

## SOLUTION PREPARATION AND CONFIRMATION

### PRE-LAB DISCUSSION

Students will make 100.0mL of 1.00M NaCl solution. They will then confirm the concentration of the solution by removing 2.00mL of 1.00M NaCl and drying it in an evaporating dish and determining the mass.

State Standards: Chemistry 6. Solutions are homogenous mixtures of two or more substances.  
d. Students know how to calculate the concentration of a solute in terms of grams per liter, molarity, parts per million, and percent composition.

### PURPOSE:

To create procedures using hints to make a solution of specific molarity and confirm the molarity by evaporation.

### MATERIALS:

100mL Volumetric Flask	Beaker, Stirring Rod	Watch Glass
NaCl	Evaporating dish	DI Water
Rubber bulb, 10mL pipette	Hot Plate/ Bunsen Burner	
	Balance	

Hints: (use these to make specific instructions)

1. Make sure glassware is clean and rinsed with DI water before using.
2. Zero the scale before each massing and mass to the nearest 0.01g.
3. Do not fill the volumetric flask until after the salt is completely dissolved.
4. Practice using the rubber bulb and pipette with DI water.
5. Mass the evaporating dish before adding the 2.00mL of solution.
6. Before removing the 2.00mL of solution, draw some into the pipette and pour into the sink.
7. Don't let the solution boil or you risk losing solute.

### PRE-LAB QUESTIONS:

1. What does the "M" stand for in 1.00M NaCl?
2. What are the units for M?
3. Determine how many grams NaCl you will need to measure to make 100.0 mL of 1.00M NaCl solution.
4. Identify the solute and solvent for the solution you will make.
5. If you remove and evaporate 5.00 mL of the 1.00M NaCl solution in an evaporating dish, how many grams of NaCl will remain in this dish after evaporation?
6. What does "TC" on a volumetric flask mean?
7. What does "TD" on the pipettes mean?
8. Why does it say 20° on the volumetric flasks and pipettes?

**RESULTS:**

Create data tables to record mass of empty watch glass, mass of watch glass + NaCl, mass of clean, dry evaporating dish and mass of evaporating dish + solute (after evaporation). You will perform the evaporation steps three times total to get an average. You should also record other observations.

**CALCULATIONS:**

1. What is the concentration of the original solution in grams/L?
2. What is the concentration of the original solution in parts per million?
3. What is the concentration of the original solution by percent composition?
4. What is the mass needed to make 500. mL solution of 0.20M NaCl?
5. How many moles of NaCl are in 2.00mL of 1.00M NaCl?
6. How many grams of NaCl are in 2.00mL of 1.00M NaCl?
7. Determine your percent yield of NaCl.
8. Determine your absolute error.
9. Determine your percent error.