

Clover Kid Project

Solar Oven S'mores



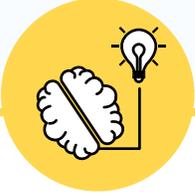
DETAILS

Time:

- 20 minutes to construct solar powered oven
- 60 minutes to cook s'mores

Age Range:

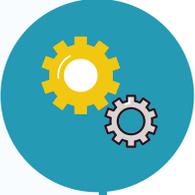
- Toddler/Preschool/Elementary



OBJECTIVES

Children will :

- use the sun to generate heat by constructing a solar powered oven.
- discover how chocolate and marshmallows melt in a solar powered oven (greenhouse effect).



MATERIALS

- Pizza box
- Pencil, ruler, scissors, glue stick, craft knife, clear tape, stick or dowel
- Tin foil , clear plastic wrap, black construction paper
- Graham crackers, chocolate bars, & marshmallows

INTRODUCTION

You don't need to build a campfire to get gooey s'mores. Just tap into the sun, the fuel source that people around the world use to power solar ovens. Here's an easy model that will let you catch enough backyard rays to cook the most delicious s'mores!

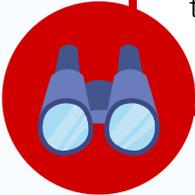


WHAT ARE GREENHOUSE GASES?

Greenhouse gases are gases in the Earth's atmosphere that trap heat. They let sunlight pass through the atmosphere, but they prevent the heat that sunlight brings from leaving the atmosphere.

FAIR PROJECT IDEA

After using your solar powered oven, replace your black piece of construction paper with a clean sheet. Enter your solar powered oven as a science and technology exhibit!



DIRECTIONS

Solar Oven S'mores

Step 1

On the top of the box, draw a square that is an inch smaller than the lid all the way around. Use a craft knife (adults only) to cut through the cardboard along three sides, and then fold the cardboard up along the uncut line to form a flap.



Step 2

Glue aluminum foil, shiny side out, to the bottom of the flap, keeping it as wrinkle-free as possible.



Step 3

Glue another piece of foil to the inside bottom of the box. Then place black construction paper on the top of the foil.



Step 4

Tape clear plastic wrap to the underside of the lid to seal the opening created by the flap. For best results, the seal should be as airtight as possible.



Step 5

For each s'more, center two graham crackers on the construction paper. Top one with chocolate and the other with marshmallow.



Step 6

Place your oven outdoors in direct sunlight. Use a stick or dowel to prop the box open at the angle that reflects the most sunlight into the box. Within an hour or sooner the chocolate and marshmallows should melt enough to assemble into a s'more.



ADDITIONAL RESOURCES

Solar Oven S'mores

How does it work?

The foil flap gathers sunlight and reflects it through the plastic and into the oven, doubling the amount of incoming light. The black paper absorbs the light and converts it to heat, and the clear plastic allows the sun to shine in while keeping the heat from escaping. As more light hits the black paper, more heat is created and trapped. After an hour on a sunny day, the oven can be as hot as 275 degrees, hot enough to melt chocolate and marshmallows!

Engaging Questions

- Why do you think it takes so long to cook s'mores in the sun vs. at a campfire?
- What are some recipes you could make using your solar powered oven?
- How would different types of weather change your results?

Lesson Extensions

- Decorate your solar powered oven to make it unique!
- Try making s'mores with another type of candy bar. Compare melting times.
- Solar ovens come in many shapes and sizes. Experiment with different types of boxes. What design cooks the fastest?

Family Engagement

Camping as a family can be a lot of fun and can be done in your backyard. Here are some ideas!

- Practice oral storytelling by sharing your favorite campfire stories.
- Read children's books with a flashlight under the stars.
- Play the game Would You Rather? by offering two choices to pick from. This game provides lots of laughs!

Books to Check Out

The Big Blue Thing on the Hill by Yuval Zommer

We're Going on a Bear Hunt by Michael Rosen

Flashlight by Lizi Boyd

Scare a Bear by Kathy Jo Wargin

Dramatic Play

Encourage dramatic play and camping indoors. Use cardboard, cotton balls, and brown felt as props to create s'mores. Paper towel rolls and red, yellow, and green tissue paper to be used to design an indoor campfire.