



Kids in the Biosphere Club

Wednesday: Watching the Weather

Cook a Pizza in a Solar Oven

MATERIALS

A pizza box, scissors, tin foil, wooden skewer or spoon, tape, plastic bag, black construction paper, mini pitas, pizza sauce, cheese, toppings!

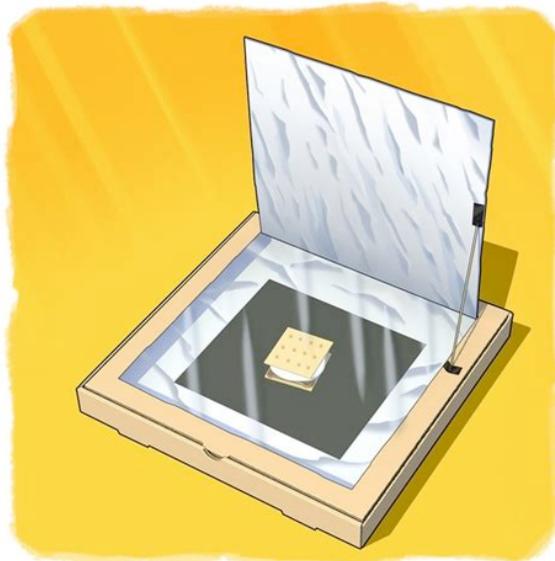
Solar energy can cook food, power vehicles, power homes, and much more. It is a renewable energy, and this means it is a more sustainable choice than non-renewable sources like natural gases and fossil fuels. Unlike other types of energy, the sun won't ever run out!

1. Using sharp scissors, cut a flap in the lid of your pizza box. Cut along three sides, leaving about an inch between the edges of the flap and the edges of the lid. Fold this flap out so it stands up when the lid is closed.
2. Cover the inner side of the flap with aluminum foil to reflect the rays from the sun into your oven. To do this, tightly wrap foil around the flap and then tape it to the outer side of the flap.
3. Use clear plastic to create an airtight window for sunlight to enter into the box. Find a clear plastic bag that you can reuse, such as a freezer bag or clear grocery bag. Then open the box and tape the plastic bag over the opening in the lid. Tape each side down securely, sealing out the air.
4. Line the bottom of your box with black construction paper. The colour black absorbs heat, so the black surface is where you will set your pizza to cook.

Solar energy is an abundant power resource we love to use here on Earth! Solar energy comes from sunlight that is turned into energy we can use in our homes and other buildings. We collect sunlight through solar panels that are made up of solar cells.

- 5. It is best to set up your solar oven when the sun is high overhead, from 11 am to 3 pm. Take your oven outside to a sunny spot and adjust the flap until the most sunlight possible is reflecting off the aluminum foil and onto the plastic-covered window. Tape your skewer or wooden spoon to the flap and the base of your oven to prop the flap open.**
- 6. Build your pizza! Our favourite recipe uses mini multigrain pitas, garlic pizza sauce, and shredded mozzarella. Once your pizza is ready on a plate, open the box and place it on the black paper. If you have a thermometer, you can place it inside your oven before you close it so you can check the temperature.**
- 7. To take food out of the oven, open the lid of the pizza box and use oven mitts to lift the plate out. Your pizza will be ready once the cheese has melted. Enjoy!**

Fun Fact! The earth intercepts a lot of Solar Power: 173,000,000,000,000,000 watts (173 thousand terawatts). This is 10,000 times more power than our planet's population currently uses.



Sun Time: Making a Sundial

Did you know the sun doesn't actually move? The Earth moves around the sun, completing one full loop every 24 hours and giving us night and day. Early "clocks" actually used the Earth's movement around the sun to mark the passage of time. Try it yourself!

MATERIALS

A piece of cardboard or thick sturdy paper, modelling clay or rubber ball/block, pencil, white glue, ruler, marker, clock, and an open space that gets full sun (example: driveway, deck, yard)

1. Take your modeling clay and stick your pencil in the middle of it. Make sure you flatten the bottom of whichever material you choose to help the pencil stand up straight.
2. Draw an X in the bottom centre of your cardboard. This will be where you place your pencil.
3. Glue your pencil and its base on the cardboard X you just created.
4. Find an open, outdoor space that receives full sun all day and make sure the area is flat. You can place your sundial on top of a box, bucket, or table to help keep it level.
5. Move your sundial around so that that shadow cast by your pencil is at the far left side of your cardboard.
6. Using your ruler, mark the shadow on the cardboard. This is your first hour. Make sure to write the time at the top of your new line.
7. Check on your sundial every hour and mark the hour each time. Make sure to use the same clock each time to ensure that your sundial is as accurate as possible.

