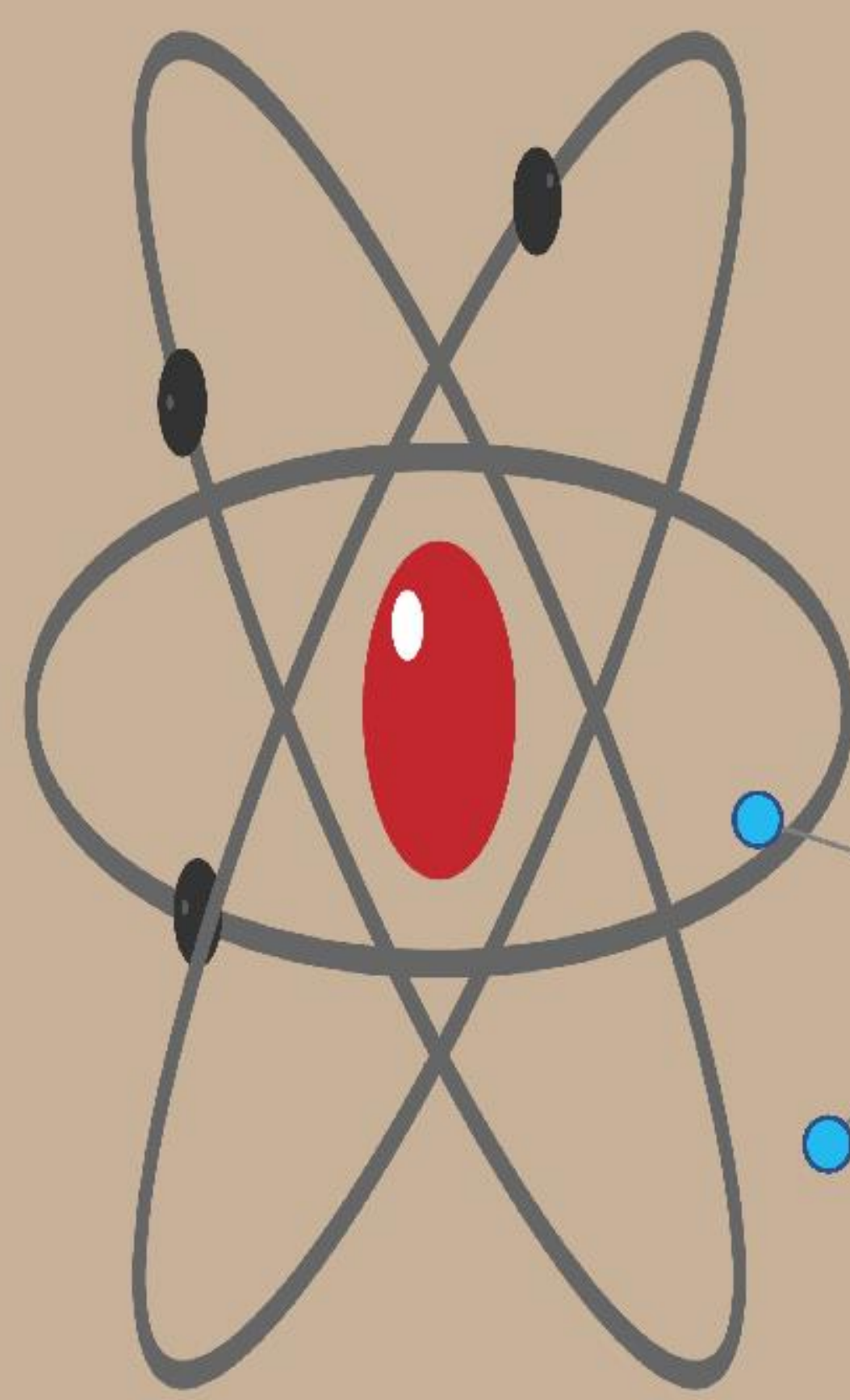
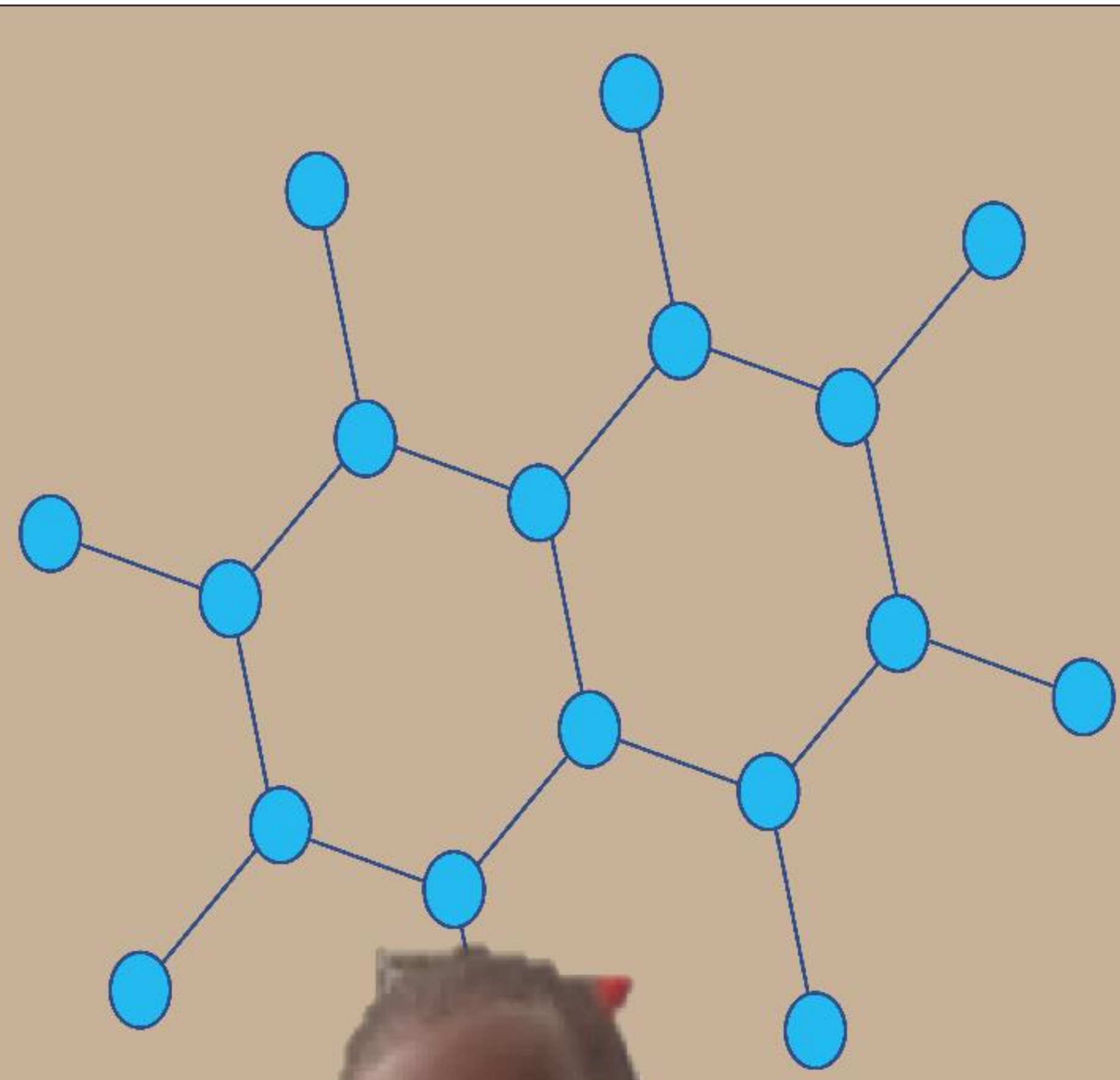
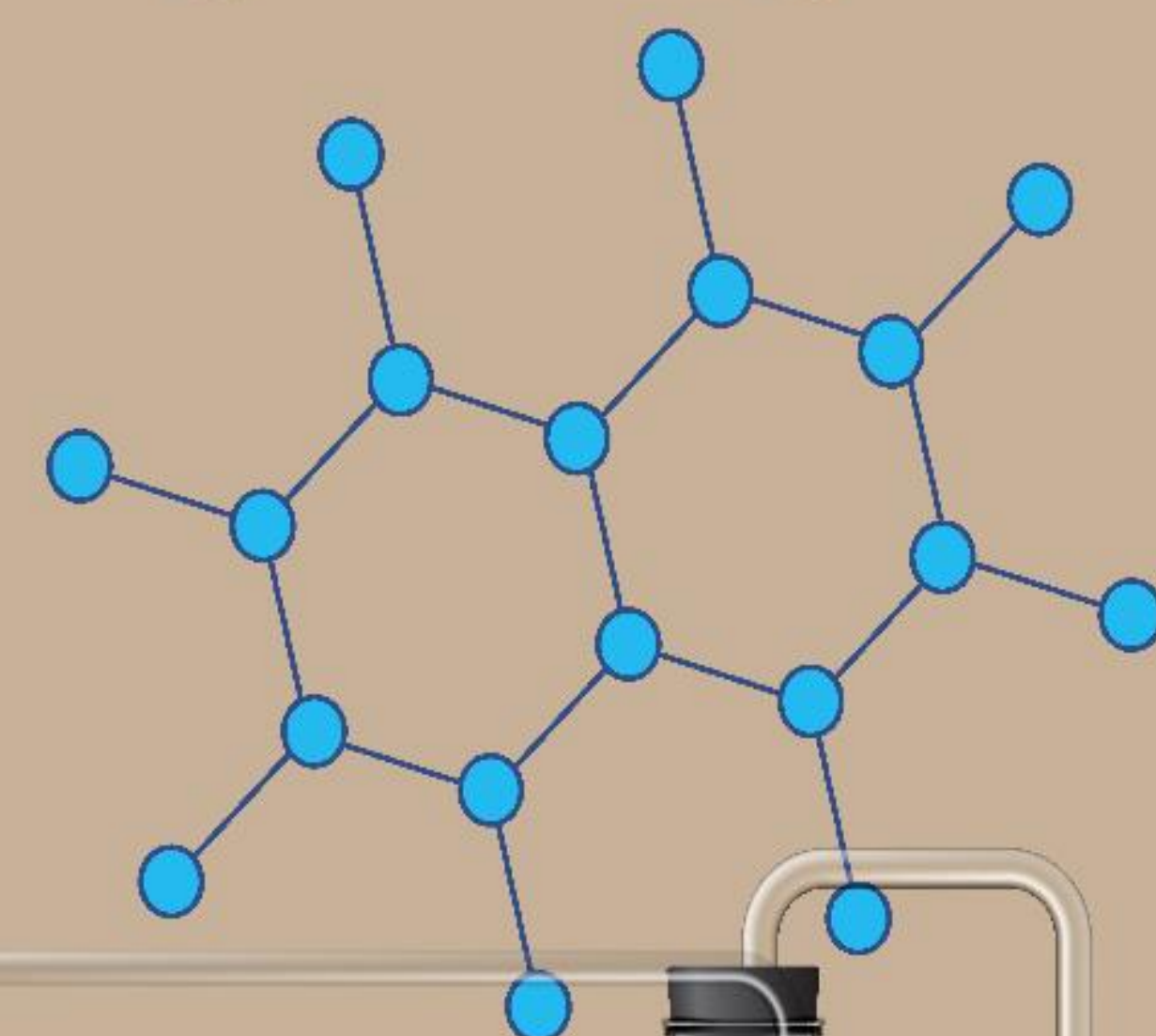
