

Name \_\_\_\_\_ Date \_\_\_\_\_ Period \_\_\_\_\_ Page \_\_\_\_\_

## Using Chemical Change to Identify an Unknown- Activity Sheet

### Objectives:

1. To be able to identify and control variables to develop a test to identify an unknown power.
2. To be able to explain that a substance \_\_\_\_\_  
\_\_\_\_\_ ways and that these characteristics can be used to \_\_\_\_\_  
\_\_\_\_\_.

### DEMONSTRATION

1. Your teacher poured iodine solution on top of two white powders. How do you know that these two similar-looking powders are really different?



2. Adding iodine solution to one powder caused a physical change, while adding the iodine solution to the other powder caused a chemical change. Which powder probably reacted chemically with the iodine solution?

How do you know?

## ACTIVITY

### Question to Investigate

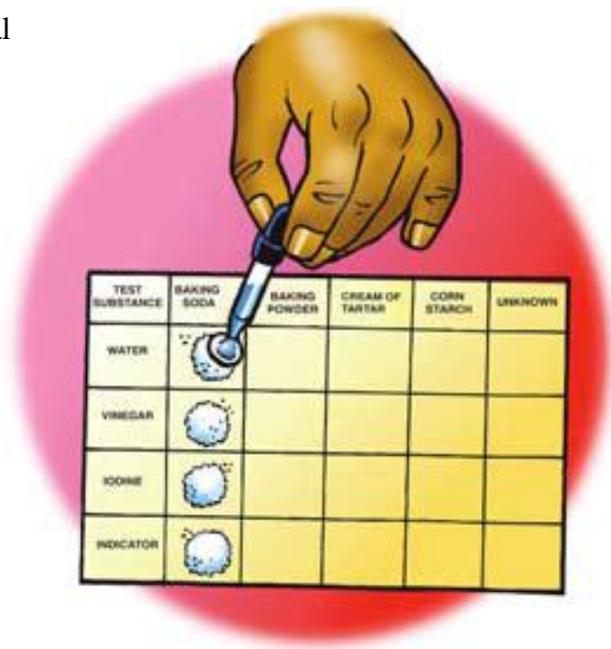
Can you use the characteristic way substances react to tell similar- looking substances apart?

### Materials for Each Group

- Baking soda in a cup
- Baking power in a cup
- Cream of tartar in a cup
- Cornstarch in cup
- Water in dropper bottle
- Vinegar in a dropper bottle
- Tincture of iodine solution in dropper bottle
- Universal indicator solution in dropper bottle
- 4 Popsicle sticks
- Well plate

### Procedure

1. Use the end of a Popsicle stick to place four equal piles of baking soda on the testing chart in the baking soda column. You will not use all of the powder at this time. The reminding powder will be used in the *Extend* portion of this lesson.
2. Add 3 drops of water to the first pile of baking soda. Record your observations in the chart on the activity sheet.
3. Continue testing each pile of baking soda with different test solutions and recording your observations.
4. Test each power with the test solutions that way you tested baking soda and record your observations.



Results Table

| Test solutions | Baking Soda | Baking Powder | Cream of tartar | Cornstarch | Unknown |
|----------------|-------------|---------------|-----------------|------------|---------|
| Water          |             |               |                 |            |         |
| Vinegar        |             |               |                 |            |         |
| Iodine         |             |               |                 |            |         |
| Indicator      |             |               |                 |            |         |

## TAKE IT FURTHER

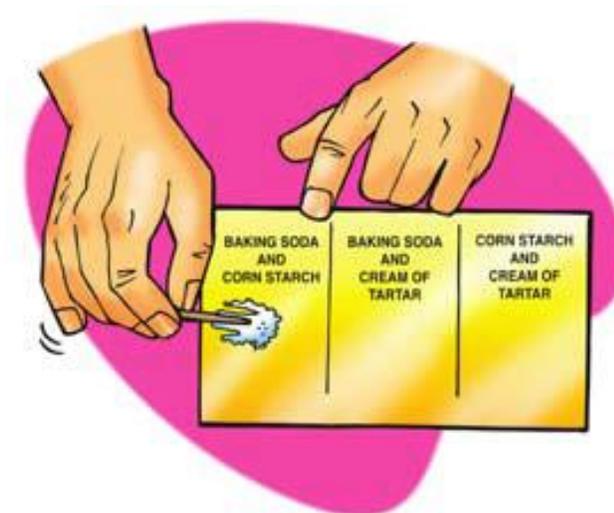
Baking powder is a combination of different powders – baking soda, cream of tartar, and cornstarch. Two of these three powders react with one another and produce carbon dioxide gas when water is added.

### Question to Investigate

Which two substances in baking powder react with one another and produce a gas when water is added?

### Materials for Each Group

- Baking soda in a cup
- Cornstarch in a cup
- Cream of tartar in a cup
- 3 Popsicle sticks
- Toothpicks
- Wax paper
- Water
- Dropper



### Procedure

1. Use separate popsicle sticks to place a small amount of two powders on a piece of wax paper.
2. Use a toothpick to mix the powders.
3. Use a dropper to add about 3 drops of water to the combined powders and record your observations.
4. Repeat steps 1 and 2 until you have tested all three combinations.

| Baking soda + cornstarch | Baking soda + cream of tartar | Cornstarch + cream of tartar |
|--------------------------|-------------------------------|------------------------------|
|                          |                               |                              |