

Student Instructions for Testing Household Liquids with Red Cabbage Juice

1. Set up your tray with the test mat and the wax paper over it.
2. Choose a household liquid to begin your test. Record its name on **Record Sheet 15-A**.



3. Draw a seventh circle on your test mat to use as your compare circle. Put three drops of the household liquid in the compare circle.

4. Using the dry-erase marker, write the household liquid's name above the first test circle. Put six drops of the liquid in the circle.





5. Add six drops of the red cabbage juice to the liquid you are testing.
6. Observe the mixture for about 15 seconds and record what happens on **Record Sheet 15-A**.
7. With a paper towel, remove the liquid from the compare circle.
8. Repeat Steps 2 through 7 for the five other household liquids.

Reading Selection

The Case of the Disappearing Stomachache



Has this ever happened to you? You take a big bite out of a sour pickle. You like it so much that you eat three more. Chances are, you get an awful stomachache. So, you take some stomach medicine. Soon, your stomach stops burning and you feel better. What's going on? Here's a clue. It has to do with two groups of chemicals: acids and bases.

Acids are found in foods like lemons, clear sodas, apples, vinegar, and, of course, pickles. Most of these acids taste sour and have a strong smell.

Then, there are the kinds of acids you **don't** eat, because they are poisonous. Some of these are used in fertilizers, polishes, and car batteries. Many of these acids are so strong that they can burn your skin or clothes.

Bases are found in detergent, oven cleaner, cement, baking soda, bleach, and the pills you take to make your stomach feel better. Some bases have a bitter taste and some burn. They're often slippery like soap.

Acid or Base: How Can You Tell?

How can you tell whether a chemical is an acid or a base? In the 1600s, a scientist named Robert Boyle did some experiments using the juices from plants such as violets and roses. When he added acids to the plant juices, they turned colors—either pink, red, or bright purple. When he added bases to the juices, they turned green.





We call these juices (like the red cabbage juice you used in your tests) **acid-base indicators**. Why? Because the juices indicate (or tell), by a change in color, whether a chemical is an acid or a base.

What about the chemicals that don't turn these plant juices pink or green? We call these substances **neutrals**. Neutrals—like water—are not acids or bases. But when you mix the right amounts of an acid and a base, you get a neutral substance. That process is called **neutralization**.

Why Did Your Stomachache Disappear?

So why did your stomachache go away? The pickles you ate caused too much acid to build up in your stomach. And the stomach medicine is a base.

When you swallowed the medicine, it mixed with the acid in your stomach and neutralized it. And you felt much better. (Next time a bee stings you, have an adult put some baking soda on it. What do you think will happen?)

Now, go back to your chart of results from the red cabbage juice tests.

What are the acids?

What are the bases?

What are the neutrals?



Record Sheet 15-A

Name: _____

My Partner's Name: _____

Date: _____

Household Liquids Test Results Table

Name of Chemical	What Happened