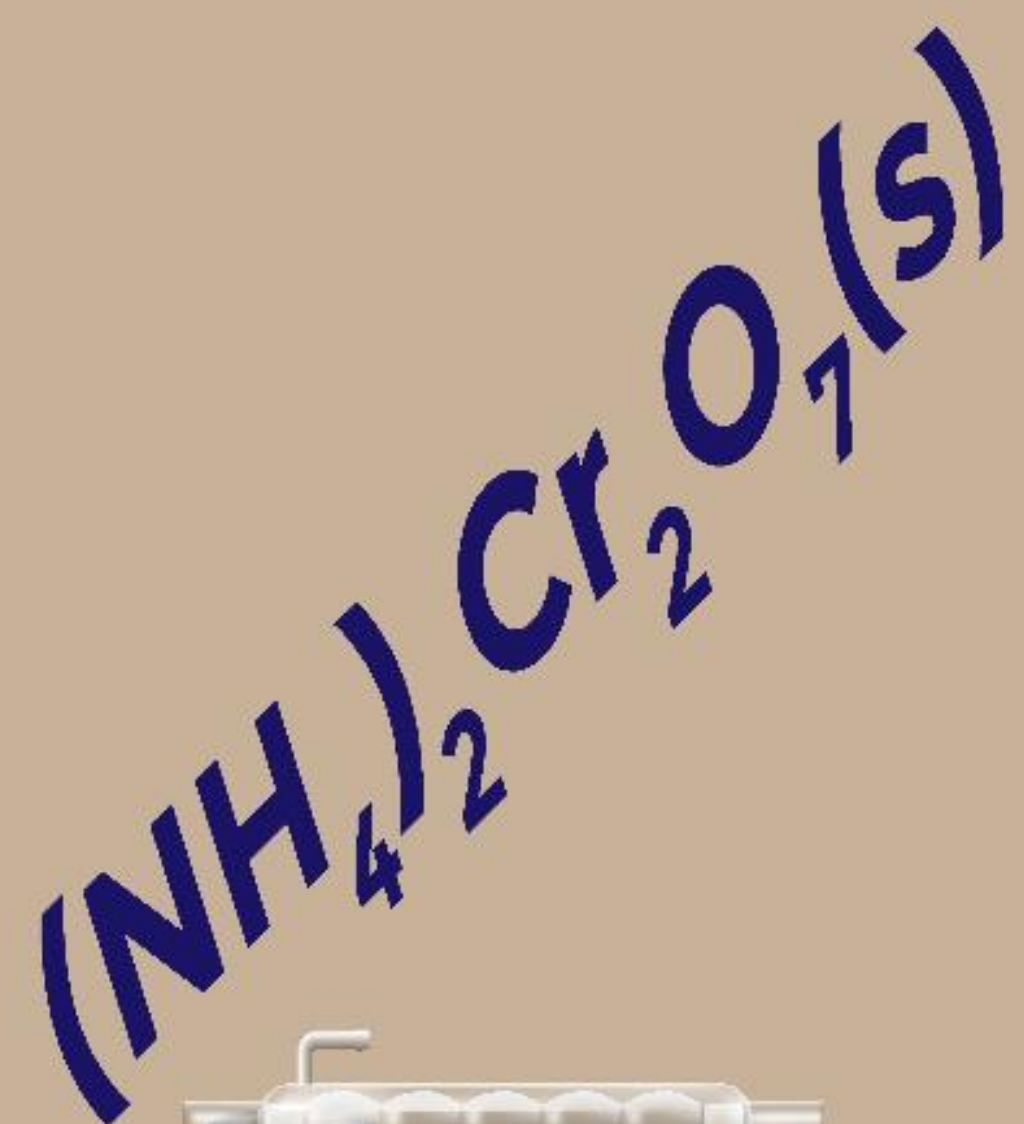
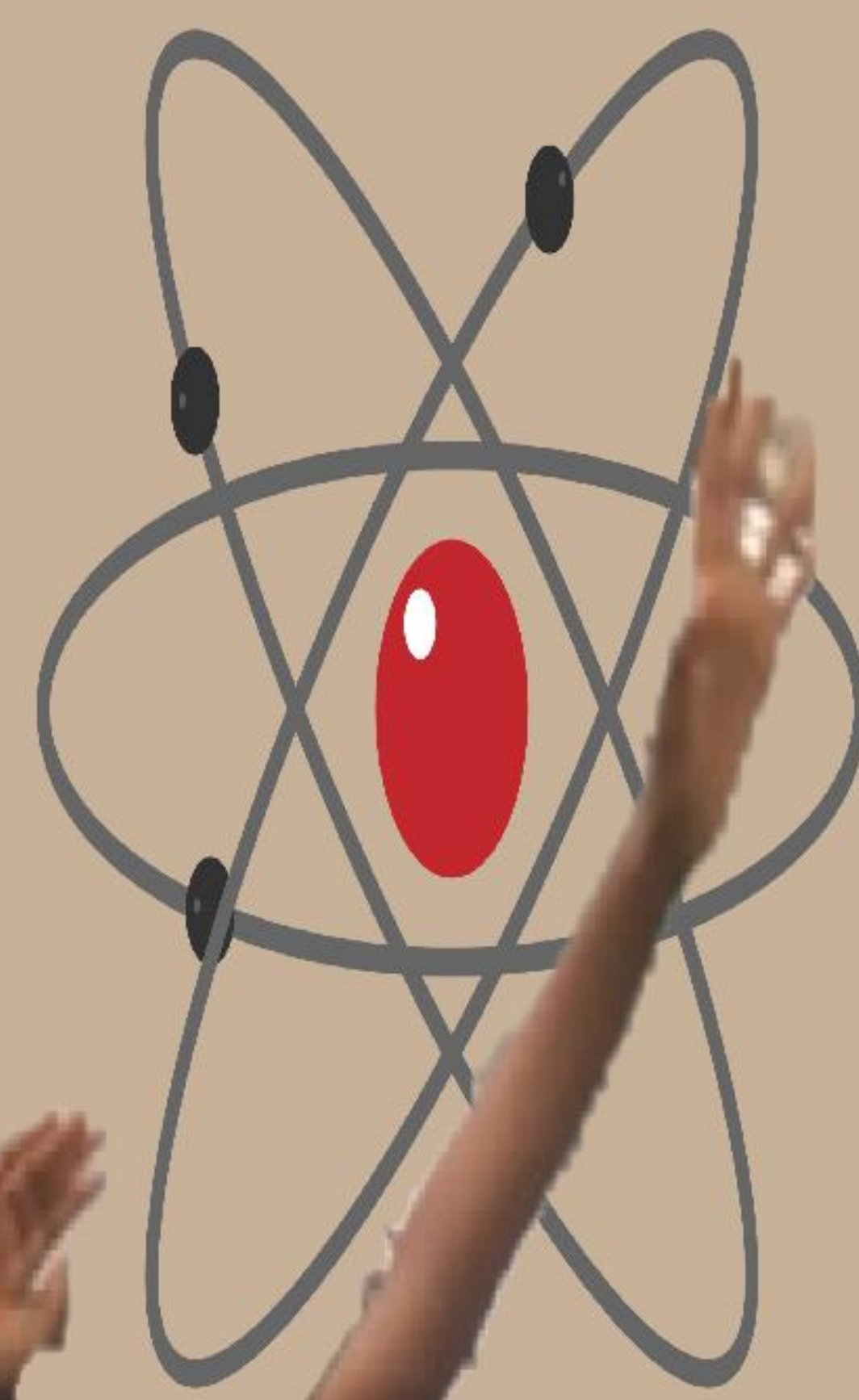


