

Science fair



LOG BOOK

OUR BIG QUESTION

Our science fair project is about the effect of baking powder on cupcakes.

Our experiment

In our experiment we made 3 batches of cupcakes. In the first batch we put the normal amount of baking powder. In the second one we put double the amount of baking powder and then finally in the third we put none.

OBSERVATIONS

After our experiment we observed that the normal ones were just like normal cupcakes and raised the normal amount. The double the baking powder ones raised a lot so that they looked like volcanoes as well they browned more and the no baking powder ones did not rise as expected.

WHAT IS BAKING POWDER?

Baking powder is a mix of baking soda and other ingredients. Some specific ingredients include cornstarch, monocalcium phosphate, sodium bicarbonate

Research.

WHAT DOES BAKING POWDER DO IN YOUR BAKING?

What we found out from our research is the tiny patches of baking powder expand with heat and make tiny bubbles of carbon dioxide gas. These bubbles get

trapped in the cupcake while it bakes causing the cupcake to be light and fluffy. Therefore when we put double the baking powder in it makes sense that it caused the baking powder to form more bubbles making it more light and fluffy. This also means that when we didn't put any in there was no bubbles to make the cupcakes rise. If you cut open a cupcake cake bread etc. you would find pockets of air and these are the bubbles of carbon dioxide that the baking powder makes.

WHEN WAS BAKING POWDER INVENTED AND WHY?

Did you know baking powder is 175 years old? Baking powder was invented in the 1850s by a Harvard chemist named Eben Norton Horsford. Baking powder is used to help rise things like cakes, cupcakes and bread.

FUN FACTS

People used natural yeast in bread and cupcakes but also they put baking soda mixed with different acids. They didn't have baking powder back then because it was not invented. Baking Soda was invented in 1850s. Back then when you used recipes with yeast in it you would have to wait hours and hours for the dough

to rise. Then once baking Soda was created they had a faster and more efficient way of baking.

HYPOTHESIS

Fluffy cupcakes with sprinkles are an amazing way to start your day. Making cupcakes are also a fun way to learn chemistry. In this science project you will learn what amounts of baking powder gives cupcakes a nice fluffy texture. We think that the cupcakes we put double the amount of baking powder in will rise the most due to the baking powder, once we put the normal amount of baking powder will rise normally. and the once we did not put any baking powder will not rise at all. We think this because in all respites for cupcakes cake bread etc. they either have baking Soda or baking powder. this is because that is what makes it rise. So if you didn't have any baking powder in it it would not rise or if you had double it would rise more. We do not know how the baking powder makes it rise but that is what we are planning to find out in this project.

WHAT WE DID

Nov.29 Saturday

Today we finished some of our cysf questions on the website.

Today we started our experiment in Brooke's kitchen. We baked a batch of cupcakes and split

into three. In one we added a half a teaspoon because it calls for one and a half teaspoons and we divided it by three. This means in the double batch we added one teaspoon.

Jan. 9

At school we worked on the cysf questions and finished most of them.

Jan 12

Today we went to Heidi's house and finished more of the cysf questions and completed it.

Jan 17

Today we went to Heidi's house and did the experiment again. We followed the same recipe and used the same methods as the first experiment to split the batch of cupcake into three. In one we added a half a teaspoon because it calls for one and a half teaspoons and we divided it by three. This means in the double batch we added one teaspoon.

This time we measured weight and height of the cupcakes when they were done baking. Each batch had 8 cupcakes and we measured each cupcake individually and then did an average.

We also did a taste test to see if people could tell the difference between the batches. We took a small piece of each of the 3 cupcakes, we had 6 taste testers. We asked the taste testers 2 questions:

- 1) Which cupcake was the fluffiest?
- 2) Which cupcake was their favorite?

Out of the 6 taste testers, they all said the cupcake with double the baking powder was the fluffiest. 5 out of 6 said the double baking powder was their favorite, 1 said the normal baking powder was their favorite.

February 22, 2026

Today we worked on the display board and on our log book.