Credit: www.clearwaycommunitysolar.com/blog/science-center-home-experiments-for-kids/sundial-experiment/

How many hours can you record on your sundial? Can you use it the following day and test to see if it is accurate? Would this be more helpful than not being able to tell time at all?



Create a Cloud

The ultimate weather experiment: create a cloud in your kitchen. Watch it take shape before your eyes, then release it to the skies!

MATERIALS

A jar with lid, 1/2 cup hot water, ice cubes, bug spray (or hairspray)

1. Swirl the hot water around in the jar.
2. Place the lid upside-down on the top of the jar, then place several ice cubes onto the lid. Allow it to rest for 20 seconds.
3. Remove the lid, quickly spray a little bug spray into the jar, then replace the lid with the ice still on top. Watch the cloud form!
4. When there is a lot of condensation in the jar, remove the lid to see the cloud escape.

Why did the cloud form? Make a hypothesis (scientific guess).

Pine Cone Weather Station

Did you know that pine cones open and close depending on the weather outside? When the weather is dry, the pine cone will open up and try to disperse its seeds using the wind. When the weather becomes wet or it feels like it's going to rain soon, the pine cone will close up to stop its seeds from escaping. Seeds won't travel very far if they are heavy and wet.

This experiment is easy and takes little to no preparation! When you're outside, try and find 4 - 6 pine cones. Bring them inside and place on a windowsill or near a window. You'll want to keep them there so you can easily check on the weather outside.

Make yourself a chart that records the weather and how the pine cones look.

Riding the Air: Homemade Kite

We're lucky to be on the shores of Georgian Bay, where there is almost always a steady supply of wind. Enjoy a windy day with this homemade kite!

MATERIALS

A sheet of paper, bamboo skewer, tape, cotton string, scissors, hole punch, and party streamers or decorations (optional)

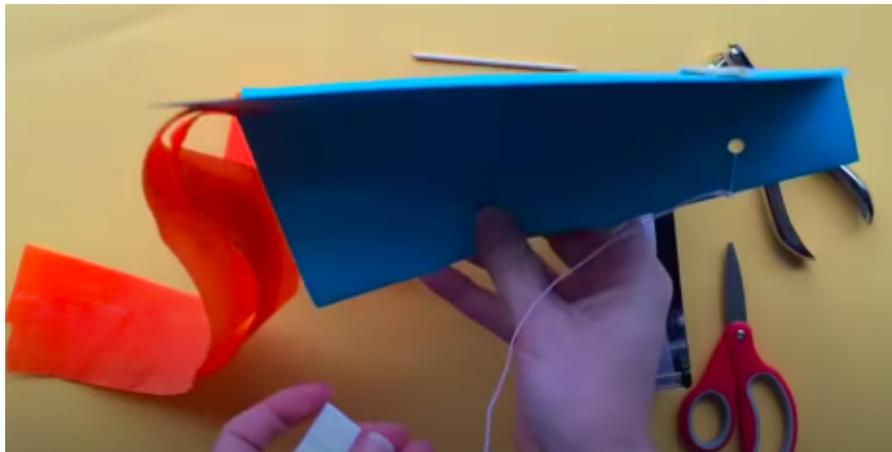
1. Take your piece of paper and fold it in half along the short edge (hamburger-style).
2. Then, take one flap and fold it on an angle.
3. Flip your paper and do the same thing to the other flap so that they are lined up evenly.
4. Open one flap, leaving the other folded down, and secure the seam with tape at the top and bottom.
5. Carefully remove and discard the pointy end of the skewer. Attach the rest of the skewer along the top of your kite with tape.
6. Flip the bottom portion of your kite out. It should look a bit like a paper airplane, with the skewer running along the lower section of the flat top. Punch a hole at one end of the bottom flap of your kite.



7. Attach the string by pulling it through the hole and tying it gently to secure it.
8. Add decorations or patterns using markers. At the back of your kite, tape the streamers on to create a tail!
9. Test your kite out in a windy, open place! Make sure there are no power lines or other hazards around.

Source: https://www.youtube.com/watch?v=Xl_NiH1g0VQ&ab_channel=ArtforKidsHub

You can even try changing this design a little. Do different shapes or decorations help the kite or make it harder to fly?



Additional Resources

More About Weather

<https://www.teachervision.com/all-kinds-weather>

Cloud Information & Worksheet

http://teacher.scholastic.com/activities/wwatch/observe_step1.htm

DIY Types of Clouds Poster with Cotton balls

<https://iheartcraftythings.com/preschool-cotton-ball-clouds-activity.html>