Cu²⁹
Copper



Al¹³
Aluminium



6 Fun STEM Activities

TO TRY AT HOME WITH YOUR CHILD



Launch your own rocket, fly your paper plane or make your own rain. These are STEM experiments that are fun. It's an awesome way to learn more about science, practice creative thinking and simply have fun!!!

[HTTPS://9IJAKIDS.COM](https://9ijakids.com)

What's Inside:

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The Bottle Rocket: Make your own rocket and see it take off.

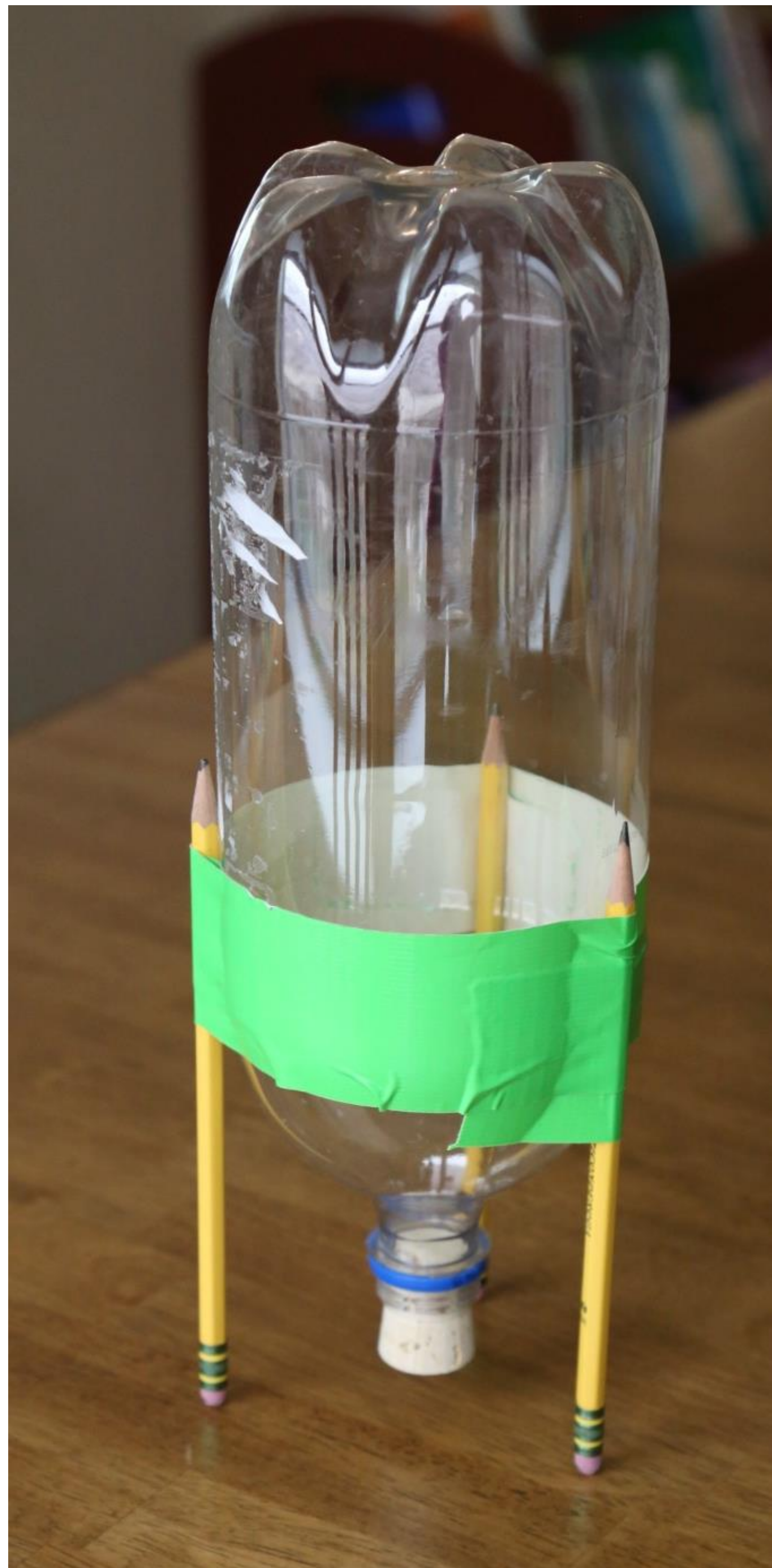
Rainbow Rubber Egg: A fun experiment to make naked eggs that are bouncy.

