



Rainbow Paper



Total Time:

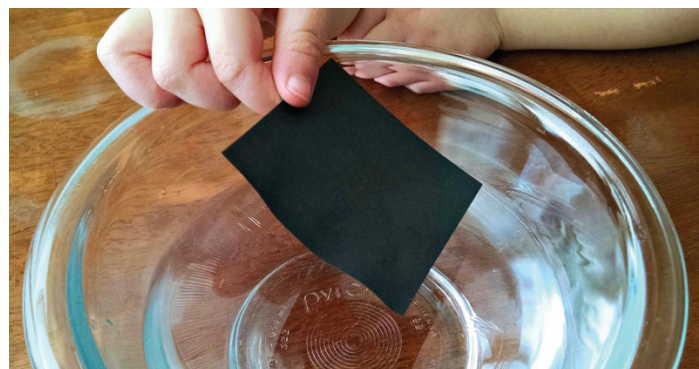
About 5 minutes

Safety Concerns:

None. This is a fantastic activity that even toddlers and preschoolers can do on their own.

Materials You Need:

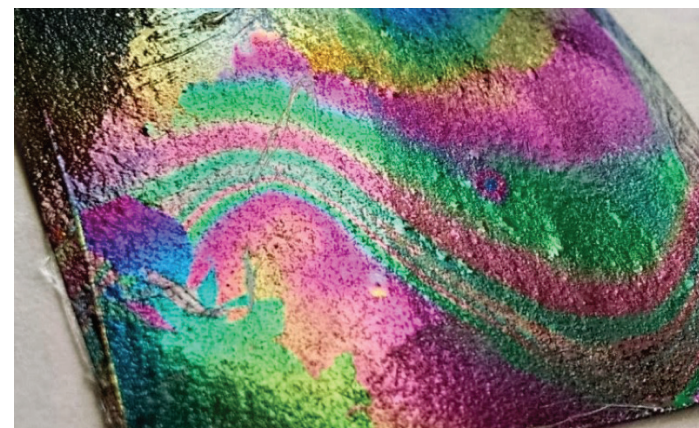
- A bowl filled with water
- Clear nail polish
- Small pieces of black paper



Directions:

- Add 1-2 drops of clear nail polish to the bowl of water. Watch it disperse over the surface of the water.
- Quickly dip the paper into the water. Let it dry on a paper towel.
- Once it is dry (this only takes a few minutes) tilt the paper in different directions to see the rainbow patterns appear. Hold it next to a sunny window for best results.

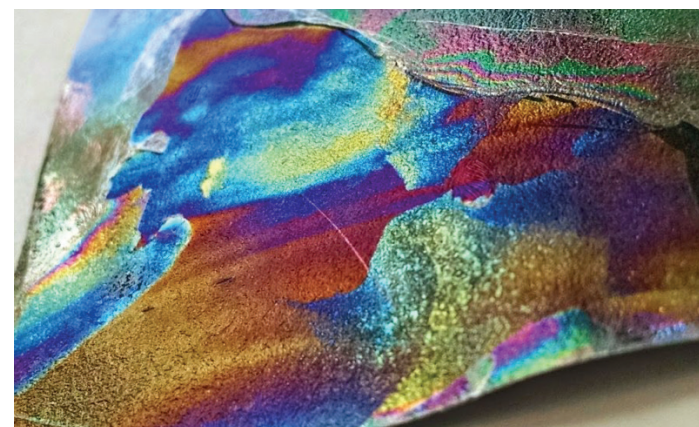
NOTE: The nail polish will dry quickly on the surface of the water, which will create a film that won't stick to the paper. To do this activity successfully you will need to do it quickly. Be sure to dip the paper into the water within 10-15 seconds after you drop the nail polish in. If the nail polish does create a dry film on top, simply scoop it off and try again more quickly!



We did this experiment several times with several pieces of paper. It was fascinating to see how each piece came out so differently!

What is going on?

When you dip the paper into the water it gets coated with a thin layer of nail polish. Light is reflected by the nail polish, creating rainbow patterns. This is basically the same thing that happens when a rainbow is naturally formed in the sky.



Try to find each of the following colours on your rainbow paper: red, orange, yellow, green, blue, indigo, and violet. White light is composed of all of these colours!

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SNOOD Activities

Fake Lung Experiment!

