



# HOW TO MAKE A SOLAR OVEN

Cook up this fun project with your kids to teach them about the power of the sun.

Can't stand the heat and want to get out of the kitchen? Head outside with the kids and make a solar oven. The best part: lunch can be served when you're done!

Make this simple device out of everyday household items like a cardboard box and aluminum foil, and cook your lunch using solar power. Be careful – this oven actually gets hot!



**Tested, edited & approved by:**

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## GATHER THIS:

- Pizza box, shoe box, or any cardboard box
- Aluminum foil or reflective material
- Clear plastic film, wrap or sheet
- Box knife or sharp scissors
- Dark colored (black) paper
- Newspaper
- Tape
- Thermometer

## THEN DO THIS:

1. Use a box knife or sharp scissors to cut a flap in the lid of the cardboard box. Cut along three sides, leaving about an inch between the sides of the flap and the edges of the lid.
2. Cover the inner side of the flap with aluminum foil so that it will reflect rays from the sun.
3. Use clear plastic wrap to create an airtight window for sunlight to enter into the box. Tape the plastic wrap down thoroughly, sealing out air.
4. Line the bottom of the box with black construction paper - black absorbs heat. The black surface is where your food will be set to cook.
5. To insulate your oven so it holds in more heat, roll up sheets of newspaper and place them on the bottom of the box. Tape them down so that they form a border around the cooking area.
6. Set your favorite food in an aluminum baking tin or clear glass plate. Put liquids inside a heavy duty plastic freezer bag and set in an aluminum baking tin.
7. Set out in the sun and watch your food cook, melt or get hot!  
\*For best results, angle and rotate your solar oven so it faces the sun throughout the day



## ASK THIS:

- Put a thermometer inside your solar oven. How hot does your oven get?
- Does the temperature change if you tilt your oven off the ground towards the sun?
- Does the temperature change if you add or remove reflective panels?
- Does the temperature change if you add or remove the newspaper insulation?

(continued)

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SCIENCE  
PLAYGROUND  
& ZOO

## WHAT IS HAPPENING?

Ovens like this one are called collector boxes because they collect the heat energy from sunlight. Rays of light from the sun hit Earth at an angle. The foil reflects the sunrays through the window of the box. Once the light goes through the plastic wrap, it heats the air trapped inside. The black paper absorbs the heat at the bottom of the oven, and the newspaper insulates the oven, making sure that the heat stays inside.

The best time to set up your solar oven is mid-day in the summer. Take it 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. Use a stick to prop the flap at the appropriate angle. Keep the oven angled towards the sun. Though it will take longer to heat something compared to a conventional oven, your solar oven may reach about 200° F or more on a sunny day!

**Safety:** The reflected sunlight is very bright and hot! Do not look directly at the reflected sunlight as it can injure your eyes! Food containers in the oven may get hot to the touch. Use oven mitts or potholders to take food and food containers out of the oven.



### WHAT THIS TEACHES:

Skills: Measuring, construction

Themes: Light and heat energy, insulation