Size up Your Cereal

Pillar: Healthy Eating
Division: II
Grade Level(s): 5-6
Core Curriculum Connections: Language Arts and Mathematics

I. Rationale: Prepare students for a *serial* of *cereal* box activities that integrate healthy eating into language arts and math. Students will use cereal boxes to complete a diverse range of activities to accomplish several outcomes in these core subject areas. In math, they will perform various calculations, measurements, and graphs to determine perimeter, area, volume, unit price, and solve problems based on the cereal boxes themselves as well as the nutritional data from several different types of cereals. After studying ingredient lists and nutritional information, students delve into some creative oral, print, and media activities. Written activities include: a business letter to a cereal company, a descriptive paragraph about their cereal and an expository paragraph explaining the cereal that is the 'best buy'. Students will also design a new cereal box cover, and promote their new cereal through a radio broadcast.

II. Activity Outcomes:

The students will:

- recognize the nutritional benefits of eating cereal
- compare and analyse the nutritional content of different cereals to identify the healthiest options
- make recommendations for improvement of the ingredients found in specific cereals
- Invent, describe, and promote their own cereal

III. Curriculum Outcomes: Math and Language

Mathematics	Language Arts
NUMBER **General Outcome** • Develop number sense.	**General Outcome 1** Students will listen, speak, read, write, view and represent to explore thoughts, ideas, feelings and experiences. ***1.2 Clarify and Extend*** **Extend understanding** · search for further ideas and information from others and from oral, print and other media texts to extend understanding
Grade 5 Specific Outcomes: 6. Demonstrate, with and without concrete materials, an	**General Outcome 2** Students will listen, speak, read, write, view and

understanding of division (3-digit by 1-digit), and interpret remainders to solve problems. [C, CN, ME, PS, R, V]	represent to comprehend and respond personally and critically to oral, print and other media texts. ***2.4 Create Original Text*** **Generate ideas** · use texts from listening, reading and viewing experiences as models for producing own oral, print and other media texts **Elaborate on the expression of ideas** · experiment with modeled forms of oral, print and other media texts to suit particular audiences and purposes
Grade 6 Specific Outcomes: 5. Demonstrate an understanding of ratio, concretely, pictorially and symbolically. [C, CN, PS, R, V] 6. Demonstrate an understanding of percent (limited to whole numbers), concretely, pictorially and symbolically. [C, CN, PS, R, V]	**General Outcome 3** Students will listen, speak, read, write, view and represent to manage ideas and information. ***3.1 Plan and Focus*** **Focus attention** · summarize important ideas in oral, print and other media texts and express opinions about them
SHAPE AND SPACE (Measurement) **General Outcome:** • Use direct and indirect measurement to solve problems	***3.3 Organize, Record and Evaluate*** **Organize information** · organize ideas and information to emphasize key points for the audience · add, delete or combine ideas to communicate more effectively **Evaluate information** · connect gathered information to prior knowledge to reach new conclusions
Grade 5 Specific Outcomes: 4. Demonstrate an understanding of volume by: • selecting and justifying referents for cm3 or m3 units • estimating volume, using referents for cm3or m3 • measuring and recording volume (cm3 or m3) • constructing right rectangular prisms for a given volume. [C, CN, ME, PS, R, V]	***3.4 Share and Review*** **Share ideas and information** · communicate ideas and information in a variety of oral, print and other media texts, such as illustrated reports, charts, graphic displays and travelogues · select visuals, print and/or other media to inform and engage the audience
Grade 6 Specific Outcomes: 3. Develop and apply a formula for determining the: • perimeter of polygons • area of rectangles • volume of right rectangular prisms. [C, CN, PS, R, V]	**General Outcome 4** Students will listen, speak, read, write, view and represent to enhance the clarity and artistry of communication ***4.1 Enhance and Improve*** · revise to add and organize details that support and clarify intended meaning **Enhance legibility** · apply word processing skills and use publishing programs to organize information **Enhance artistry** · experiment with words, phrases, sentences and multimedia effects to enhance meaning and emphasis
STATISTICS AND PROBABILITY (Data Analysis) **General Outcome**	***4.3 Present and Share*** **Present information** · organize ideas and information in presentations to

• Collect, display and analyze data to solve problems.	maintain a clear focus and engage the audience
Grade 5 Specific Outcomes: **2.** Construct and interpret double bar graphs to draw conclusions. [C, PS, R, T, V] [ICT: C6–2.2, P5–2.3]	**Enhance presentation** · use effective openings and closings that attract and sustain reader or audience interest **Use effective oral and visual communication** · adjust volume, tone of voice and gestures to engage the audience; arrange presentation space to focus audience attention
Grade 6 Specific Outcomes: 1. Create, label and interpret line graphs to draw conclusions. [C, CN, PS, R, V] 3. Graph collected data, and analyze the graph to solve problems. [C, CN, PS, R, T] [ICT: C6–2.5, C7–2.1, P2–2.1, P2–2.2]	**Demonstrate attentive listening and viewing** · show respect for the presenter's opinions by listening politely and providing thoughtful feedback