The lungs are an essential organ to all Mammals. It is the organ that allows for gaseous exchange to ensure we get the most important product Oxygen into our bodies and also exhale the waste products. Find out how lungs work by making a fake lung.

What you will need

- A plastic bottle
- A straw
- An elastic band
- Scissors
- 2 balloons
- Play dough

Method

1. Remove the bottom of your bottle
2. Tie a knot in one end of a balloon and snip off the fat end
3. Stretch this end around the bottom of your plastic bottle
4. Put a straw in the neck of the other balloon and secure tightly with the elastic band but not so that you crush the straw. The air must flow through so test it with a little blow through the straw to see if the balloon inflates.
5. Put the straw and the balloon into the neck of the bottle and secure with the play dough making a seal around the bottle – make sure that again, you don't crush straw.

Your lung is finished and now for the action!

Hold the bottle and pull the knot of the balloon at the bottom and watch what happens? You should find that the balloon inside the bottle inflates, and that as you let go it deflates.

The science bit.

As the knotted balloon is pulled it creates more space inside the bottle. Air then comes down the straw and fills the balloon with some air to fill the space! When you let go of the knot the space no longer exist, so the air from the balloon is expelled and deflates.

This demonstrates how our lungs work. Air is taken in

through the mouth and nose, passes down the windpipe and into our lungs. The diaphragm at the bottom of our chest moves down to create more space. As we breathe out the diaphragm raises again.

The knotted balloon represents the diaphragm and balloon inside the container the lung!



Bottle Rocket



This experiment demonstrates how a build-up in pressure can launch a rocket.

As we pump air through the water the pressure inside the bottle builds up until the force of the air pushing on the water is enough to push the cork out of the end of the bottle. The water rushes out of the bottle in one direction whilst the bottle pushes back in the other. This results in the bottle shooting upwards.

What you need

- an empty plastic bottle
- cardboard made into a cone and 4 fins
- a cork
- a pump with a needle adaptor
- water

Instructions

- Push the needle adaptor of the pump through the cork, it needs to go all the way through so you might have to trim the cork a little bit.
- Decorate the bottle with the cone and fins.
- Fill the bottle one quarter full of water and push the cork in tightly.
- Take the bottle outside and connect the pump to the needle adaptor. Ours wouldn't stand up on the fins so we rested it on a table, but if you make some strong fins it should stand up by itself.
- Pump air into the bottle, making sure all spectators stand back, the bottle will lift off with force after a few seconds.

Warning!

Please make sure an adult is around as the rocket takes off very suddenly and forcefully. Do not approach the rocket once you have started pumping even if it looks like nothing is happening.

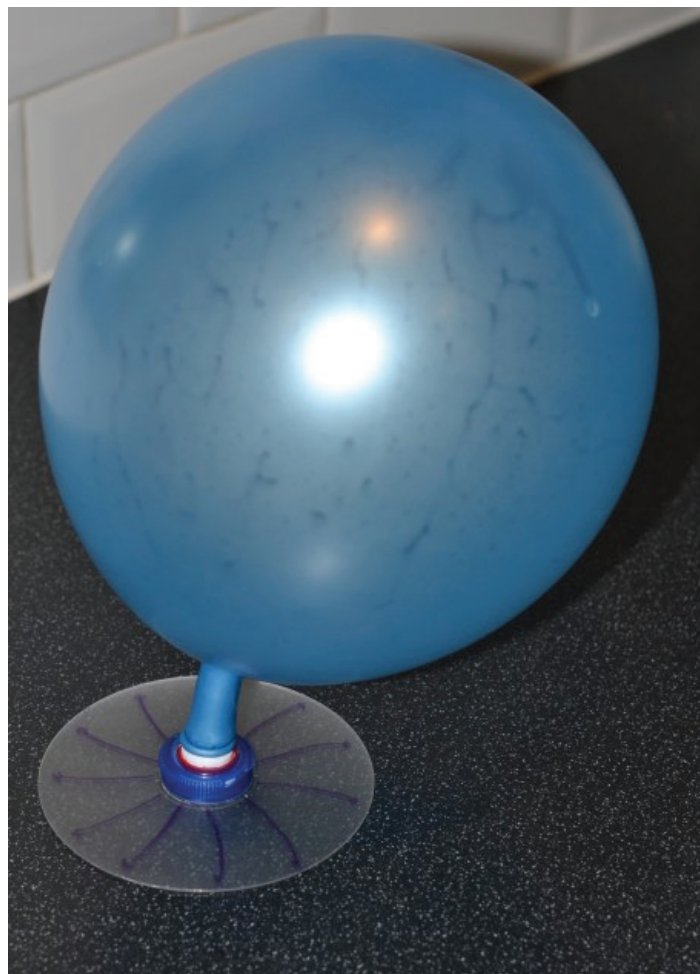
The Science bit

Space rockets work in a similar way to the bottle, but instead of squirting water they burn fuel to make a powerful jet of hot gas. The force of the gas downwards pushes the rocket upwards.