Sink or Float Orange: Would an orange float or sink? Tricky one. Let's find out.

Rain in a Jar: Lets make rain in a jar as we explain how rain forms in a fun way.

Build a Paper Plane: Childhood is not complete without building and flying your own paper plane.

Magic Balloon: Lets have fun with balloons.



STEM stands for Science, Technology, Engineering, and Math. You can make STEM exciting, fun and educational. Truth be told, learning needs to and should be fun.

With these fun STEM experiments, your child will be experimenting, building, observing, exploring, problem-solving, and creating. These experiments will open their minds, get them thinking and thinking critically.

Children learn best by doing and what they learn usually stays with them for a long time. It is important that as they do the experiments, they ask questions, predict the results and also repeat the experiments changing one or two things to see if the results will change.

Doing these experiments with their parents is also a wonderful bonding time. So relax, learn and have fun!!!

Check out <https://9ijkids/stem-kits> for our STEM resources to keep the children learning and playing.

[HTTPS://9IJKIDS.COM](https://9ijkids.com)





“

Tell me and I forget.
Teach me and I
remember.
Involve me and I learn.

- Benjamin Franklin

//01 The Bottle Rocket

My younger son wants to be an astronaut, so this experiment is an exciting one for him. This experiment needs to be done outside with lots of space, because you don't know how far the rocket would go.

WHAT YOU NEED

- Plastic bottle (an empty coke or Fanta bottle is fine)
- Vinegar
- Baking Soda (2 tablespoons)
- A cork/stopper
- A launch pad or 4 pencils and tape
- Tissue (small thin layer)

THE HYPOTHESIS

To get the kids excited about the experiment, ask the following questions to get them to predict the results (its always fun to hear their hypotheses)

- Would our rocket fly?
- What happens when the soda drops into the vinegar?
- What makes the rocket fly?
- How is this similar to a real life rocket?

Let the fun begin. Follow the instructions below:

Instructions:

Step 1: Set up your launch pad by taping the 4 pencils to the rocket with the flat end away from the bottle.

Step 2: Pour the vinegar into the bottle (fill the bottle half way).

Step 3: Pour 2 tsp. of baking soda into the thin layer of tissue to form a little packet and place gently inside the bottle. Quickly push in the cork (Wrap the cork with duct tape if it does not fit securely).

Step 4: Flip the bottle upside down, give the rocket a quick, hard shake and remember to stand back when the rocket launches (because you don't know in which direction it will fly)

Note:

The paper towel acts as a time release. This way, you will have enough time to step away from the rocket before it takes off.





STEP 1



STEP 2



STEP 3



STEP 4

The Science Explained:

A chemical reaction happens when baking soda and vinegar meet releasing a gas (carbon dioxide). The gas build up in the bottle causing pressure in the bottle. When the pressure is strong enough it pushes the cork/stopper away and the solution rushes out downward pushing the bottle upwards. This forces the rocket upwards.

//02 Rainbow Rubber Egg

A fun activity but requires a bit of patience and waiting. This experiment will make uncooked egg become rubbery and bouncy. Impossible you say? Let's find out.

WHAT YOU NEED

- Eggs (3)
- Vinegar
- Glass or Jar (3)
- Food colouring (any two colours)
- Magnifying glass (Optional)
- Flashlight (Optional)

THE HYPOTHESIS

STEM is about critical thinking. So it is important to always ask questions and let them predict the results.

- What do you think will happen to the egg? Is it bigger?
- What happened to the shell?
- Would the egg change colour and shape?
- How does the egg feel like? Will it bounce?
- What colour do you think the yolk is?

Let the fun begin. Follow the instructions below:

Instructions:

Step 1: Place each egg in a jar/glass.

Step 2: Pour vinegar into the glass till the egg is fully submerged, put a few drops of colouring and put away somewhere safe.

Step 3: After 24hours, pour away the first batch of vinegar and fill the egg with new vinegar and colouring. Be very careful not to poke a hole in the shell while doing this.

Step 4: Wait for 7 days, remove the eggs from the vinegar and rinse.

Gently roll and bounce the eggs (from 10-15 cm above the ground) and watch what happens.

Use the flashlight and magnifying glass to see the yolk inside it. What colour is it?

When the kids are done with the eggs, let them break the egg to find out the colour of the yolk.





STEP 1



STEP 2



STEP 3



STEP 4

The Science Explained:

Vinegar is a mild acid. When the vinegar touches the eggshell, a chemical reaction occurs that breaks down the calcium on the egg shell and carbon dioxide gas is created (the bubbles). The vinegar then continues to harden the external “skin” of the egg leaving the egg completely whole but soft. You might have noticed that the egg got a little bigger after soaking in the vinegar. Some of the water in the vinegar solution travelled through the egg’s skin (membrane).

However, the yolk doesn’t absorb the colour because of its high protein content prevents any fluid passing through.



“

Science and everyday
life **CANNOT** and
SHOULD NOT be
separated

- Rosalind Franklin

//03 Sink or Float Orange

Orange is usually a child's favourite fruit. Children have an idea that heavy things sink, so they would expect the orange to sink and would be really confused when it floats.

WHAT YOU NEED

- Orange or tangerine (2)
- A transparent glass or bowl (2)
- Water

THE HYPOTHESIS

Start by asking the children what they know, which materials float and which sink when placed in water. Then it's time for their predictions for this activity.

- What will happen to the orange when placed in the water? Would it sink or float?
- After the unpeeled orange floats, do they think the peeled orange would float or sink?
- Why did the peeled orange sink?

