

M2C3 Math Modeling Lesson Overview

LESSON TITLE: Modeling Pretzel Snack Time

STANDARDS ALIGNMENT:

GRADE 3	GRADE 4	GRADE 5
3.OA: Represent and solve problems involving multiplication and division. 3.OA 3: Use multiplication and division within 100 to solve word problems in situations involving equal groups, arrays, and measurement quantities.	4.OA Use the four operations with whole numbers to solve problems. Gain familiarity with factors and multiples. 4.OA 3. Solve multistep word problems posed with whole numbers and having whole number answers using the four operations, including problems in which remainders must be interpreted...Assess the reasonableness of answers using mental computation and estimation strategies including rounding.	5.OA Write and interpret numerical expressions. 5.NBT Perform operations with multi-digit whole numbers and with decimals to hundredths. 5.NBT 6. Find whole-number quotients of whole numbers with up to four digit dividends and two-digit divisors, using strategies based on place value, the properties of operations and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays and/or area models.
MP: 1 Make sense of problems and persevere in solving them. MP: 4 Model with Mathematics	MP: 1 Make sense of problems and persevere in solving them. MP: 4 Model with Mathematics	MP: 1 Make sense of problems and persevere in solving them. MP: 4 Model with Mathematics

CONNECTIONS (Consider while planning):

• Previous Math Knowledge: *What prior math knowledge and experiences does this lesson consider and/or build on?*

Four operations (addition, subtraction, multiplication and division) using numbers between 0-1000. Representing math ideas with pictures, symbols, and words.

• Cultural/Community/Family Connections: *How does the lesson connect to, or build on the knowledge, practices, or experiences of children and families? On community contexts??*

Sharing food and other items among siblings, friends, classmates. Fair sharing. Snack time rituals. Serving sizes. Label reading.

National Pretzel Day: April 26 (see brief article, image slides)

<https://www.nationaldaycalendar.com/days-2/national-pretzel-day-april-26/>

TASK VARIATIONS (to numbers, context, structure):

Routine 1: Mathematizing World - Open Ended (10 minute) - [Show image of giant pretzel container]

- What do you notice? What does this picture make you wonder about? Brief class discussion.
- What questions do you have? What would you need to do to answer those questions?

Routine 2: Mathematizing World - Specific Questions (20 minute) Sensemaking and assumption building [Show image of giant pretzel container and elicit and/or pose specific questions that can be answered using mathematics; consider using anchor chart to record “math” questions using questions stems - How much? How many? How much more/less; How big/small?]:

- Look at this big container of pretzels... (use realia or slide)
- What questions do you have that you could use mathematics to answer?
- What information do you need to find out how many pretzels each person gets?
- How will you use this information to figure out a fair way to share the pretzels?

Routine 3: Full Modeling Task (60-90 minute) Students participate in entire modeling cycle

On Monday, your class gets a giant container of pretzels to share for snack time. You have snack every day, and you want the pretzels to last the whole week. What can you do to make sure the pretzels last all week? How can you figure out how many pretzels to give to each student? Make a plan to share the pretzels in a fair way over the week.

Your plan to share the pretzels must show how:

- the pretzels last for a week
- it is a fair plan
- you can use the plan in other sharing situations

You can use pictures, numbers and words to communicate your plan.

Grade 3, 4 & 5 (adaptions): On Monday, your CLASS/SCHOOL gets a donation of [4, 9, 17, 25] giant containers of pretzels to share for snack time. You have snack every day. Make a plan to share/distribute the pretzels in a fair way over a [WEEK/MONTH].

ANTICIPATED STUDENT STRATEGIES:

Students might estimate the number of pretzels in the giant container. They could determine a *reasonable* serving size for each student. They will need to think about what a “week” means in the school context (5 days or 7 days). The phrase, “you have snack everyday” leaves open the possibility of more than once a day. They might want to determine the number of students receiving a snack each day (taking into consideration things like absences, dietary restrictions, and whether little kids and big kids eat the same amount). Students might need to figure out how to handle broken pretzels. This may be seen as an issue of fairness.

ADDITIONAL RESOURCES: Information on the nutrition label (see National Pretzel day slides or realia/physical container). Class/school information about number of students in classes, number of classes per grade and in school. Dietary restrictions.

MATERIALS NEEDED:

Pretzel Sharing_Lesson Slides

Realia - Giant Pretzel Container

Pretzel Sharing_Student Handout