Gold Seal Lesson:

Copernicus Education Gateway

Author(s): **Thomas Venezio**			***Lesson Title:*** **Volumes of Fun**			
Grade Span			***ICLE Application Model***			
K-4	***5-8*** **X**	***9-12***	***A***	***B***	***C***	***D*** X

Instructional Focus:

Geometry Students apply geometric concepts, properties, and relationships in a problem-solving situation. Students communicate the reasoning used in solving these problems.
Measurement Students use a variety of tools and techniques of measurement in a problem-solving situation. Students communicate the reasoning used in solving these problems.
Problem-Solving and Mathematical Reasoning Students apply a variety of problem-solving strategies to investigate and solve problems from across the curriculum as well as from practical applications.

Performance Task

This is an activity in which students will be asked to design and construct containers that have specific capacities.

Students should be told that they have been selected to design containers for a new juice drink. The containers can be any shape, but three sizes are needed: pint, quart, and gallon. The volumes of these three sizes are 28.875 cubic inches, 57.75 cubic inches and 231 cubic inches, respectively. The shapes of each of the three sizes can be the same or different. Extra points will be awarded if all three sizes are of different shapes. Students should also be told that the container could be up to 10% larger than specified.

Each student should design their containers and then build them out of card stock or construction paper.

ICLE Essential Skills

Understand the ***properties of circles*** (e.g., radius, arc, diameter, chord, secant, tangent, etc.). (M10)
Compute the ***perimeter and area of two-dimensional figures***. (M13)
Compute the ***volume of three-dimensional figures*** (solids). (M17)
Know how to ***measure circle quantities*** (e.g., area, angle formed by two secants, circumference, length of segments, etc.). (M30)

Scoring Guide

Score each of the following characteristics on a scale of 4 to 0, where 4 = surpasses expectations; 3 = high quality performance; 2 = satisfactory quality performance; 1 = minimum quality performance; 0 = does not meet expectations. Note – An evaluation sheet should be completed for each design.		
CHARACTERTISC	**CRITERIA**	**SCORE**
• **Computation**	• The design is within 10% of the specified volume. • Calculations are accurately performed.	_____
• **Layout & Construction**	• The design is accurately transcribed to the construction paper. • The container is neatly constructed.	_____
• **Design**	• The design is creative and meets all specified criteria.	_____

Keywords

English Language Arts	**Mathematics**	**Science**
Reading	**Algebra**	**Earth Science**
Writing	**Geometry** Area, volume, geometric shapes, Geometry in Daily Life, problem Solving, Puzzles, Three-Dimensional Objects	**Life Science**
Communications	**Statistics**	**Chemistry**
Literature	**Calculus**	**Physics**
Other	**Trigonometry**	**Other**
	Other	