Let the fun begin. Follow the instructions below:



Instructions:

Step 1: Fill the glasses or bowls with water till it is $\frac{3}{4}$ full.

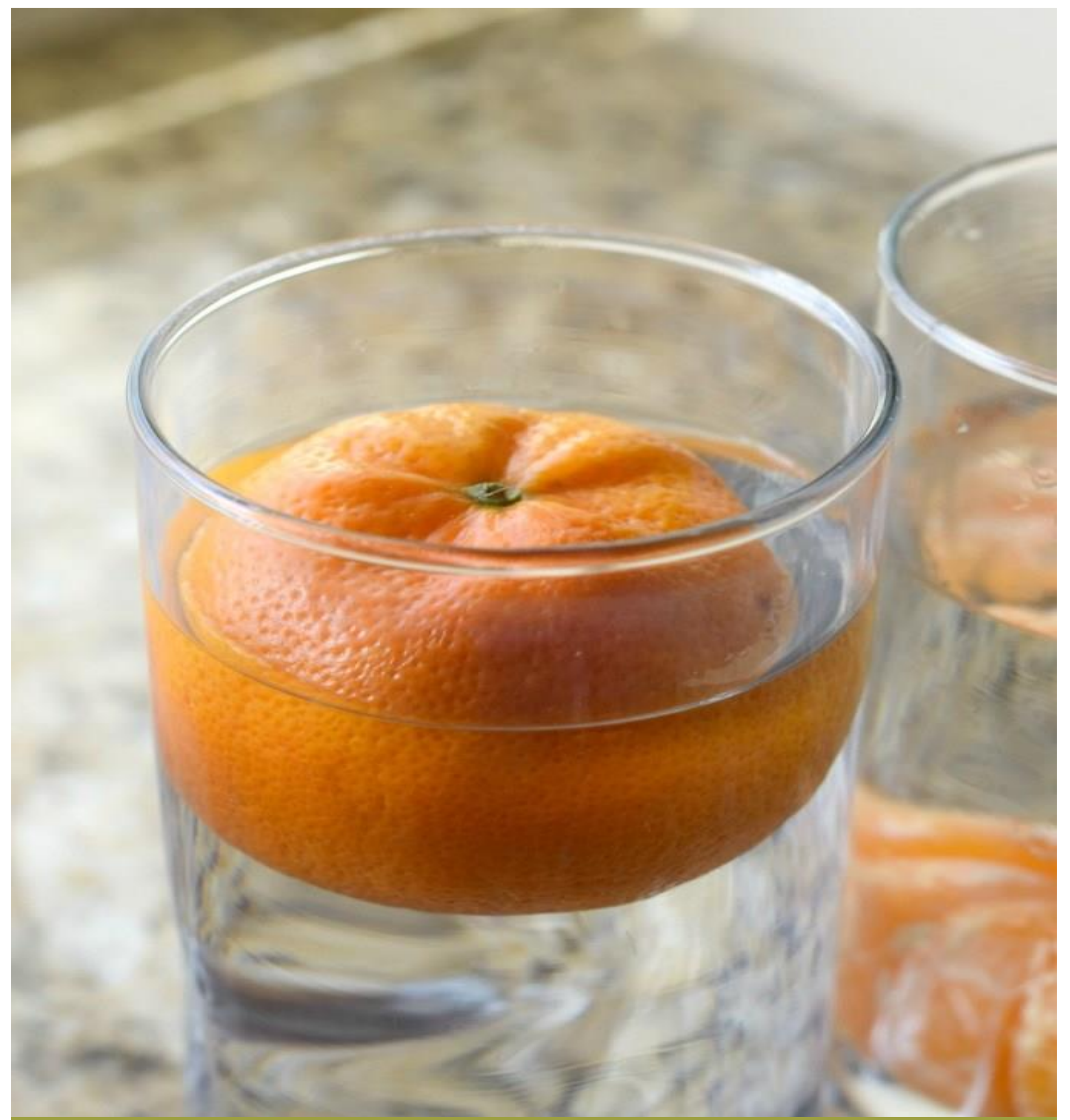
Step 2: Put the unpeeled orange in water.

Step 3: Peel the other orange in the second glass/bowl. (Before you put the peeled orange ask them if they think it will float or sink?)

Step 4: Put the peeled orange in the second glass/bowl. Does the orange float or sink?



STEP 1



STEP 2



STEP 3



STEP 4

The Science Explained:

An orange peel is full of little air pockets which makes it able to float. But once the orange peel is removed (with all the air pockets), the actual orange is denser than water so it will sink. The orange peel is like a life jacket, it helps to make the orange (though denser than water) float.

//04 Rain in a Jar

Where does rain come from? Is God crying that's why it rains? With this experiment, they will now have a chance to create their own rainy day in a jar.

WHAT YOU NEED

- A large transparent glass
- A small cup
- Shaving cream (the foam type)
- Droppers
- Food colouring
- Water

THE HYPOTHESIS

What do the children think clouds are? Soft pillows in the sky? Explain that clouds are tiny water droplets that come together in the sky. Let's make some clouds and rain.

- How is rain made?
- What do you think would happen if we drop water on the cloud (shaving cream)?
- Why didn't the "rain" drop after the first squirt?

Let the fun begin. Follow the instructions below:

Instructions:

Step 1: In a small cup, mix the food colouring with a little water (this will be the rain).

Step 2: Fill the glass with cool water till it is $\frac{3}{4}$ full.

Step 3: Spray the shaving cream in the jar until it is just a small bit above the mouth of the glass/jar.

Step 4: Fill the dropper with coloured water and squirt it on top the shaving cream.

Keep repeating Step 4 and watch what happens below the "cloud".





STEP 1



STEP 2



STEP 3



STEP 4

The Science Explained:

The shaving cream is the cloud and the water in the jar is air that fills the sky. The coloured water is rain, as more water is added, the cloud becomes heavy (full of rain). When the water is too heavy for the clouds to hold, it begins to drop down through the cloud as rain.



“

Creativity is the secret sauce to science, technology, engineering and maths

- Ainissa Ramirez

//05 Build a Paper Plane

In our time, you can't honestly say you are a child if you didn't know how to make a paper plane. It was just a MUST for every child. Help your child make a plane to fly around the house or outside in the yard. And once we are done, its time to race and see whose can go the farthest.

WHAT YOU NEED

- Paper
- Tape

THE HYPOTHESIS

Origami (paper folding) is a fun way to teach children about creating something. Origami teaches sequencing, patience, perseverance and precision.

- How do airplanes fly?
- How do they stay in the air and not fall down?
- How can we design our paper plane differently to make it fly farther?

Let the fun begin. Follow the instructions below:

Instructions:

Step 1: Fold the paper in half vertically.

Step 2: Unfold the paper and fold each of the top corners into the centre line.

