

## Lab Framework

### Die Hard 3 Water Problem

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Short Description: Problem Solving, CORD 1 and Measurement CORD 3

### LAB PLAN

TEACHER: Teacher Prep/ Lesson Plan

- Lab Objective: Problem Solving and Measurement
  - Students will use problem solving steps to measure exactly 4 cups of water using only a full, 8c container and empty 5c and 3c containers. No other measurements will be given.
  - Students will develop a way to check their answers.
- Statement of pre-requisite skills needed (i.e., vocabulary, measurement techniques, formulas, etc.):
  - Students will need to add and subtract measurements
  - Students need the 4 step process for problem solving
- New Vocabulary
  - Understand the problem
  - Develop a plan
  - Carry out the plan
  - Check the results
- Materials List
  - water
  - containers 8c, 5c, 3c
  - scales for checking answers
  - large trays such as aluminum turkey pans
- GLEs addressed
  - 2.1.1 Investigate Problems
  - 2.2.1 Apply Strategies to construct solutions

## 2.2.2 Apply Strategies

### 3.3.1 Verify results

- Set-up information
  - Each group receives a tray, one of each container, 8 cups of water
  - Watch video clip to set the stage
- Lab organization(-Grouping/leadership opportunities/cooperative learning expectations; -**Timeline required**)
  - Small groups or pairs (depending on supplies)
  - Before beginning the lab, students will write out the "Understand the problem" and "Develop a plan"
  - Once a solution has been reached, all group members must perform the task of getting 4 cups.
  - All group members responsible for identifying each of the 4 steps of problem solving.
  - Approximately 30 minutes
- Teacher Assessment of student learning(scoring guide,rubric)  
Observation  
How do students check their solution?  
4 step are written out
- Summary of learning( to be finished after student completes lab)
  - One of the big keys to the lab is how students check their solution. How can they be sure they have exactly 4 cups? (You wouldn't want the bomb to go off.)
  - There are many jobs that require problem solving skills.  
Carpenters "measure twice, cut once".
  - How did developing a plan make the lab easier?
- Career Applications
  - Carpenters
  - Farmers

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LAB TITLE: Die Hard Water problem

STUDENT INSTRUCTIONS:

- Measure exactly 4 cups of water using 8 cups of water and empty 5 cup and 3 cup containers.
- Grouping instructions - pairs
- Procedures - steps to follow/instructions  
Understand the problem:

Develop a Plan

Carry out the plan

Check the results

- Assessment instructions (peer-teacher)
  - complete a group member evaluation form
  - turn in problem solving process

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