**Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Solutions and Dilutions Inquiry Lab 2**

**Guiding Question:** How will adding water to a basic solution affect the Molarity of the basic solution?

**Pre-Lab:**

1. You will be creating solutions of aqueous sodium hydroxide. Identify the solute and solvent.
2. Define concentration and give three examples of concentration units.
3. Define what it means to dilute a solution.
4. A student says, “When water is added to a basic solution the Molarity of the solution decreases.” Write a claim to either support or disprove the student’s statement and defend your prediction.

**Prediction**: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Reasoning**: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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**Materials:** Volumetric flasks, graduated pipettes, beakers, balance, water, aqueous sodium hydroxide.

**Part 1:** Calculate the mass needed to create your solution in the box below. Describe how you created your NaOH(aq) solution with specific supplies (graduated pipettes and volumetric flasks) and measurements on the lines provided.

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Calculate the new molarity of your solution when you dilute it to 100.00mL, in the box below. Describe how you will dilute your original NaOH(aq) solution with specific supplies and measurements on the lines provided.

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**Questions:**

1. Construct a **claim** that supports or contradicts the prediction made in the pre-lab questions.
2. Provide **evidence** that supports your claim. Use your **reasoning** skills to explain why your evidence is relevant.
3. Use the dilution formula, M1V1=M2V2 to **verify** the molarity of the solution in Part two.
4. When Molarity and Volume are multiplied, what unit is left over? Why does the dilution formula make sense?
5. Calculate and describe how you would create a 50.0mL 2.50M NaOH using 20.0M concentrated solution and the equipment you have. Show all calculations.