

World's Largest Cookie

Adapted from the Lesson Study by: Cindy Cooper
George Mason University, COMPLETE Math
Fall 2015



The Task

The world's largest chocolate chip cookie was created using 40,000 pounds of cookie dough! (The recipe is listed below.) A school wants to make a smaller version of this cookie to feed all 800 students in their school. They decide that each pound of dough will feed 4 students. How many pounds of chocolate chips will they need?

Big Ideas

- Multiplicative/Proportional reasoning involved with scaling down quantities
- Estimating results of multiplication with large numbers
- Recording and representing relations with tables, charts, graphs, equations, and words

Standards of Learning for Grades 3-4-5

- 4.4 b,d multiply and divide whole numbers; solve multistep multiplication problems
- 5.4 single-step and multistep practical problems involving whole numbers.

Standards of Learning for Grades 6-7-8

- 6.1 describe/compare data using ratios
- 7.4 single and multistep practical problems with proportional reasoning
- 7.12 The student will represent relationships with tables, graphs, rules, and words.
- 8.3a solve practical problems involving rational numbers, percent, ratios and proportion
- 8.14 The student will make connections between any two representations (tables, graphs, words, and rules) of a given relationship.

Process Goals

- Problem Solving and Reasoning – Students will apply their sense of number to consider the reasonableness of results within this context. Students will also have to find ways to approach a problem where they do not have a prescribed solution pathway. Then, students will justify their methods to other classmates who may have approached the problem differently.
- Connections and Representations – Students may make use of a variety of representations to keep track of the coordinated quantities in order to reach a solution. 7th and 8th graders may make connections between proportions and real world problems.
- Communication – Students may use words, pictures, tables, or equations to communicate their thinking and solution pathways to others.

Related Task – An Apple a Day

Have you ever heard someone say, “An apple a day keeps the doctor away”? At a local grocery store, you can buy a bag of 8 apples for \$5.00. If everyone in your family ate one apple every day, how much money would your family spend in one year on apples?

Related Task – Solar Powered City

Solar panels collect energy from the sun so people can use that energy to power things in their homes. Is it possible to power an entire city by using only solar energy? New York City uses about 164,380 kilowatt hours of electricity each day. Usually, it takes 25 solar panels to produce about 5 kilowatt hours of electricity. How many solar panels would it take to power all of New York City for one day?

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Lesson Plan



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Materials

Extra paper for students to sketch out ideas
Manipulatives as needed, such as cubes or chips

Facilitating Task

You may choose to launch this task by looking at pictures of the world's largest cookie at

www.immaculatebaking.com

Allow students to work in partner groups.

As students work, circulate around the class, listening for places students may be stuck, asking questions to facilitate student thinking, and looking for strategies you may want to be shared with the class.

Whole class discussion: Select a few students to share their approaches to facilitate discussion of math ideas.

Misconceptions

Because the numbers are so large, students may be overwhelmed by the calculations.

Students may have trouble coordinating quantities and keeping track of what each number represents in the context of the problem.

Suggested Prompts or Questions

Supporting thinking:

How much cookie dough will be needed for 800 people?

What does this number represent in the story?

What have you done so far? What will you need to figure out next?

How will you know if your answer makes sense?

Extending thinking:

If you wanted to figure out how much of the other ingredients are needed, what method would you use next time?

What if they decided each pound of dough could feed 8 students? How would that change your answer?

What other questions could the class explore related to this giant cookie?

World's Largest Cookie



Name _____

Date _____

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Answer the question using pictures, words, tables, graphs, and/or symbols.

World's Largest Cookie Ingredients:

12,200 pounds of flour

6,525 pounds of butter

6,000 pounds chocolate chips

5,000 pounds of white sugar 3,370

pounds of brown sugar 184

pounds of salt

79 pounds of baking soda

30,000 eggs

10 gallons of vanilla