IV. Materials:

- empty cereal boxes (about 10 more than the number of students) Price needs to be written on the box
- calculators
- rulers
- Student handout: ***A Serial of Cereal Activities*** (following this lesson)
- e-mail addresses for breakfast cereal companies
- computer with internet access
- Microsoft Excel program
- Microsoft Word or other word processing program
- For more information on whole grains, visit the official web site of the Whole Grains Council: http://www.wholegrainscouncil.org/.
- copies of the article "Selling Wholesomeness in the Breakfast Bowl," found online at http://www.nytimes.com/learning/teachers/featured_articles/20050210thursday.html (one per student)
- For more information about the benefits of eating cereal and whole grains, consult the following links for useful information:
    - General Mills Web site: Cereal and Kids
    - Kelloggs Web site: information on physillium and its importance as a source of soluble fibre
    - Health Canada Whole Grains - Get the Facts

V. Background:

Students need to know:

- how to make graphs and spread sheets using Microsoft Excel or some other program
- how to send e-mail
- how to determine unit price by using division
- how to calculate surface area and volume of rectangular prisms

VI. Procedure:

1. A week or two before the lesson ask students to begin collecting and bringing in empty cereal boxes with the price written on them. Call local grocery stores for prices of boxes without prices. You will need at least one box for every student plus about 10 extra.

2. Go over project description with students. Inform them that all work done during the project needs to be kept to create a booklet when finished.

3. Discuss criteria with students. Each student will choose and use one box for each of the required individual activities and will use his or her box and others in their group for group activities.

4. Required parts of the booklet include: (see ***A Serial of Cereal Activities*** following the lesson)

VII. Extensions and Variations:

- Students can survey local grocery stores to determine which store sells specific breakfast cereal for the lowest price.
- Students can compare nutritional information of cereals.
- Students can use information in booklets to create problems for others to solve.

VIII. Assessment Ideas:

- Students share booklets.
- Students, with the teacher, develop and complete a rubric for self-evaluation and teacher evaluation.

Specific Criteria to be assessed:

1. mathematical accuracy
* *volume and area*
* *unit price*
* *price per serving*
2. graph
3. spreadsheet
4. business letter
5. description (mathematical terms)
6. new cereal: cover and ad

A Serial of Cereal Activities

1. Cereal box description

Each student will write a description of his or her cereal box. In the description, they should include as many mathematical terms as possible (for example rectangular prism, number of faces, edges, vertices etc.)

2. Nutrition graph

Using the cereal box they have chosen, each student is to create a graph using any of the nutritional information found on the box. Students need to decide what data to use and what kind of a graph to display the data. Students will use Microsoft Excel or other suitable software programs to make graphs.

3. Ordering

Students are divided into groups of 4 or 5. Each group uses about 10 cereal boxes. Group members must first estimate the volume of each cereal box and then compare and order the boxes from least to greatest by volume. All calculations must accompany the description of the order.

4. Table of unit prices

Students, using the same boxes they used in classification activity, make a table of unit prices for 10 different kinds of cereals. The table will include: name of cereal, total cost, weight (in grams), serving size, number of servings per box and unit price per serving and per ounce. Students may use calculators. Students will make a spread sheet using Microsoft Excel.

5. Best buy paragraph

Based on data in table of unit prices, students will write an expository paragraph explaining which of the ten cereals is the best buy and why.

6. Volume and surface area

Each student will determine the perimeter, volume, and surface area of his or her box of cereal. All work needs to be shown. Calculators may be used.

7. Letter to cereal manufacturer

Each student will write a letter to a cereal manufacturer with suggestions for improvement or with praise of his or her product. Students must carefully analyze the ingredients of the nutrients and compare their percent daily values with the recommendations in the Canada Food Guide. The correct form as well as formal tone and language will be emphasized when instructing students on writing the business letter. Students will use the computer to write and print a final copy of their letter. They will find the e-mail address of the cereal manufacturer and will e-mail the letter. A copy of the letter and any response will be included in the final booklet.

8. New cereal and cover design

Each student will create a new cereal. He or she will design the front of the new cereal box including the

name, details, and illustrations.

9. Radio or magazine ad for new cereal

Each student will write a radio ad or draw a magazine ad promoting his or her new cereal.

10. Booklet

Each student will organize and compile all completed work into a booklet. The cereal box will be the front and back covers. Booklets will be shared with classmates and put in students math portfolio.