



**Position in Sun:** Put on your sunglasses. Seriously – we don't want you getting too much bright sunlight into your eyes, and the foil does a great job of reflecting the sunlight. Once your sunglasses are on, take the pizza box outside. Aim it at the sun by standing behind the half-open lid and positioning the box so the shadow from the lid aims directly for you. Now bend down the lid to aim the reflected sunlight on the lower portion of the box. Use the chop stick supports to brace the lid in this position – tape them in place to the lower part of the box. Place the bag with the food in the middle of the pizza box.

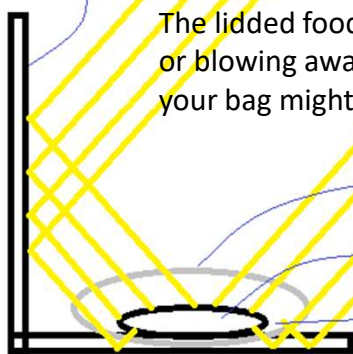
**Wait:** The amount of time it takes to warm your snack will depend on the outdoor temperature, time of day, cloud cover, size of pizza box, and amount of food you are warming. Check your snack after half an hour and again after 45 minutes.



**How it Works:** Rays of sunlight do the heating. Some rays go through the clear bag and clear lid, to be absorbed directly by the food, converting the infrared light energy into heat energy. Some rays strike the black food tray and are absorbed by the dark-colored material, warming the tray by converting the infrared light into heat. Some rays are reflected by the foil towards the food, increasing the amount of solar radiation striking the food.

The lidded food container and the bag around the container keep warm air from rising or blowing away, like shutting the oven door. Depending on what you are cooking, your bag might get steamy.

Foil reflects sunlight



Clear bag transmits light through, but prevents heated air from rising or blowing away (convection)

Clear lid transmits light through to be absorbed by food, converting infrared light energy to heat energy.

Dark-bottomed container absorbs sunlight, converting infrared light energy to heat energy.

How did it turn out? Warm and gooey? Save your Solar Oven until camp is all over – we'll use it again.

**Other things to try:** What else can you warm with your solar oven?

If you thought this was fun, try a side-by-side experiment: Make two of the same snack. Set one outside on a table in the sun, and the other in the solar oven in the sun. How much faster does the snack in the solar oven warm, compared to the snack that is just sitting outside?

How is the speed of the solar cooker impacted by the angle of the lid?

# Build a Solar Cooker

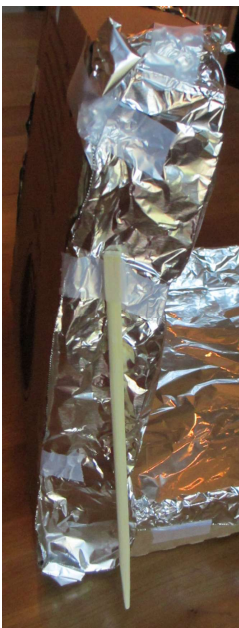
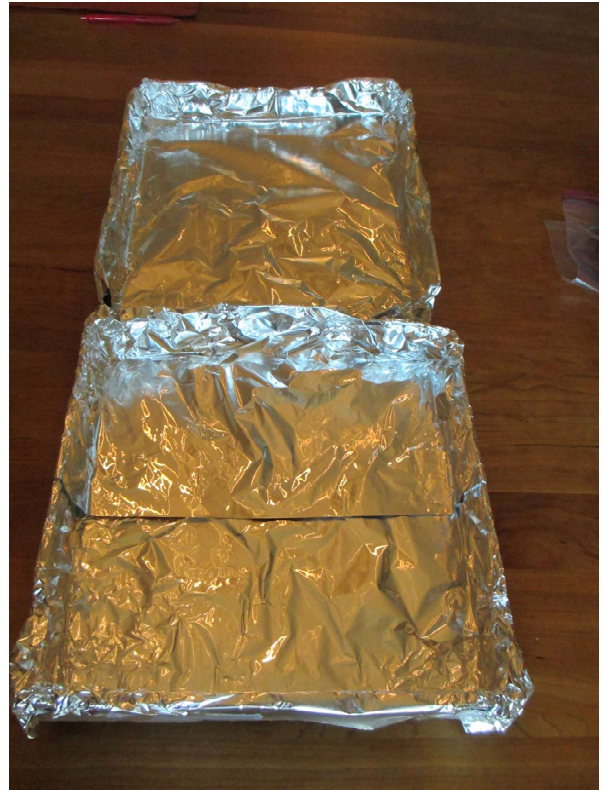
## Supplies You'll Need:

- Sunglasses
- Pizza Box – bigger is better
- Aluminum foil
- Tape (any kind). Glue will work if you don't have tape.
- Ingredients for a Snack, such as tortilla chips and shredded cheese for nachos, tortilla and shredded cheese for a quesadilla, hot dog and bun, or other "just warm it up" snack.

## Supplies We're Providing:

- Clear-topped food container
- Zip-top plastic bag
- Chop sticks

Line the Box with Aluminum Foil: tape aluminum foil onto the inside of the pizza box, trying to keep all the exposed tape on the outside of the box. Make sure you have the shiny side of the foil facing up.



Lid Support: Tape the top of each chop stick to the side of the lid, so each chop stick extends down to the level of your work surface. Don't tape them at the bottom yet, just tape them at the top.

Lunch Snack: This part works best between 11 am and 2 pm. And you'll need to take your project outside – out on a deck, in your yard, on the sidewalk, or to a local park.

Place your snack in the food container that is black on the bottom and clear on top. Close the top and place the container inside the zip-lock bag, making sure it has lots of extra air – don't squeeze the air out. Better yet, blow some air into the bag, then zip it shut.