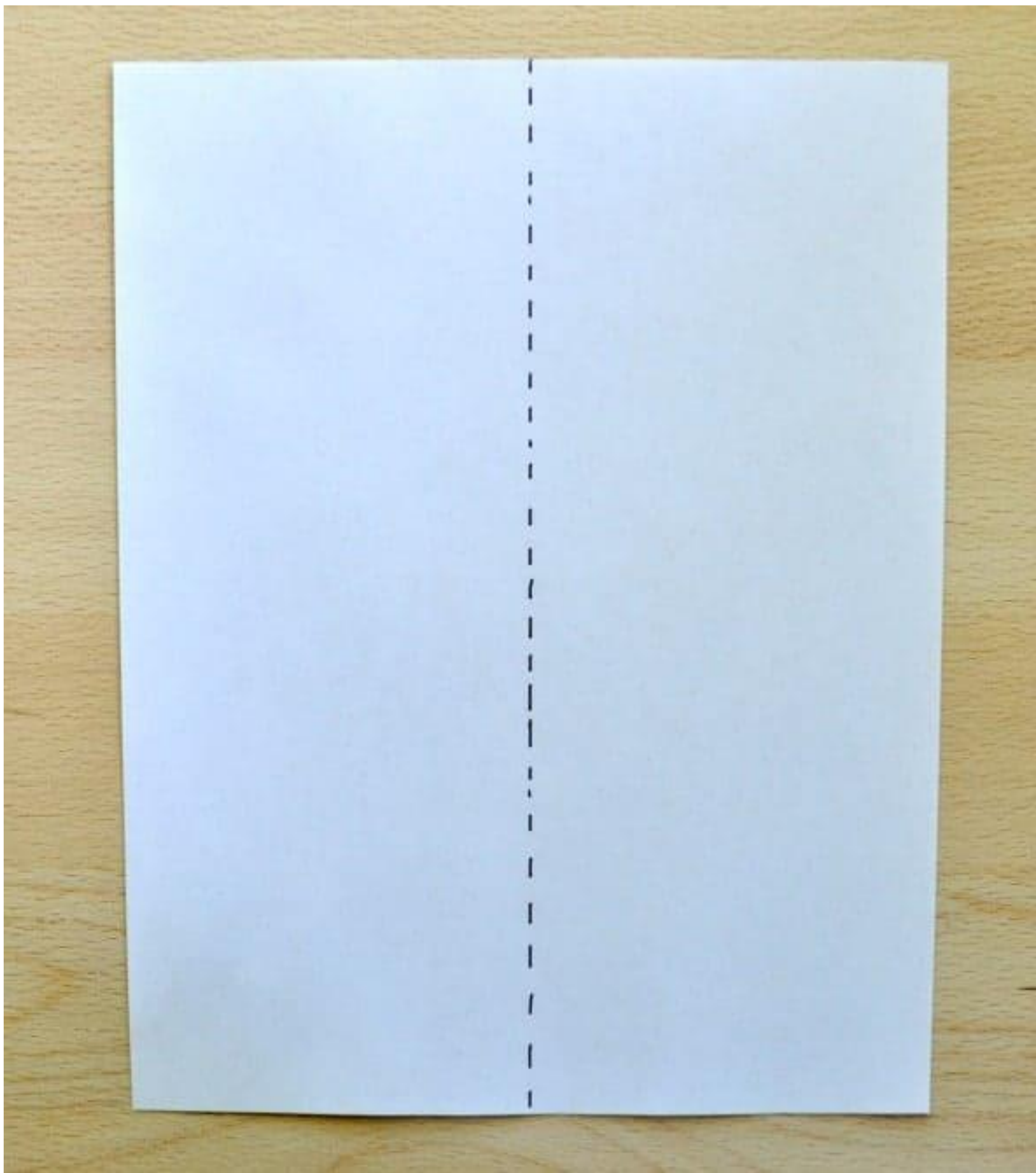
Step 3: Fold the top edges into the centre line.

Step 4: Fold the plane in half toward you.

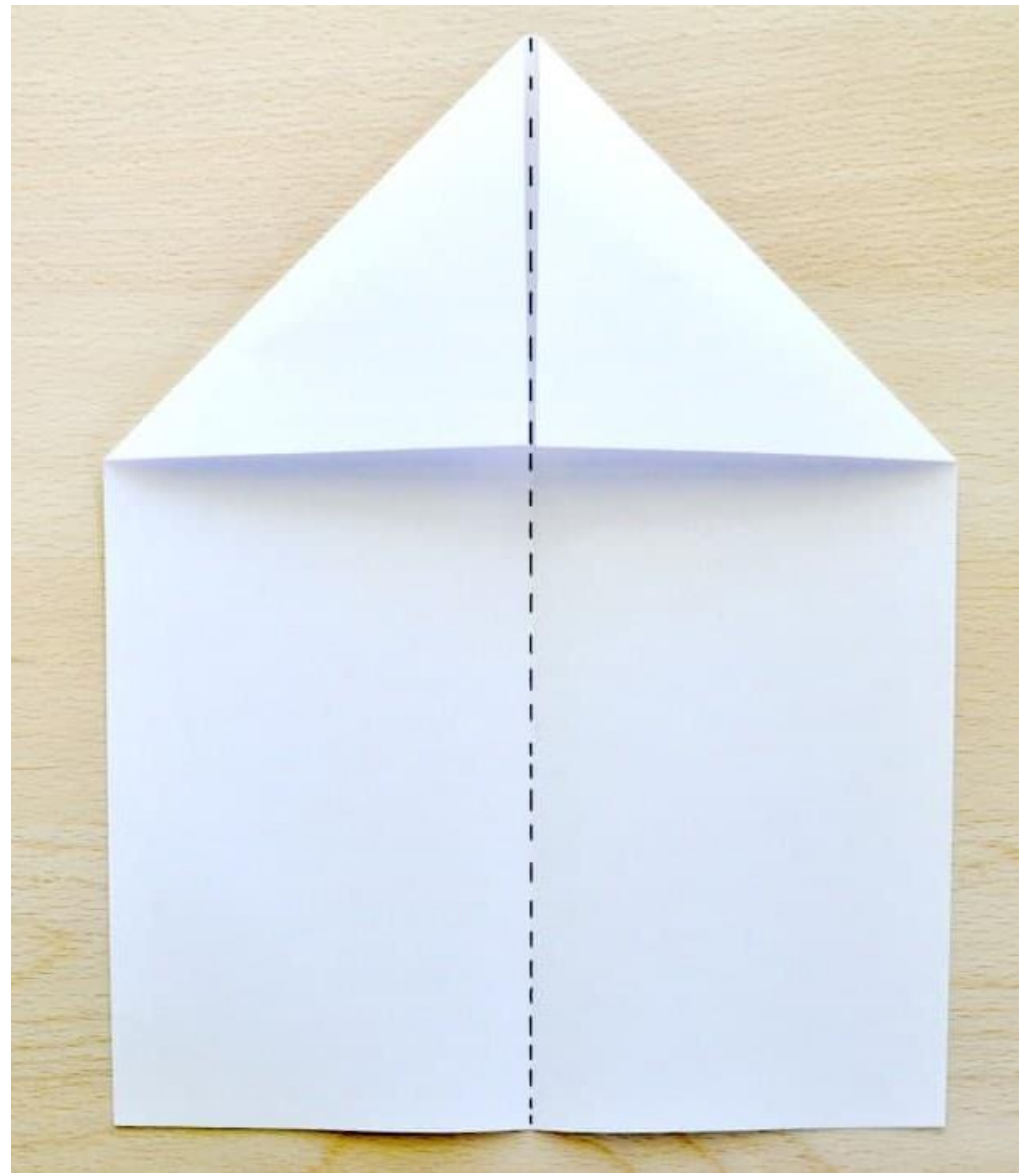
Step 5: Fold the wings down, matching the top edges up with the bottom edge of the body.