Isaac Newton worked out the three laws of motion which describe how all objects move. The third law says: 'for every action there is an equal and opposite reaction' This is demonstrated by the bottle rocket.

Make a Hovercraft

Hovercrafts are really interesting as they move on top of a layer of air. The layer of air reduces friction allowing the hovercraft to move quickly over both land and sea.



You will need:

- A CD you don't need. We actually used the plastic cover from a pack of CDs which also worked well.
- Superglue
- A pop up lid from a drinks bottle
- Balloon

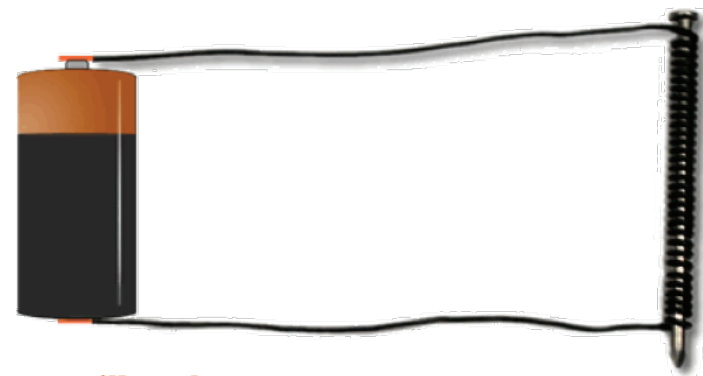
Method

- Take the lid off the drinks bottle. Discard the plastic cover cap and ensure the push down mechanism is down.
- Put superglue around the bottom rim of the lid and stick to the centre of the CD over the hole. Make sure there are no holes for air to escape through.
- Blow up a balloon, don't let out air. We used a hair clip to hold it in place.
- Place the balloon over the pop up.
- Lift the pop up part and let go off the balloon.

Your Hovercraft should shoot across the surface as the air is forced out the bottom.

Can you try the Hovercraft on different surfaces? What happens?

Make an Electromagnet



You will need:

- A large iron nail (about 3 inches)
- About 3 feet of THIN COATED copper wire
- A fresh D size battery
- Some paper clips or other small magnetic objects

Method

1. Leave about 8 inches of wire loose at one end and wrap most of the rest of the wire around the nail. Try not to overlap the wires.
2. Cut the wire (if needed) so that there is about another 8 inches loose at the other end too.
3. Now remove about an inch of the plastic coating from both ends of the wire and attach the one wire to one end of a battery and the other wire to the other end of the battery. See picture below. (It is best to tape the wires to the battery - be careful though, the wire could get very hot!)
4. Now you have an ELECTROMAGNET! Put the point of the nail near a few paper clips and it should pick them up!

NOTE: Making an electromagnet uses up the battery somewhat quickly which is why the battery may get warm, so disconnect the wires when you are done exploring.

Most magnets, like the ones on many refrigerators, cannot be turned off, they are called permanent magnets. Magnets like the one you made that can be turned on and off, are called ELECTROMAGNETS. They run on electricity and are only magnetic when the electricity is flowing. The electricity flowing through the wire arranges the molecules in the nail so that they are attracted to certain metals. NEVER get the wires of the electromagnet near at household outlet! Be safe - have fun!

The project above is a DEMONSTRATION. To make it a true experiment, you can try to answer these questions:

1. Does the number of times you wrap the wire around the nail affect the strength of the nail?
2. Does the thickness or length of the nail affect the electromagnets strength?
3. Does the thickness of the wire affect the power of the electromagnet?

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How do Clouds work?

Try this Weather Experiment: Fill the cup with water. Put shaving cream on top for a cloud. Explain that when clouds get really heavy with water, it rains! Then put blue food colouring on top of the cloud, and watch it rain.

