

# Food For Thought

## *Math Grows Up (Fractions/Decimals)*

### Objective

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Students will estimate the size of one ounce. Students will use computation and problem solving strategies to determine the unit cost of given items.

### Overview of the Lesson

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“How much is an ounce of cereal?” This is the question students explore as they pass around small bags of cereal and try to discern which one weighs one ounce. Students then use computation skills, problem solving and number sense to find the cost of an ounce of cereal. Students compare the cost per ounce of a variety of cereals and then speculate as to the reasons for the different prices. Students then utilize similar strategies in determining the price per chip for bags of snacks and make comparisons.

### Materials

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#### Teacher:

- 15 ounce box of cereal with price clearly marked
- 1 small bag of pretzels with price clearly marked
- 8 additional cereal boxes with prices marked on them (empty boxes are acceptable)

**Each Student:**

- 2 copies of Activity Sheet: “Cost of Cereal”
- Calculator

**Each Group of 4 Students:**

- 3 plastic bags of the cereal: one bag should have exactly 1 ounce; the second bag should have less than 1 ounce, while the third bag should be more than 1 ounce
- 1 small bag of snacks (potato chips, Doritos, Cheese Puffs, etc.)

**Procedure**

Begin the lesson by surveying the class to see how many students have eaten cereal. Ask students to identify the types of information that can be found on the front of a cereal box. (name, weight, claims, etc.) Show the class a 15 ounce box of cereal and ask a student to read the weight of the product from the front panel of the box.

Divide the class into groups of four. Give each group three plastic bags of cereal. In one bag place exactly an ounce, in the second bag place more than an ounce, and in the third bag place less than one ounce of the cereal. Label each bag with a letter, A, B, and C. Tell the groups to pass around the bags to see if they can estimate which bag holds exactly one ounce.

After allowing students enough time to hold all of the bags and discuss their predictions with their peers, have students tell the class their choices and explain their reasoning.

Hold up the box of cereal to use as a benchmark. Show the bags that hold less than one ounce of cereal and ask the class if 15 bags would fill the box. Follow the same procedure with the bag containing more than one ounce and then finally with the bag containing exactly one ounce.

Ask a student to find the price of the box of cereal printed on the panel. (\$2.98). Challenge students to find the cost of one ounce of cereal. Have the students work with partners to solve this problem. Encourage students to estimate the answer before they find the exact cost. They may use calculators to do the computations.

Divide the class into small groups. Have the groups go to stations set up in the classroom with two different cereals at each station. Give each student 2 copies of Activity Sheet: “Cost of Cereal”, to record the price per ounce of their two boxes of cereal. Students can use calculators, mental math, or paper and pencil to solve the problem.

Have students place their boxes of cereal on the chalk ledge from least to greatest in cost per ounce. The Activity Sheets should be placed on the board over the corresponding box of cereal. Have students compare the prices and determine the least and most expensive cereals. Ask students to think of possible reasons why one type of cereal might cost more than another. (Example: Ingredients could be more expensive in one type than the other.)

Informally survey the class to find out which students like to eat snack foods. Show the class a small bag of pretzels and ask if they would pay 25¢ for a single pretzel. Ask how much a single Dorito, Cheese Puff, etc. would be worth. Give each group a small bag of snacks and ask them to determine how much each piece of snack would cost. Be sure each bag has the price clearly marked. Provide calculators for students to do the computation. Focus student attention on the idea that they must count the total amount of snacks in each bag and divide the price by the total number of snacks.

Have students compare the cost of each snack to determine the least and most expensive snacks.

### ***Mathematically Speaking...***

When using the calculator to calculate unit costs, many times the display shows a fraction of a cent. In other words digits are displayed beyond the tenths/hundredths place on the calculator. When this occurs and depending on the application, it will be necessary to establish a procedure to be used to obtain a logical unit price. Rounding to the nearest cent is one method that can be used. For example if the display shows 0.234, then the nearest cent is \$0.23. If the display shows 0.23598, then the nearest cent is \$0.24. Another option is to always change any fraction of a cent to the next highest cent. For example 0.234567 would be \$0.24. Finally, you may have the students truncate the answer shown on the display by eliminating all of the digits to the right of the hundredths place. Thus, if the display shows 0.23656 then the students would record \$0.23.

## **Extensions & Connections**

Have students survey several foods at their house to determine the cost per unit for each of the items. Encourage students to report their findings to the class and bring in the food item for a classroom display if possible.

Have students compute the unit cost for items sold in the school cafeteria. Have students determine which lunch items are a better buy. Students could write letters to the cafeteria manager detailing their findings.

**Resources**

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Research Ideas for the Classroom: *Middle Grades Mathematics*

Douglas T. Owens, Editor; Sigrid Wagner, Project Director

National Council of Teachers of Mathematics, Research Interpretation Project

MacMillan Publishing Company, New York, Copyright 1993.

Applications in Mathematics: *Course B*

Authors: Johnson, Hansen, Peterson, Rudnick, Cleveland, Bolster

Scott, Foresman and Company, Glenview, Illinois • Copyright 1974

(ISBN: 0-673-4080-1).

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## Ideas for Online Discussion

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(Some ideas may apply to more than one standard of the *NCTM Professional Standards for Teaching Mathematics*.)

### Standard 1: Worthwhile Mathematical Tasks

- The video teacher stated that he uses real-life applications for math in his classroom. How do you adapt your mathematics curriculum so that there is an emphasis on real-life applications?
- The video teacher indicated that he does not use multiplication tables, but emphasizes how they can use multiplication. What is your position on students memorizing their multiplication facts?

### Standard 3: Students' Role in Discourse

- Share some of the ways that you encourage your students to explain their thinking or their solutions in solving a problem.

### Standard 5: Learning Environment

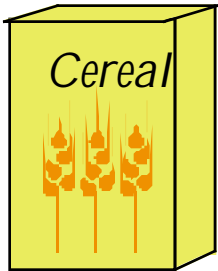
- The video teacher said that the classroom environment needed to be “just right” for students to feel comfortable enough to share their ideas. How do you create an environment that encourages your students to be risk takers?

### Standard 6: Analysis of Teaching and Learning

- How can you assess an individual student's acquisition of a mathematical skill if they are working in cooperative groups?

## Cost of Cereal

Name of Cereal \_\_\_\_\_



Total Price \_\_\_\_\_

Total Ounces \_\_\_\_\_

Price Per Ounce \_\_\_\_\_

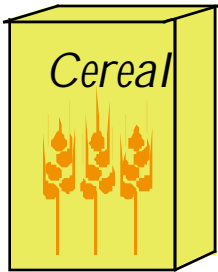
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Name of Cereal \_\_\_\_\_



Total Price \_\_\_\_\_

Total Ounces \_\_\_\_\_

Price Per Ounce \_\_\_\_\_

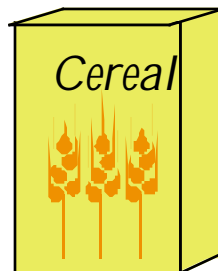
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Name of Cereal \_\_\_\_\_



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