

WHAT ARE WE INVESTIGATING?

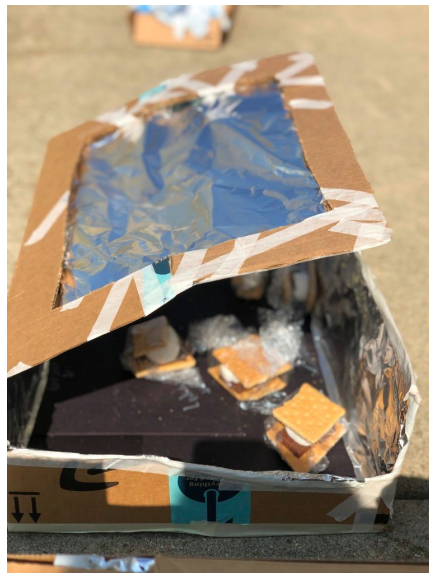
Can you cook some food in a homemade oven?

MATERIALS:

- Cardboard
- Tape
- Scissors
- Black Paper
- Aluminum Foil
- Plastic Wrap
- Some ideas to cook in your solar oven: Smores, Grilled Cheese, Hot Dog, Frozen Pancake
- Ruler or Wooden Spoon
- Strive Academy's Engineering Design Process Handout (found at www.striveacademy.org)
- Pencil or Pen

EXTENSION:

- * Yum - try a different type of food and repeat the experiment!
- * Use a thermometer to measure the temperature of your oven at different parts of the experiment. What temperature do you think it needs to be to cook your food?
- * Try different colors of paper on the bottom of your solar oven. Does any color work as well as black paper at cooking your food?



DIRECTIONS:

1. Gather all of your materials. Our materials are just suggestions - feel free to add other things too!
2. On your handout (found at www.striveacademy.org), fill in the title of your experiment (Solar Oven).
3. On your handout, fill in your hypothesis. You want to answer the question: What food can I cook in my solar oven? (Be sure to check with your parents!)
4. On your handout, sketch a design of your solar oven. Feel free to use color and label the materials that you will be using!
5. Using cardboard, build a box. It needs to have a bottom and a lid that opens on the top (think of a pizza box).
6. Cut a flap in the lid of the box but only cut out three sides of the flap so it opens but is still attached to the lid.
7. Cover the inside of the flap with aluminum foil and tape it on. This will help reflect the Sun when it is time to cook.
8. Open the lid of the box and line the bottom of your box with black paper and tape it down. This will help to absorb the sun's rays.
9. Cover the opening in the lid (not the flap) with plastic wrap and tape it on. It will work best if you cover the opening on both sides. This will also help trap the sun's heat.
10. Under "Data Collection/Observation", draw a picture of what your finished solar oven looks like. Feel free to use color!
11. Set your solar oven outside in the sun (between 11am and 3 pm is the best time) on a very sunny day. Put the food that you want to cook on a paper plate and then on the black paper at the bottom of the box. Close the lid but leave the flap open. Use the ruler or wooden spoon to help keep the flap propped open.
12. Check your food after an hour. If it is not finished, leave it in longer (the time will depend on the food and the amount of sunlight). **HAVE A PARENT HELP YOU REMOVE THE FOOD AS IT MAY BE HOT.** Under "Results", record how long it took for your food to cook.
13. Answer the "Analysis" questions on your handout:
 - How did your food taste? Was it better or worse than cooking it in a real oven?
 - How could you redo this activity and make it more scientific?
 - The heat from the sun got trapped inside your solar oven to cook your food. How is this same idea used to grow plants in greenhouses?

**** Try the extension activities on the first page for more fun! ****