

The Romantic Bureau of Investigation

Case #2-14: Case of the Valentine Cookie Mystery



Cupid needs your help! Every year, during the few weeks before Valentine's Day, Cupid starts making batches of his special heart shaped cookies for boys and girls to give to their sweethearts on Valentine's Day.

A naughty little Leprechaun snuck into Cupid's kitchen and messed up all the special baking powders! The Leprechaun left a note with three mystery bags of white powder. The Romantic Bureau of Investigations has provided samples of six white powders found at Cupid's house and the three mixtures left by the Leprechaun.

**I'm a Naughty Little Leprechaun
That's very clear
With your cookies gone
Mine will surely win this year!**



Without your help, Cupid will not be able to make his special heart shaped cookies and all the boys and girls will be heartbroken! Help Cupid save Valentine's Day!

Part 1: Follow the directions to test each sample (# 1-6) with water, vinegar, iodine, and heat. Record your observations in the top part of the chart on the back of this page.

Part 2: Follow the same procedure to test the three Mystery Mixtures (A, B, and C). Record your observations in the bottom portions of the chart. Use your results from Part 1 to determine which mixture is the special heart shaped cookie mix!

Cupid's Heart Shaped Cookies

Mix 15 cups of flour, 6 teaspoons of baking powder, 5 cups of powdered sugar, 3 pounds of butter, and 10 eggs in a large red heart shaped bowl. Add lots of tender loving care and one drop of love potion #9, then bake until golden brown.

Part 1: Testing Mystery Baking Powders

Sample	Description	Water Test	Vinegar Test	Iodine Test	Heat Test
1					
2					
3					
4					
5					
6					

Part 2: Testing Mystery Mixtures

Sample	Description	Water Test	Vinegar Test	Iodine Test	Heat Test
A					
B					
C					

Conclusion:

Which mystery mixture is the special Valentine's Day Cookie mix? _____
Why did you choose this mixture?

Powder Testing Procedure

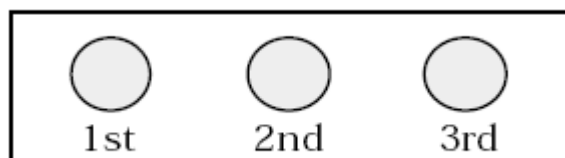
Case #2-14: Case of the Valentine Cookie Mystery



**IMPORTANT: Each person should test only one powder at a time!
DO NOT ALLOW SAMPLES TO MIX TOGETHER!**

FOR EACH SAMPLE:

Step 1: Place 3 small samples of your powder (about half the size of a dime) on a piece of wax paper. Place the wax paper on a paper towel to prevent messes!



Step 2: Describe your powder sample and write your observations in the chart on the back of your worksheet.

Step 3: Add 4 to 5 drops of **WATER** to the 1st pile and mix using a clean toothpick. Record your observations in the chart.

Step 4: Add 4 to 5 drops of **VINEGAR** to the 2nd pile and mix using a clean toothpick. Record your observations in the chart. (HINT: Fizz or no reaction)

Step 5: Add 4 to 5 drops of **IODINE** to the 3rd pile and mix using a clean toothpick. Record your observations in the chart. (HINT: Black, brown, or no reaction)

CAUTION: Iodine will stain clothing, hands, and anything it touches!

Step 6: For the **HEAT** test, place a small amount of powder on a clean square of aluminum foil. Bend the edges up to create a “cup” and hold onto it using a pair of tongs or tweezers. Hold the sample over the candle flame for a few seconds. Record your observations in the chart.

CAUTION: Use care when working with heat! Long hair must be tied back. Sleeves must be rolled up. Keep papers (and anything flammable) away from the flame. Goggles must be worn, since the powder may melt and splatter!

CLEAN UP YOUR AREA BEFORE YOU LEAVE!