

STEM from Home

Kitchen Chemistry

Chemistry is the fascinating science of change. It is at the heart of how everything works. How does water freeze? Why do we hear a sizzling sound when a soda bottle is opened? What causes an apple slice to turn brown? Chemistry has an answer to all these questions because it is all about how substances interact with each other and how they change.

In this set of activities, you will experiment with materials from your own kitchen to discover and learn the magic of chemistry. You'll explore chemical reactions, and make yummy treats! Each project will illustrate an important chemical concept.

This week your tasks include designing a webpage using parallax scroll; exploring a number of kitchen chemistry experiments and designing a boat or lamp powered by chemical reactions using kitchen ingredients.

Main Activity: Sweet Scroll

Fun Fact: Did you know that baking actually involves a chemical reaction? When you add heat to something and it changes, it is called an endothermic reaction. Cake batter goes through an endothermic reaction in an oven and the result is a cake. So, baking is chemistry!

[Read this interesting cake baking kitchen chemistry experiment to know more.](#)

Introduction

In this activity, you will learn to use a cool website scrolling technique called 'parallax scroll' to create a web page for a cake recipe.

What You Will Need

Hardware

A computer connected to the internet.

What you will learn

1. How to use CSS classes
2. How to use the background-image and background-attachment: fixed CSS properties
3. How to use the CSS @media rule for responsive web design

[Let's start!](#)



Bonus Activities

Activity 1: Chemistry Magic

Introduction

Let's use kitchen ingredients to create some magic. We will use the carbon dioxide released by a reaction of baking soda and lemon juice to inflate a balloon.

What You Will Need

- Balloons
- About 40 ml of water (a cup is about 250 ml so calculate the amount needed accordingly)
- Empty soft drink bottle
- Drinking straw
- Juice from a lemon
- 1 teaspoon of baking soda

Procedure:

1. Before you begin, make sure that you stretch out the balloon to make it as easy as possible to inflate.
2. Pour the water into the soft drink bottle.
3. Add the baking soda and stir it around with the straw until it has dissolved.
4. Pour the lemon juice in and quickly put the stretched balloon over the mouth of the bottle.

What you will learn

The Science Behind the Activity:

If all goes well, then your balloon should inflate! Adding the lemon juice to the baking soda creates a chemical reaction. The baking soda is a base, while the lemon juice is an acid. When the two combine they create carbon dioxide gas (CO_2). The gas escapes from the soft drink bottle, into the balloon, pushing it outwards and blowing it up. If you don't have any lemons, you can substitute the lemon juice with vinegar.

Remember to conduct all experiments under adult supervision.

Let's explore a few more kitchen chemistry experiments given in the [activity sheet](#)



Challenge Activity: Power Up!

Your challenge is to design a boat that is powered solely by kitchen chemistry (using ingredients available in the kitchen) and can travel a minimum of 6 feet across a tub or a container of water.

Alternately you can design a lamp which can be powered using chemical reactions involving fruits or vegetables.

For constructing the lamp or boat you need to think of recyclable material available in your home. It is important to present the scientific reasoning behind your design. What chemical reactions cause the boat to move forward or the lamp to glow?

Click videos or pictures of your design and create a presentation website using the parallax scroll learnt in the technical section of this activity. Remember to give the scientific reasoning behind the activity as well. Your final submission can also be presented digitally using [Docs](#) or [Presentation](#) software

Safety Precautions: Always conduct experiments under the supervision of an adult. Wear safety gear and an apron to protect yourself.

