

A hand is shown holding a lit sparkler against a dark background. The sparkler is emitting a shower of bright, colorful sparks that fan out upwards. The sparks are in various colors, including white, yellow, orange, and red. The hand is positioned at the bottom right of the frame, and the sparkler is held vertically. The overall scene is festive and celebratory.

*Naked egg  
&  
Vanishing  
Color !*

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FREE EBOOK

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# Vanishing Color



## Requirement:

- food color
- water
- household bleach
- dropper
- glass or jar

## Method:

1. Fill a glass about halfway full with water
2. Add a few drops of food color
3. Add few drops of bleach until the color starts to disappear. Continue until the color is gone.
4. Add a few drops of another color. What happens? The color doesn't spread out the same way as it did when coloring was added to pure water. It forms swirls, which may disappear if there is enough bleach in the water.



# Vanishing Color



## How stuff work:

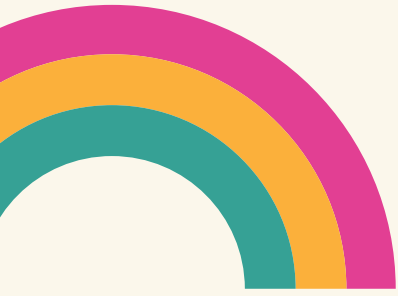
Bleach contains sodium hypochlorite, which is an oxidizer. It oxidizes or reacts with the chromophore or color molecules in food color. The resulting molecules, after being oxidized, will no longer be able to absorb visible light, resulting in faded colors. Bleach can also fade colors through reducing. Reducing bleach converts double bonds into single bonds. The reducing process results in a molecule that is unable to absorb visible light.

## Experiment source:

1. <https://www.stevespanglerscience.com/lab/experiments/the-power-of-bleach/>
2. <https://www.thoughtco.com/disappearing-colors-experiment-606175>



# Rainbow at Home



Pull out sugar, water, and food color and get started

## Requirement:

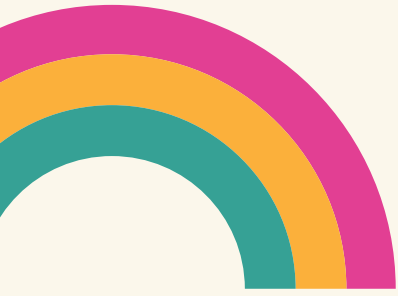
- sugar
- water
- food color
- 5 glasses

## Method:

1. Line up five glasses.
2. Add 1 tablespoon (15 g) of sugar to the first glass
3. 2 tablespoons (30 g) of sugar to the second glass
4. 3 tablespoons of sugar (45 g) to the third glass and
5. 4 tablespoons of sugar (60 g) to the fourth glass
6. Add 3 tablespoons (45 ml) of water to first 4 glasses. Stir each solution. If the sugar does not dissolve in any of the four glasses, then add one more tablespoon (15 ml) of water to each of the four glasses



# Rainbow at Home



7. Add 2-3 drops of red food coloring to the first glass, yellow food coloring to the second glass, green food coloring to the third glass, and blue food coloring to the fourth glass. Stir each solution
8. Fill the fifth glass with blue sugar solution
9. Layer some green sugar solution above the blue liquid. Do this by putting a spoon in the glass, just above the blue layer, and pouring the green solution slowly over the back of the spoon. This way, you won't disturb the blue solution. Add green solution until the glass is about half full.
10. Now layer the yellow solution above the green liquid, using the back of the spoon. Fill the glass to three-quarters full
11. Finally, layer the red solution above the yellow liquid. Fill the glass the rest of the way

## How stuff work:

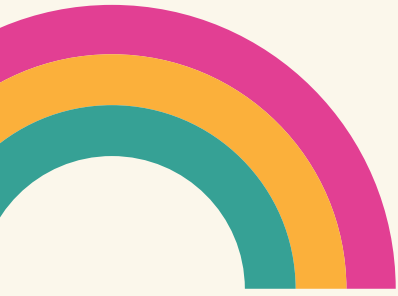
**Density is defined as mass divided by volume.**

