



South Carolina Academic/Career Development Integration Activity (DRAFT)

Title **Packaging Possibilities (HM-1)**
Subject **Geometry**

Grade Level(s) 9-12

SC Content Standard Geometry - Standard I. Analyze characteristics and properties of two-and three-dimensional geometric shapes and develop mathematical arguments about geometric relationships.

Expectation B. Explore relationships (including congruence and similarity) among classes of two- and three-dimensional geometric objects, make and test conjectures about them, and solve problems involving them.

I.B.4. Determine the resulting change in the area and volume of a figure when one or more dimensions are changed.

National Career Development Guidelines Goal/Indicator

Career Management GOAL CM4. Master academic, occupational, and general employability skills in order to obtain, create, maintain, and/or advance your employment.

Indicator CM4.A3. Demonstrate attainment of general employability skills and personal qualities needed for success in school and employment (e.g., critical thinking; problem solving; resource, information, and technology management; interpersonal skills; honesty; and dependability).

Career Development Objectives

1. The student will determine the impact on volume when the dimensions of a box are changed.
2. The student will recognize that problem solving is an employability skill.
3. The student will successfully demonstrate the ability to solve a real world problem dealing with geometry.

Assessment

1. The student will determine the impact on volume when the dimensions of a box are changed.
2. The student will complete the *Packaging Possibilities* worksheet.
3. The student will recognize that problem solving is an employability skill that can be used in many occupations. (Class discussion, Teacher observation.)

* Adapted from *Career Development Tool Kit*, Linda Kobylarz & Associates, 2001. Used with permission

Preparation

- Prior Learning—Instruction in solving problems related to area and volume, familiarity with employability skills
- Handouts/Worksheets— *Packaging Possibilities* worksheet
- Resources/Materials—writing materials, Optional: O*Net (<http://online.onetcenter.org>), or SC Careers system, or other career information system
- Time Required—90 minutes

Procedures**Part One (60 minutes)**

- In this activity, students will practice solving problems dealing with area and volume. They will see how the thought processes and skills they use in solving math problems are employability skills they can use in almost any job.
- Review with students the process for finding the volume of a three-dimensional object.
- Give students a copy of the *Packaging Possibilities* handout. Review the directions with them. They are to imagine that they are working for a company that sells cereal. The marketing department wants to explore some new packaging that will catch the eye of consumers. The students are to design new packaging for the cereal. The packaging can be of any shape, but it must be of the same volume and the box must fit on a standard size shelf (12" high). They will create 2 new packaging designs.
- Give students time to complete the assignment.
- Optional: Extend the assignment and have students make posters showing the new packaging possibilities.

Part Two — Career Development Connections (30 minutes)

- Begin by reminding students that problem solving is a valuable employability skill.
- Brainstorm with students some of the occupations where problem solving, investigating, and finding solutions are important skills. Make a list on the board.
- What other employability skills helped them to complete the assignment? (For example: knowledge of math, reasoning, creative thinking, and decision-making.)
- Optional: Have students use the O*Net, SC Careers system, or other career information system to research an occupation of interest and see what employability skills are key. Which of those skills are students learning to use in the math class?

Crosswalks**SC Career Guidance Standard/Competency**

Learning to Work Standard 4. Students will demonstrate a positive attitude toward work and the ability to work together.

Competency 4.10. Acquire employability (SCANS) skills necessary to obtain and maintain jobs.

Key Employability Skills

Thinking Skills—Problem-solving, decision-making, critical thinking, reasoning

Packaging Possibilities

Name _____

Date _____

Directions: Imagine you are working for a company that sells cereal. The marketing department wants to explore some new packaging that will catch the eye of consumers. You are to design new packaging for the cereal. The packaging can be of any shape, but it must be of the same volume as the original packaging and the box must fit on a standard size shelf (12" high). Create 2 new packaging designs. Show each design, its dimensions, and volume below.

Part 1 Original Packaging

Original Packaging Dimensions: 7" x 10.5" x 2.25"

Compute volume of original packaging and show your work.

Volume of original packaging _____

Part 2 New Packaging Designs

Design A

Dimensions: _____

Volume: _____

Design A Sketch:

Design B

Dimensions: _____

Volume: _____

Design B Sketch: