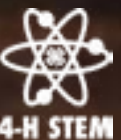




S'more Science

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S'more Science

OVERVIEW

There are lots of great reasons to learn how to make a solar oven! Maybe you're going camping, or you're interested in learning about different ways to concentrate the sun's energy. Maybe you're just hungry! In any case, as long as you're patient and willing to move your oven into direct sunlight, you'll be rewarded with hot, yummy food.

Several scientific factors are involved in making your oven the best heater it can be. Heat is a form of energy (sometimes called thermal energy) that is transferred by a difference in temperature. You want to transfer the sun's heat to your solar oven. Reflection is the throwing back of light, heat or sound by a body or surface, like a mirror. The shiny foil you'll use in your oven will reflect the sun's light and heat inside your oven. You will line the inside of your oven with black paper so it can absorb the light and heat being reflected into it.

Another energy process you should be familiar with for this project is convection. Convection is the transfer of heat by the movement of a gas or liquid. You'll use plastic wrap to make your oven airtight so the air warmed by the sun doesn't leave your oven through convection. Our final energy term is very important to this experiment- insulation. Insulating materials prevents heat from leaving your oven through radiation. That's why you are going to line the inside of your oven with a cheap and effective insulator—news-paper (or any other paper you have on hand).



ACTIVITY

Part 1

MATERIALS NEEDED

Cardboard pizza box or small - medium box
Pencil
Ruler
Box cutter or scissors
Aluminum foil
Clear tape
Black construction paper or black spray paint

Newspapers
Oven mitt
Plate
Chocolate
Graham Crackers
Marshmallows
Optional: a thermometer that goes up to 250°F



STEPS

Step 1: Clean any stray bits of cheese, sauce or crumbs out of your pizza box.

Step 2: Using the ruler and pencil, draw a square one inch in from the edges of the top of the box .

Step 3: Use a box cutter or scissors to cut out three of the four sides of the square. Make a crease along the uncut side of the square to create a flap that stands up.

Step 4: Cut a piece of aluminum foil large enough to cover the inner side of the cardboard flap. Wrap the foil tightly, and secure with tape.

Step 5: Line the bottom of the pizza box with black construction paper or black spray paint.

Step 6: Cut two pieces of plastic wrap that are the same size as the top of the pizza box. Use tape to secure the plastic wrap to the inside edges of the square window you cut into the box. You are creating an airtight window.

Step 7: Roll up some newspaper pages into tubes to stuff into the sides of the box. Make sure you are still able to close the lid of the pizza box. Once the pizza box is closed, secure it shut with tape.



ACTIVITY

Part 2

STEPS

Now it is time to get cooking! The best time to use your oven is between 11:00 a.m. and 2:00 p.m. Make sure to set the food on a plate so you don't mess up the interior of your oven.

Step 1: Place one or two marshmallows on top of a graham cracker.

Step 2: Put two to three squares of chocolate on top of the marshmallow. Place into the center of your solar oven on top of a plate.

Step 3: Wait until it's done cooking to add the second graham cracker.

Step 4: Once your chocolate is melted, and your marshmallow looks toasty, carefully remove your S'more from the oven with an oven mit, let cool, and enjoy.

Resources: [Scientific American](#), and [Education.com](#).