Mass = how many atoms are in an object

Volume = how much space an object takes up



# Rainbow at Home



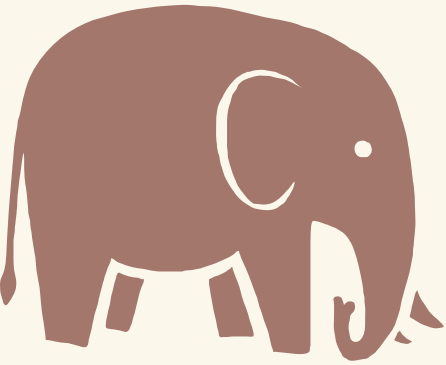
As you add sugar to the water, more and more sugar molecules will take over the space, making the water more dense. The cup containing the 4 tablespoons of sugar will be the most dense, the cup with one tablespoon will be least dense. The most dense is poured first, followed by the next densest one. Care should be taken to add solutions slowly to prevent mix up.

## Experiment source:

1. <https://www.thoughtco.com/rainbow-in-a-glass-density-demonstration-604258>
2. <https://www.stevespanglerscience.com/lab/experiments/colorful-sugar-density-tower/>
3. <http://littlebinsforlittlehands.com/sugar-water-density-rainbow-science-experiment/>



# Elephant toothpaste



Elephant toothpaste...you read it right...let's make it

## Requirement:

- A two-liter soda bottle
- Hydrogen peroxide solution (at least 6% or greater)
- Dishwashing soap (liquid)
- Warm water
- One yeast packet
- Food coloring
- A cooking pan

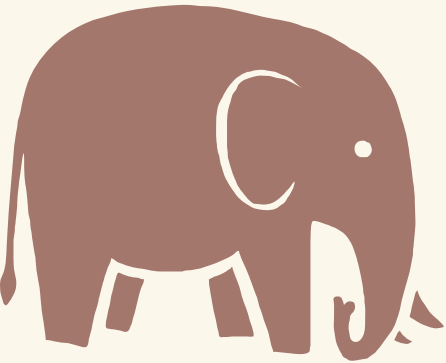
## Method:

1. Place the soda bottle upright in the middle of the big pan (pan will hold the overflowing stuff)
2. Fill the bottle with half cup of hydrogen peroxide, a few drops of food color and a few drops of dishwashing soap
3. Mix some yeast into lukewarm water





# Elephant toothpaste



4. Add yeast mixture into the soda bottle mixture and watch the elephant toothpaste come to

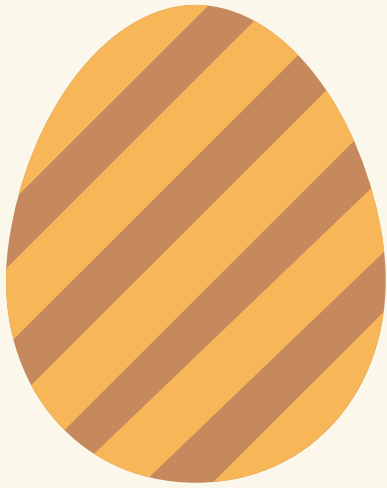
## How stuff work:

Elephant's toothpaste is a foamy substance caused by the rapid decomposition of hydrogen peroxide. This sometimes is also known as the "Marshmallow Experiment". Hydrogen peroxide breaks down into oxygen and water in presence of enzyme catalase from yeast. As a small amount of hydrogen peroxide generates a large volume of oxygen, the oxygen quickly pushes out of the container. The soapy water traps the oxygen, creating bubbles, and turns this into foam.

## Experiment source:

1. [https://en.wikipedia.org/wiki/Elephant%27s\\_toothpaste](https://en.wikipedia.org/wiki/Elephant%27s_toothpaste)
2. <http://preschoolpowolpackets.blogspot.in/2012/01/science-experiment-elephant-toothpaste.html>





# Naked Egg

what would happen if you allowed an uncooked egg to sit in a glass filled with vinegar for about a day...

