

Chemistry Mystery Lab Instruction

The Scenario:

Today you are at the scene of a chemistry crime! Your lab has been broken into, and 6 prominent local chemists have been identified as suspects. Each have traces of a different substance on their clothing.

Some unidentified powder has been found in your lab – and you need to match it to one of the suspects so the police know who to focus on.

Here are the suspects, and the substance found on their clothing:

Dr. Sweets	Sugar
Dr. Baker	Baking Soda
Dr. White	Baking Powder
Dr. Jackson	Cornstarch
Dr. Morgan	Cream of tartar
Dr. Mastiff	Borax or powdered laundry detergent

The Analysis:

To prepare your analysis, you'll first need to gather your materials. You'll need samples of each of the above substances, plus a few liquids for testing:

- Iodine solution
- White vinegar
- Tap water
- Red cabbage juice

To make red cabbage juice: tear 2 red cabbage leaves into small pieces, and place in a zip loc bag with 1 cup of warm water. Remove as much air from the bag as possible before sealing. Squeeze the leaves through the bag until the water turns blue (medium to dark blue). Pour the liquid from the bag into a cup.

To make an iodine solution: Add 1 teaspoon tincture of iodine to $\frac{1}{4}$ cup water.

Once you have your materials together, set up your lab station. You'll need to complete the table below, so you know how the substances you are evaluating react to each of the testing liquids.

Put 1 teaspoon of the first liquid into a small cup or container, and add $\frac{1}{4}$ teaspoon of the first powder. If nothing happens, stir gently and evaluate again. Write down the reaction you see, or "no change". Rinse and dry your container, and repeat with the next combination.

Once your reference table is completed, the detective will give you a sample of the powder found at the scene. Test it with your liquids – and let the detective know who to arrest!

Chemistry Mystery Lab Sheet

	Iodine	Vinegar	Water	Red Cabbage
Sugar				
Baking Soda				
Baking Powder				
Cornstarch				
Cream of tartar				
Borax or laundry detergent				