Step 6: Add double stick tape to the inside of the body.

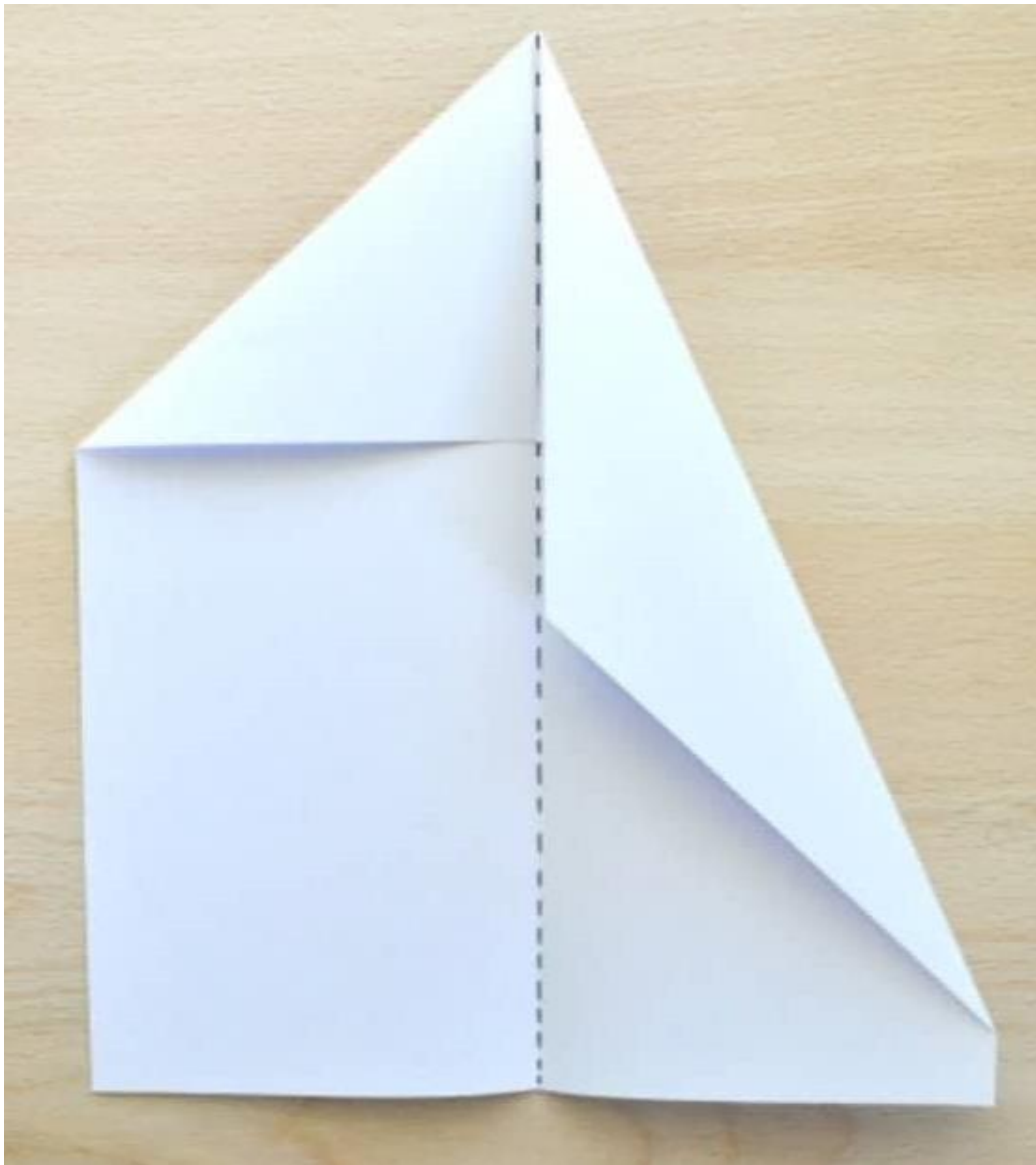




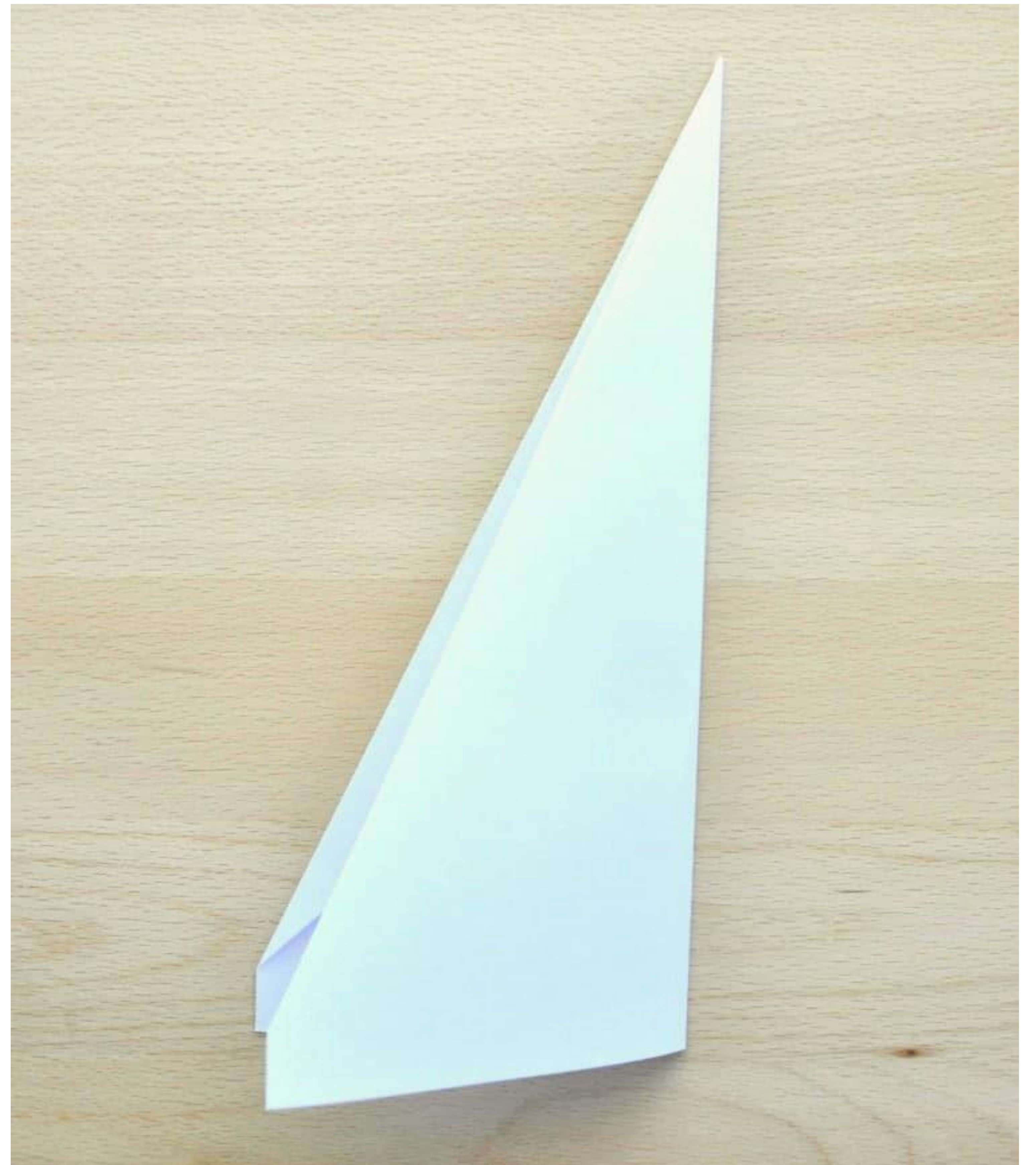
STEP 1



STEP 2



STEP 3



STEP 4



STEP 5



STEP 6

The Science Explained:

