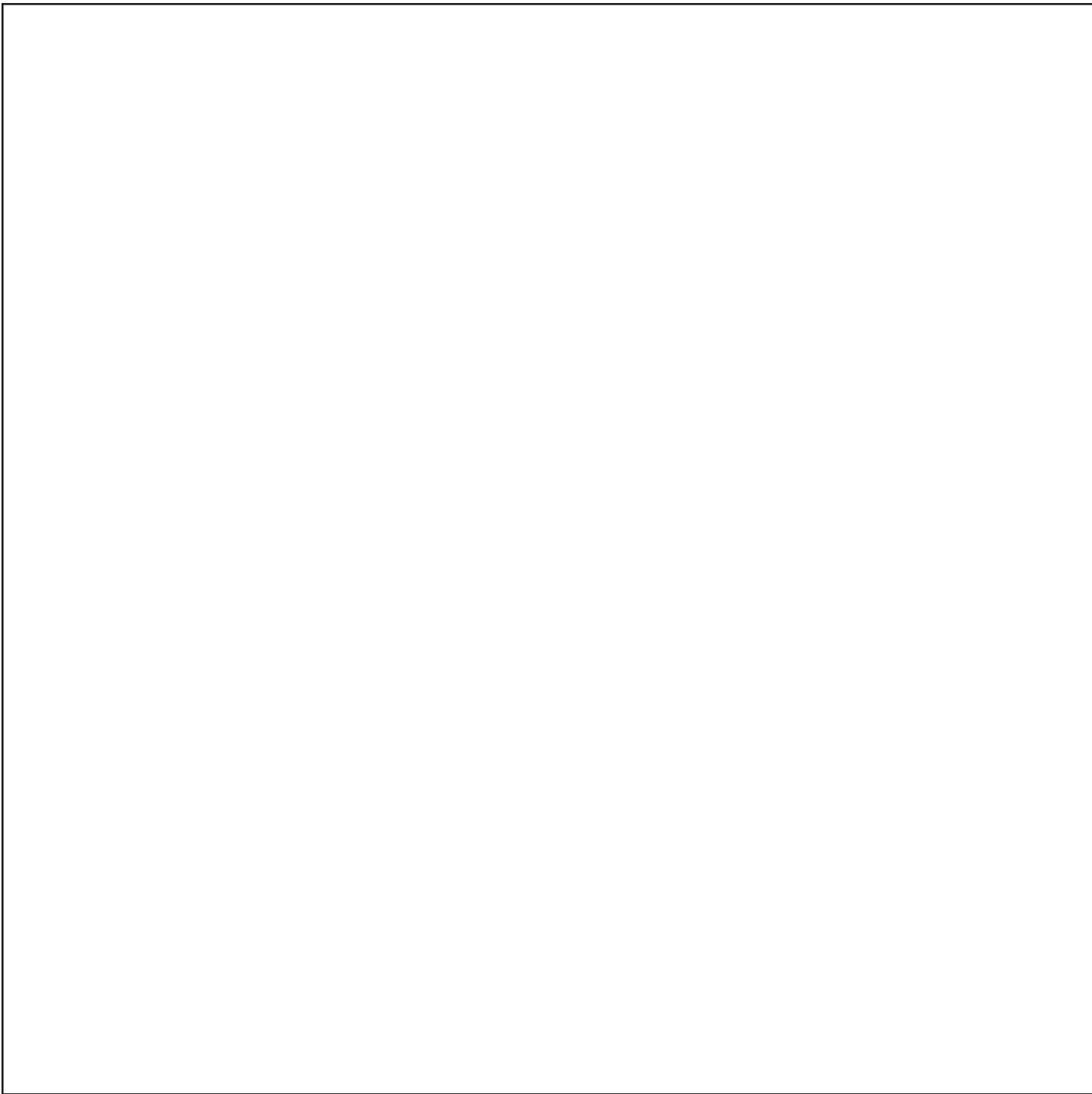
Task 31: Giant Circle Cookie Student Page

Today I Learned Student Page

Today I learned . . ., I realized . . ., or I was surprised by . . .

Today I learned . . ., I realized . . ., or I was surprised by . . .

Today I learned . . ., I realized . . ., or I was surprised by . . .