

North Pole Bureau Of Investigations
Case #1225: Case of the Christmas Cookie Mystery

Mrs. Claus needs your help! Each Christmas, Mrs. Claus makes a batch of her special sugar cookies to give Santa all the energy he needs to deliver presents to all the good little boys and girls around the world. A bad little elf has snuck into the kitchen and messed up all the special baking powders.

He has left a note with three mystery bags of white powder. The North Pole Bureau of Investigations has provided samples of six white powders found at Santa's house and the three mixtures left by the elf.

Without your help, Mrs. Claus will not be able to make her cookies and there will be no Christmas! Help Mrs. Claus save Christmas!



I'm a bad little elf,
That's plain to see;
There will be no cookies
for Santa this year,
Which means more
presents for me!

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 sugar cookie mix!

Mrs. Claus' Special Sugar 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 bowl. Add lots of tender loving care
and a bit of magic dust, then bake until golden brown.

Part A

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

Part B

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

Which mystery mixture is the special Christmas Cookie mix? _____

Why did you choose this mixture?

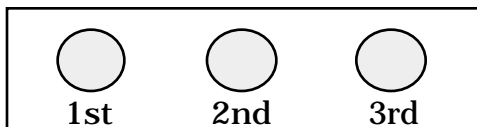
Powder Testing Procedure

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**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!