The air around you is one thing that helps a paper airplane fly. When you throw a paper plane in the air, you are giving the plane a push to move forward. That push is a type of force called thrust. While the plane is flying forward, air moving over and under the wings providing an upward lift force on the plane. At the same time, air pushing back against the plane is slowing it down, creating a drag force. The weight of the paper plane also affects its flight, as gravity pulls it down toward Earth. All of these forces (thrust, lift, drag and gravity) affect how well a given paper plane will fly. When these four forces are used in balance, paper airplanes will fly longer.

There are various different designs which each cause the plane to fly differently. For instance, planes which are longer and balanced will fly longer, but those that are shorter and heavier in the front will barely fly at all.

//06 Magic Balloon

Every child loves balloons. I can't count the number of times we go to a party and we end up going home with some of the balloon decorations. So, let's have some fun with balloons.

WHAT YOU NEED

- Balloon
- Vinegar (1/2 cup)
- Baking soda (2 tablespoons)
- Empty transparent bottle
- Funnel

THE HYPOTHESIS

Can our balloon magically inflate itself? Its fun to blow a balloon so lets investigate how we can do that in this experiment.

- What will happen to the balloon?
- Does the size of the container affect the size of the balloon?
- What will happen if we add more baking soda or vinegar?
- How do we make the balloon bigger?
- Why does the balloon stop blowing up and begin to deflate?

Let the fun begin. Follow the instructions below:

Instructions:

Step 1: Pour the vinegar into the empty bottle (a quarter of the bottle is enough).

Step 2: Pour 2 tablespoons of baking soda into the balloon (you can use a funnel or get someone to open the balloon wide while the other pours).

Step 3: Carefully put the balloon on top the bottle.

Step 4: Lift up the balloon so that the soda drops into the vinegar.

You can repeat the experiment by increasing either the amount of vinegar or baking soda to see what happens to the balloon.

After about an hour and a half the balloon will start to deflate.





STEP 1



STEP 2



STEP 3

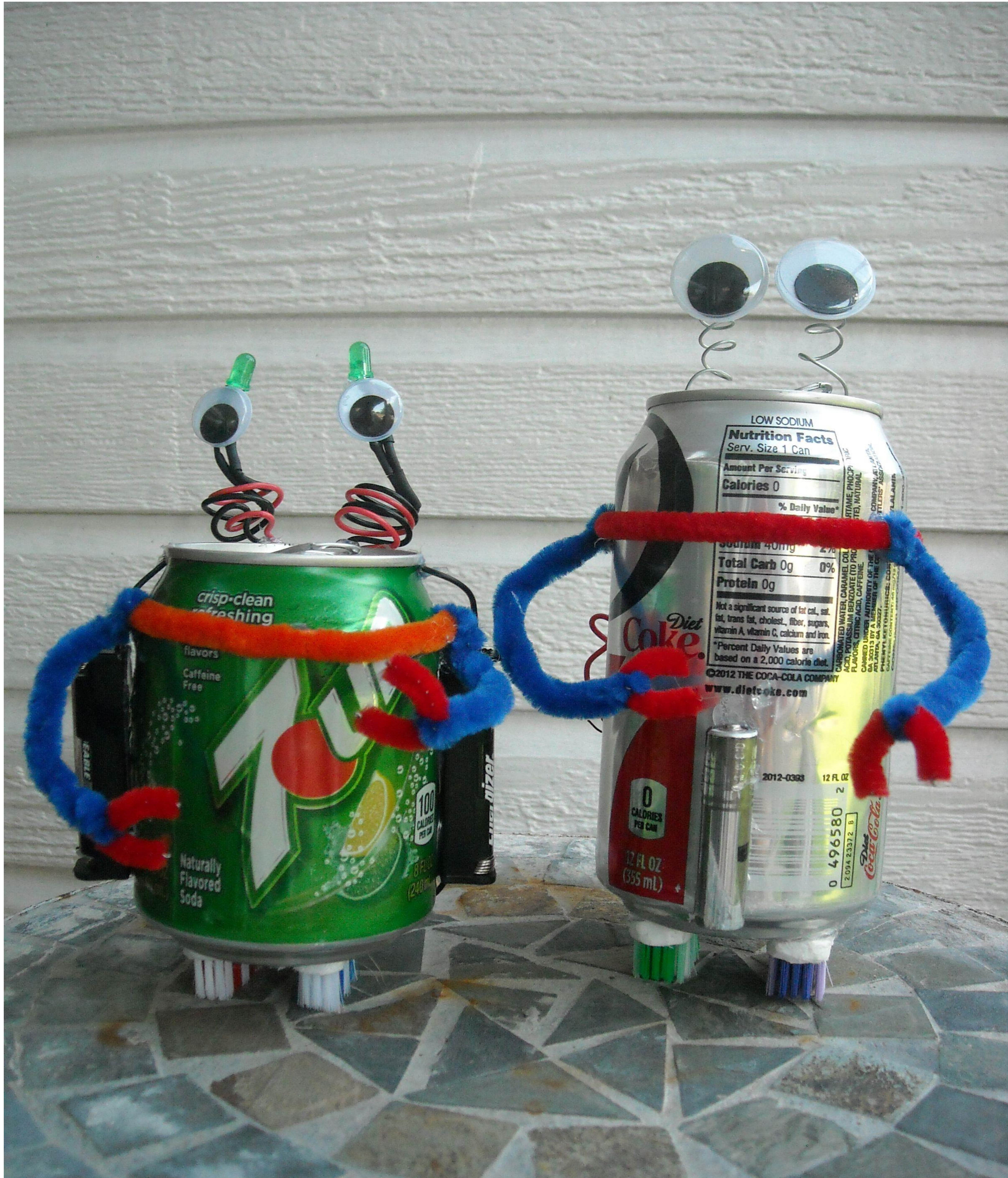


STEP 4

The Science Explained:

The mixture of vinegar and baking soda produces a chemical reaction which produces carbon dioxide gas (the bubbles you see). The gas rises in the bottle and tries to escape from the bottle but the balloon catches it and that is what makes the balloon expand.

As the reaction continues, more gas is created which makes the balloon get bigger and bigger.



Lets Take A Flight Into the World of Creativity and Fun Learning

Encourage your child's curiosity and real love for learning through fun STEM activities. Let the kids question, explore and play with this fun activities and many other STEM resources from 9ijakids. Watch out for rocky candy, erupting volcanoes and lots more in our next series.

Don't let the fun end, check out <https://9ijakids.com/stem-kits/> for our STEM resources to build your own metal robot, crystal radio or make your own lipstick and perfume. The fun doesn't have to end.



EQUIPPING CHILDREN WITH THE SKILLS TO SOLVE TOMORROW'S PRESSING PROBLEMS