



# Gold Seal Lesson

<b>Author(s):</b> Marsha Kucker			<b>Lesson Title:</b> How Much Does It Hold?			
<b>Grade Span</b>			<b>ICLE Application Model</b>			
K-4 x	5-8	9-12	A	B	C x	D

### Instructional Focus:

<b>Basic Concepts and Knowledge</b> – Students develop an understanding of scientific concepts using facts, theories, principles, and models.
<b>Science as Inquiry</b> – Students demonstrate knowledge and skills necessary to perform scientific inquiry.
<b>Communication</b> – Students communicate and apply scientific concepts.
<b>Measurement</b> – Students use a variety of tools and techniques of measurement in a problem-solving situation. Students communicate the reasoning used in solving these problems.
<b>Geometry</b> – Students apply geometric concepts, properties, and relationships in a problem-solving situation. Students communicate the reasoning used in solving these problems.
<b>Problem Solving and Mathematical Reasoning</b> – Students apply a variety of problem-solving strategies to investigate and solve problems from across the curriculum as well as from practical applications.
<b>Listening</b> – Students listen for a variety of purposes appropriate to the grade level.
<b>Speaking</b> – Students speak for a variety of purposes and audiences with sophistication and complexity appropriate to the grade level.

### Performance Task

<ol style="list-style-type: none"> <li>For this lesson, you will need different sizes of cups, glasses, bowls and jars. You will also need water and 4 or 5 measuring cups.</li> <li>Ask students to look at the various jars and glasses. Ask which one they feel will hold the most water. Ask them which one will hold the least water. Have them write down their guesses on a sheet of paper.</li> <li>Divide students into groups of 3. Give each group one of the containers and also a measuring cup. Have students fill the container with water and measure how much the container will hold.</li> <li>Have the groups draw a picture of the shape of their container and write down how much water it holds.</li> <li>In closing, have students share their drawings and measurements. Were their guesses correct? Ask for comments on the activity. Were students surprised at how little or how much water some containers held?</li> </ol> <p>This activity meets specific competencies and indicators as outlined in the National Career Development Guidelines.</p>
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### ICLE Essential Skills

Make observations using senses and instruments. Inferences and interpretations are arrived at based on observations. Classify observable properties and organize observations in a meaningful and logical way. (s 5)
Measure properties of the environment using dimensional quantities such as time, length, mass, pressure, volume, acceleration, etc. Compare, estimate and predict measurements. (s 23)
Know how to obtain accuracy and precision using common measuring devices. (s 33)
Know and apply the principles of scientific inquiry. (Implicit in this statement are the processes of prediction, estimation, developing hypotheses, drawing conclusions, evaluation, and following ethical principles and professional procedures. (s 114)
Plan and apply real or hypothetical models and constructions to facilitate investigation and learning and the solution to practical problems. (s 115)
Follow oral or written directions. (ela 4)
Use brainstorming, role playing, and standard problem solving strategies to define a problem and suggest solutions. (ela 19)
Participate, sometimes leading, in group meetings by contributing, taking turns speaking, and working toward a common goal. (ela 20)
Gather information such as data, facts, ideas, concepts, and generalizations from oral sources. (ela 51)

**Scoring Guide:**

See attachment: How Much Does it Hold Chart

**Keywords**

<b>English Language Arts</b>	<b>Mathematics</b>	<b>Science</b>
<b>Reading</b>	<b>Algebra</b> <b>Math in daily life</b> <b>Problem solving</b>	<b>Earth Science</b>
<b>Writing</b>	<b>Geometry</b> <b>Volume</b> <b>Problem solving</b>	<b>Life Science</b>
<b>Communications</b> <b>Discussion</b> <b>Listening</b> <b>Illustration</b> <b>Communication</b>	<b>Statistics</b>	<b>Chemistry</b> <b>Lab experiment</b> <b>Measurement</b> <b>Scientific process</b>
<b>Literature</b>	<b>Calculus</b>	<b>Physics</b>
<b>Other</b>	<b>Trigonometry</b>	<b>Other</b>
	<b>Other</b>	

## Chart

<b>3</b>	<b>BEYOND</b>	Analyzed and readily understood the task. Developed an efficient and workable strategy. Showed explicit evidence of carrying out the strategy. Synthesized and generalized the conclusion.
<b>2</b>	<b>AT LEVEL</b>	Understood the task. Developed a workable strategy. Inferred (some evidence) but not always clear. Connected and applied the answer.
<b>1</b>	<b>NOT YET AT</b>	Partially understood the task. Appropriate strategy some of the time. Possible evidence of a plan – not clear. Partial connection of answer.
<b>0</b>		Totally misunderstood. Inappropriate, unworkable strategy. No evidence of carrying out a plan. No connections of answer. Blank.