



**FIGURE A** After adding phenolphthalein indicator, you can more easily determine which solution is acidic and which solution is basic.

You will record the numbers of the unknown solutions in the proper column as you identify them.

For Data Table 2, make three columns, with the headings “Concentration,” “HCl,” and “NaOH.” Record the concentration of each solution as you test it, and then record the concentrations of HCl and NaOH present in the solution.

2. In your lab notebook, write the steps that you will use to determine which solutions are acids and which solutions are bases. Figure A shows one test that you can use to make this determination.
3. Ask your teacher to approve your plan and to give you any additional supplies that you will need.

## PROCEDURE

1. Carry out your plan for determining which solutions are acids and which are bases. As you perform your tests, avoid letting the tips of the storage pipets come into contact with other chemicals. Squeeze drops out of the pipets onto the 24-well plate, and then use these drops for your tests. Record all observations in your lab notebook, and then record your results in your first data table.

2. In your lab notebook, write your procedure for determining the concentrations of the solutions. Ask your teacher to approve your plan, and request any additional supplies that you will need.
3. Carry out your procedure for determining the concentrations of the solutions. Record all observations in your lab notebook, and record your results in the second data table.

## CLEANUP AND DISPOSAL

4. Clean all equipment and your lab station. Return equipment to its proper place. Dispose of chemicals and solutions in the containers designated by your teacher. Do not pour any chemicals down the drain or in the trash unless your teacher directs you to do so. Wash your hands thoroughly before you leave the lab and after all work is finished.



## CONCLUSIONS

1. **Analyzing Conclusions:** List the numbers of the solutions and their concentrations.
2. **Analyzing Conclusions:** Describe the test results that led you to identify some solutions as acids and others as bases. Explain how you determined the concentrations of the unknown solutions.

## EXTENSIONS

1. **Evaluating Methods:** Compare your results with those of another lab group. Do you think that your teacher gave both groups the same set of solutions? (For example, is your solution 1 the same as the other group’s solution 1?) Explain your reasoning.
2. **Applying Conclusions:** Imagine that you are helping clean out the school’s chemical storeroom. You find a spill of a clear liquid coming from a large, unlabeled reagent bottle. What tests would you do to quickly determine if the substance is acidic or basic?