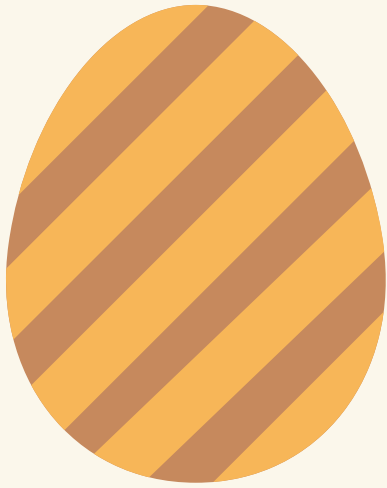
## Requirement:

- Vinegar
- Big glass jar
- Raw egg

## Method:

1. Fill the three fourth of jar with vinegar
2. Carefully place the egg in it. The egg must be completely covered
3. Let it stand for 2-3 days
4. If needed remove old vinegar and add new vinegar solution
5. Slowly take out the egg with a spoon after removing vinegar





# Naked Egg

6. wow...you are holding an egg without shell

## How stuff work:

The shell of an egg (chicken egg) is made up of primarily calcium carbonate. When you soak this egg shell in vinegar (which is about 4% acetic acid), a chemical reaction sets in and dissolves the calcium carbonate shell. The acetic acid reacts with the calcium carbonate in the egg shell and releases carbon dioxide gas. The only part that remains is the thin membrane called a semipermeable membrane around the egg.

## Experiment source:

1. <http://imaginationstationtoledo.org/educator/activities/how-to-make-a-naked-egg>
2. <https://www.stevespanglerscience.com/lab/experiments/naked-egg-experiment/>





# Inflate a balloon

This time using baking soda and vinegar....

## Requirement:

- Balloon
- Clear glass bottle
- Small funnel
- Baking soda (2 tablespoons )
- Vinegar

## Method:

1. Using the funnel, add the baking soda to balloon carefully
2. Pour the vinegar into the bottle
3. Fit the balloon over the bottle opening, without dropping baking soda
4. Once the balloon is fitted to the nozzle, hold up the balloon and allow the baking soda to fall into the vinegar
5. Observe the chemical reaction and effect on the balloon





# Inflate a balloon

## How stuff work:

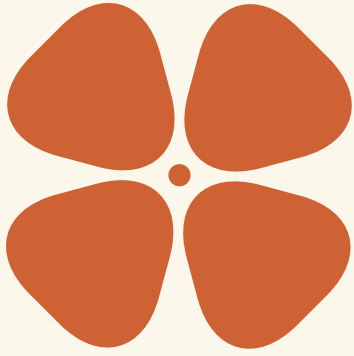
When baking soda and vinegar combine it forms carbon dioxide, water and sodium acetate. Carbon dioxide which gets trapped fills up the balloon because it has nowhere else to go.

## Experiment source:

1. <https://www.education.com/science-fair/article/balloon-gas-chemical-reaction/>
2. <http://littlebinsforlittlehands.com/balloon-baking-soda-vinegar-experiment-kids/>



# Color changing flowers



A little bit of color is all that you need to make different colored flowers.....

## Requirement:

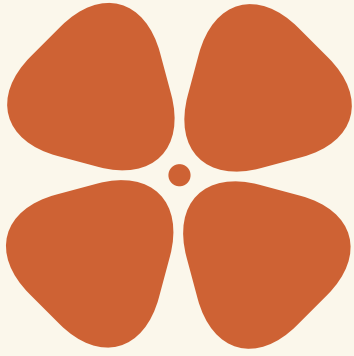
- White flowers (chrysanthemums, roses or carnation)
- Small containers or jars
- Water
- Food color

## Method:

1. Add 100ml of clean water to jars and then add 10 drops of food color (Red, yellow, green, blue )
2. Cut the stem of the flowers little short before placing them in jar
3. Let it stand for couple of hours
4. You would be able to see colorful flowers



# Color changing flowers



## How stuff work:

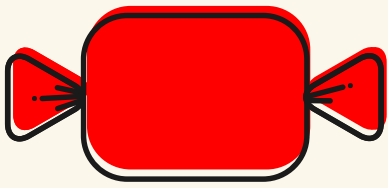
When a flower is cut off the plant, it no longer has its roots but the stem of the flower still “drinks” up the water and provides it to the leaves and flowers. Water is transported up the xylem to the various parts of the plant, including the flower. Coloring the water with food color does not harm the plant, but it allows you to see the movement of water into the flower.

