

Grade 8
Celebrations Unit
Math Lesson Day 3

Rationale

- ✚ The intent of this lesson is to apply the concepts of Geometry.

Goals

- ✚ Students will calculate the volume of various food containers.

Standards

- ✚ **8.G.9** Know the formulas for the volumes of cones, cylinders, and spheres and use them to solve real-world and mathematical problems.
- ✚ **MP.4** Model with mathematics.
- ✚ **MP.5** Use tool strategically.
- ✚ **MP.7** Look for and make use of structure.

Objectives

- ✚ Students will be able to calculate the volume of food that fits into various food containers.

Materials

- ✚ Paper
- ✚ Pencil
- ✚ Colored pencils
- ✚ Calculator
- ✚ Rulers
- ✚ PARCC Grade 8 Reference Sheet
http://www.parcconline.org/sites/parcc/files/ApprovedPARCCReferenceSheet_11%205%2014.pdf

Procedure

- ✚ Tell the class that there will be carnival food for sale at the end of the school year celebration. Today the class will investigate the volume of various food containers that are often used to serve carnival food.
- ✚ Provide the students with the Activity of the Day instructions.

Teacher & Teachers' Aide Observations During the Group Activity

- ✚ The teacher should make sure each student is utilizing the reference sheet as needed and showing work on paper.

Assessment

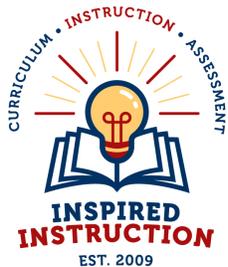
- ✚ When the students complete the calculations and the drawings, the students can demonstrate correct use of the formulas for the various shapes and demonstrate correct calculation.

Activity of the Day – Carnival Foods

1. At the end of school year celebration, carnival foods will be for sale. These foods come in various shapes and sizes. Special food containers are used. Today, you will apply mathematics to find the volume of various food containers and draw them.
2. A chart describing a variety of food containers is provided. Use the information in the chart and the reference sheet to calculate the volume of each container.
3. Draw each container. You can create a label on each drawing with colored pencils. Label the dimensions of each container and record the volume below each container.
4. **Optional:** Can you think of other carnival foods? Search on the internet for the dimensions of the food containers for these foods. Find their volumes.
5. If time permits, look for objects in the classroom that have similar shapes to the food containers. Measure the objects and find their volumes.

Carnival Food Containers

Food	Dimensions
Snow cone	$d = 2.5 \text{ in.}$ $H = 4 \text{ in.}$
can of drink	$d = 2 \frac{3}{8} \text{ in.}$ $H = 4 \frac{3}{4} \text{ in.}$
popcorn	$l = 3.75 \text{ in.}$ $w = 2 \text{ in.}$ $h = 5 \text{ in.}$
hot dog	$l = 6 \text{ in.}$ $w = 1 \frac{1}{2} \text{ in.}$ $h = 1 \frac{1}{4} \text{ in.}$
French fries	$l = 6 \text{ in.}$ $w = \frac{3}{4} \text{ in.}$ $h = 7 \frac{1}{4} \text{ in.}$
ice cream sugar cone	$d = 8 \text{ cm.}$ $H = 10 \text{ cm.}$
ice cream cake cone	$d = 2 \frac{5}{16} \text{ in.}$ $H = 2 \frac{5}{8} \text{ in.}$
ice cream cup-medium	$d = 80 \text{ mm}$ $H = 56 \text{ mm}$



Grade 8

Celebrations Unit

Math Lesson Day 4

Rationale

- ✚ The intent of this lesson is to apply the concepts of unit rate, percent discount, and pricing.

Goals

- ✚ To gather and organize data used in decision making
- ✚ To apply mathematical skills to a retail situation
- ✚ To work cooperatively in planning the menu for an event

Standards

Analyze proportional relationships and use them to solve real-world and mathematical problems.

- ✚ **7.RP. 3** Use proportional relationships to solve multistep ratio and percent problems.
*Examples: simple interest, tax, markups and markdowns, gratuities and commissions, fees, percent increase and decrease, percent error. **
- ✚ **MP.4** Model with mathematics.
- ✚ **MP.5** Use tool strategically
- ✚ **MP.7** Look for and make use of structure

*Note: Skills and concepts developed in previous grades are often used in application-style problem solving at higher grades.

Objectives

- ✚ Students will be able to understand and apply the concept of unit pricing.
- ✚ Students will be able to use ratio and proportion, write and solve equations, calculate units of measure, and calculate currency to solve problems.

Materials

- ✚ Paper
- ✚ Pencil
- ✚ Calculator
- ✚ Computer with internet

Procedure

- ✚ Tell the class that today they will investigate the cost of carnival foods and their containers, and the cost of equipment needed to prepare the foods.
- ✚ Provide the students with the Activity of the Day instructions.

Teacher & Teachers' Aide Observations During the Group Activity

- ✚ The teacher should make sure each student is showing their calculation processes on paper.
- ✚ The teacher should observe the students' abilities to reason and make decisions as they price each food item and create a menu.

Assessment

- ✚ The students will demonstrate their ability to apply mathematical operations, unit rates and percentage discount with 90% accuracy.

Activity of the Day – Carnival Foods Costs

1. Today, the Board of Education is asking you to investigate the cost of providing the carnival foods for the end of school event; there will be 150 people at the event.

2. You and a partner will begin investigating how much it costs for each food item that will be available at the event. You can use the list of food containers (Day 3) to spark your ideas, but the menu is your choice. You will need to price each food, its container, and the cost of the equipment (purchased or rented) needed to make the food. Please remember to include condiments and paper products. At the conclusion of the investigation, you will need to provide the Board of Education with the menu and the price for each item.

3. Details for pricing:

- The cost of the utilities (electricity, gas and water) is covered by a donation and does not need to be considered in the pricing.
- The cost of the location is covered; tables and chairs are included.
- The event is non-profit; the food items should not be priced for profit.

4. Your research will be via internet. Here are some websites to investigate:

<http://carnivaldepot.com/carnivalsupplies.html>

<http://www.dollardays.com/wholesale-food-pantry.html>

http://www.atozpartyrental.net/carnival_food_-_beverage_equipment.htm

<http://www.samsclub.com/sams/grocery/1444.cp>

5. Be prepared to justify your prices. Keep a complete record of your research and supporting mathematics. You and your classmates can compare your prices at the conclusion.