WAMC Lab Template

Math Concept(s): Scale and Proportion, writing equations Source / Text:

Developed by: Olivia Hernandez E-Mail:ohernandez@masd209.org

Attach the following documents:

- Lab Instructions
- Student Handout(s)
- Rubric and/or Assessment Tool

Short Description (Be sure to include where in your instruction this lab takes place):

Date:

•

<u>Lab Plan</u>

Lab Title: Chocolate Chip Lab

Prerequisite skills: Basic knowledge of scale factor, proportional relationships, unit rates

Lab objective: Develop students knowledge of scale and proportion, determining appropriate units of measure, and writing equations for real world, entrepreneurial situations **Standards:** (Note SPECIFIC relationship to Science, Technology, and/or Engineering) Mathematics K–12 Learning Standards:

HSN-Q.A.1 Use units as a way to understand problems and to guide the solution of multistep problems; choose and interpret units consistently in formulas; choose and interpret the scale and the origin in graphs and data displays.

2. HSN-Q.A.2 Define appropriate quantities for the purpose of descriptive modeling.

3. HSN-Q.A.3 Choose a level of accuracy appropriate to limitations on measurement when reporting quantities.

Standards for Mathematical Practice:

- Make sense of problems and persevere in solving them
- Reason abstractly and quantitatively
- Attend to precision

K-12 Learning Standards-ELA (Reading, Writing, Speaking & Listening):

• Initiate and participate effectively in a range of collaborative discussions

K-12 Science Standards

• Make observations and measurements to identify materials based on their properties

Technology



Leadership/21st Century Skills:

21st Century Interdisciplinary themes (Check those that apply to the above activity.) Financial/Economic/Business/Entrepreneurial Literacy Civic Literacy Global Awareness Health/Safety Literacy Ē. Environmental Literacy

21st Century Skills (Check those that students will demonstrate in the above activity.)

LEARNING AND INNOVATION

- Creativity and Innovation Think Creatively Work Creatively with Others Implement Innovations Critical Thinking and Problem Solving Reason Effectively
- Use Systems Thinking Make Judgments and Decisions
- Solve Problems
- Communication and Collaboration
- Communicate Clearly
- Collaborate with Others
- **INFORMATION, MEDIA &** TECHNOLOGY SKILLS Information Literacy Access and Evaluate Information Use and manage Information Media Literacy Analyze Media Create Media Products Information, Communications and Technology (ICT Literacy) Apply Technology Effectively

LIFE & CAREER SKILLS Flexibility and Adaptability Adapt to Change Be Flexible Initiative and Self-Direction Manage Goals and Time Work Independently Be Self-Directed Learners

Social and Cross-Cultural Interact Effectively with Others

Work Effectively in Diverse Teams

П

Productivity and Accountability Manage Projects Produce Results Leadership and Responsibility Guide and Lead Others Be Responsible to Others

Teacher Preparation: (What materials and set-up are required for this lab?)

Materials

- Baking ingredients- flour, sugar, brown sugar, butter, vanilla, baking soda, eggs, • chocolate chips, salt
- Measuring spoons •
- Mixing bowls
- **Baking sheets**
- Parchment paper or nonstick spray (other equipment will be provided through us working in food science lab)

Set-Up Required:

- Preheating ovens to 350
- Prearranging groups of 3 students and assigning to station

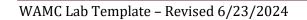
Lab Organization Strategies:

Leadership (Connect to 21st Century Skills selected):

Students will be working in groups and expected to be equal participants in the process of baking cookies. They will be assigned roles such as Head Chef, Prep cook, dishwasher

Cooperative Learning:

Following the completion of the assessment attached where students are expect to convert a recipe into the appropriate units of measurement, students will then get into



groups, use one students final answers and work together to bake one-third of a batch of cookies all together.

Expectations:

My expectation for this lab is to show students a practical, everyday, application to help them understand scale and proportional relationships. Also I expect students to accurately identify an appropriate and reasonable unit of measure based on materials provided

Timeline:

The math write up portion(conversions) should take students 20 minutes. Students will then get into assigned groups and decide which ONE student's recipe they are going to use to take to the food science lab where they will work with their group to make a onethird batch of cookies. They will choose between 3 roles(Head chef, sous chef, dishwasher)

Post Lab Follow-Up/Conclusions:

Discuss real world application of learning from lab

- *
- **Career Applications**
 - ✤ Any food industry

Optional or Extension Activities

You could build on this activity by involving price of ingredients and asking students to determine cost using unit rates. You could then ask them to use that cost to write an equation for the cost with the number of batches being the variable.



Washington

Chocolate chip cookies

1 oz= 1/8 cup

1 oz= 6 tsp

1 oz= ¼ stick of butter

Directions: convert all measurements to either cups or teaspoons (You determine what makes more sense)

Ingredients



WAMC Lab Template – Revised 6/23/2024

- * 2 eggs
- * 16 oz chocolate chips

Instructions:

- 1. Preheat oven to 350°F. Line baking sheets with parchment paper.
- 2. In a medium bowl, combine the flour, baking soda, and salt.

3. In the bowl of an electric mixer, beat the butter, granulated sugar, and brown sugar until creamy, about 2 minutes. Scrape down the sides and bottom of the mixing bowl. Add the vanilla and eggs and beat until combined, scraping the bowl down as needed. Gradually beat in the flour mixture. Stir in the chocolate chips.

4. If time permits, wrap dough in plastic wrap and refrigerate for at least 24 hours but no more than 72 hours. This allows the dough to "marinate" and makes the cookies thicker, chewier, and more flavorful. Let dough sit at room temperature just until it is soft enough to scoop.

5. Divide the dough into 3-tablespoon sized balls using a large cookie scoop and drop onto prepared baking sheets.

6. Bake for 11-13 minutes, or until golden brown. Cool for 5 minutes before removing to wire racks to cool completely.