## Experiment source:

1. <http://laughingkidslearn.com/science-experiment-with-colour-changing-flowers/>
2. <https://www.stevespanglersscience.com/lab/experiments/colorful-carnations/>
3. <https://gosciencegirls.com/colour-changing-flowers-science-experiment-kids/>



# Make your own Rock



## Candy

with sugar.....

### Requirement:

- 1 cup water
- 3 cups table sugar (sucrose)
- clean glass jar
- food color
- flavoring (optional —cherry, peppermint, and cinnamon)
- pencil or butter knife
- string
- pan or bowl for boiling water and making the solution
- spoon or stirring rod

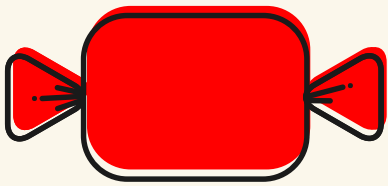
### Method:

1. Boil the water. Stir in the sugar, a teaspoonful at a time
2. Add in food color
3. Keep adding sugar until it starts to accumulate at the bottom of the container and won't dissolve even with more stirring. This means your sugar solution is saturated.
4. Tie the string to your pencil or butter knife. The string should be able to hang into your jar without touching the bottom or sides.





# Make your own Rock



## Candy

5. Carefully pour the solution from the pan into your clean glass jar
6. Set the jar somewhere where it can remain undisturbed
7. Check on your crystals after a day. You should be able to see the beginnings of crystal growth on the string or seed crystal
8. Let the crystals grow until they have reached the desired size or have stopped growing. At this point, you can pull out the string and allow the crystal to dry. You can eat them or keep them

### How stuff work:

Sugar (sucrose) crystals are one of the few types of crystals you can grow and eat. As time passes, the water will evaporate slowly from the solution. As the water evaporates, the solution becomes more saturated and sugar molecules will continue to come out of the solution and collect on the seed crystals on the string. The rock candy crystals grow molecule by molecule.

### Experiment source:

1. <https://www.thoughtco.com/sugar-crystal-growing-problems-607655>
2. <http://www.kidzworld.com/article/26598-make-your-own-crystals>
3. <https://www.exploratorium.edu/cooking/candy/rock-pop.html>

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# Make a Bouncing Polymer Ball



## Requirement:

- Borax (found in the laundry section of the store)
- Cornstarch (found in the baking section of the store)
- PVA glue (e.g., Elmer's glue - makes an opaque ball) or blue or clear school glue (makes a translucent ball)
- Warm water
- Food coloring (optional)
- Measuring spoons
- Spoon or craft stick to stir the mixture
- 2 small plastic cups or other containers for mixing
- Marking pen
- Watch with a second hand
- Metric ruler
- Zip-lock plastic baggie

## Method:

1. Label one cup 'Borax Solution' and the other cup 'Ball Mixture'
2. Pour 2 tablespoons warm water and 1/2 teaspoon borax powder into the cup labeled 'Borax Solution'. Stir the mixture to dissolve the borax. Add food coloring, if desired



# Make a Bouncing Polymer

## Ball



3. Pour 1 tablespoon of glue into the cup labeled 'Ball Mixture'. Add 1/2 teaspoon of the borax solution you just made and 1 tablespoon of cornstarch. Do not stir. Allow the ingredients to interact on their own for 10-15 seconds and then stir them together to fully mix. Once the mixture becomes impossible to stir, take it out of the cup and start molding the ball with your hands.

4. The ball will start out sticky and messy but will solidify as you knead it

5. Once the ball is less sticky, go ahead and bounce it

6. You can store your plastic ball in a sealed Ziploc bag when you are finished playing with it

### How stuff work:

The PVA in PVA Glue stands for Poly-Vinyl Alcohol. It's a special sort of chemical called a polymer. The "Poly" part of PVA means many, because PVA is made of lots and lots of units added together into big long chains. Usually they chains slip and slide past each other, and we get a flowing liquid.



# Make a Bouncing Polymer Ball

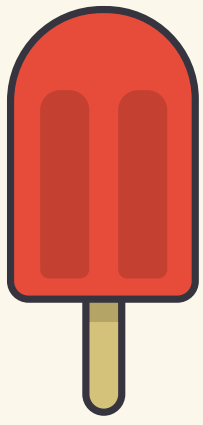


Borax is a chemical that we usually use for cleaning, but it has another interesting property. When it's mixed with Poly-Vinyl Alcohol, it grabs those long chains of polymer, and links them together (leaving water behind as a by-product). Now, the properties of the PVA change: instead of slip sliding past each other, the PVA-borax mixture stretches and clumps together into a kind of slime. By adding cornflour to the PVA and Borax mixture you now have a material which becomes harder when you give it more pressure.

## Experiment source:

1. <https://www.thoughtco.com/how-to-make-bouncing-polymer-ball-606316>
2. <http://www.fizzicseducation.com.au/Free+experiments/Kitchen+chemistry/bouncy+polymer+ball.html>





# Melting Ice experiment

with salt and color.....

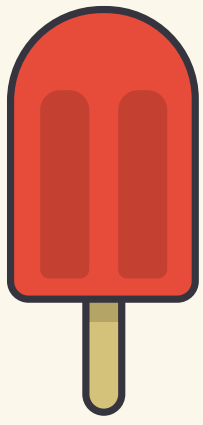
## Requirement:

- Bowls or dishes (for making the ice in different shapes)
- A large tray with sides
- Salt
- Liquid watercolors or food coloring
- Droppers or a spoon

## Method:

1. Fill bowls of different shape with water and freeze them overnight
2. Loosen the ice from the bowls with a little warm water and set them in a big plastic tray
3. Sprinkle over the ice modest amount of salt
4. Ice will start melting
5. Add liquid water color over ice with the help of spoon or dropper





# Melting Ice experiment

## How stuff work:

Liquid watercolor highlight the ravines, crevasses, and tunnels that are forming in the ice as the salt melts it. You could take it out in sun and see it against sunlight to see the beautiful image

## Experiment source:

1. <http://artfulparent.com/2012/07/melting-ice-science-experiment-with-salt-liquid-watercolors.html>





# Coke and Mentos blast

Let's finish this list with a blast.....

One of the most popular experiments of modern times is the Diet Coke and Mentos Geyser. Outside on some grass or ground is perfect, please don't try this one in your family room.

## **Requirement:**

- Large bottle of Diet Coke
- About half a pack of Mentos

## **Method:**

1. Stand the Diet Coke upright and unscrew the lid
2. Put some sort of funnel or tube on top of it so you can drop the Mentos in at the same time
3. Drop the Mentos into the Diet Coke and run like mad!

If you've done it properly a huge geyser of Diet Coke should come flying out of the bottle, it's a very impressive sight. The record is about 9 metres (29 feet) high!

## **How stuff work:**

Combination of carbon dioxide in the Diet Coke and the little dimples found on Mentos candies does the magic. Mentos has thousands of small pores on its surface disrupting the polar





# Coke and Mentos blast

attractions between the water molecules, creating thousands of ideal nucleation sites for the gas molecules in the drink to congregate. The buoyancy of the bubbles and their growth in size will quickly cause the bubbles to leave the nucleation site and rise to the surface of the soda. Bubbles will continue to form on the porous surface and the process will repeat, creating a nice foamy result.

## Experiment source:

1. <http://www.todayifoundout.com/index.php/2012/11/why-do-mentos-and-diet-coke-react/>
2. <http://www.sciencekids.co.nz/experiments/dietcokementos.html>





So get Started .....

SO  
MUCH  
FUN

