Pringles® Pinhole

Recycle a potato chip can into a simple camera!

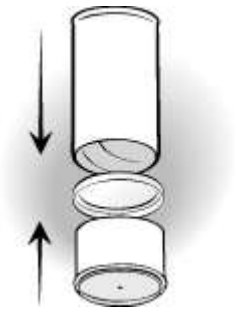
What do I need?

- empty Pringles® chip can
- marker
- ruler
- X-Acto knife or utility knife (ask a grown-up to help you cut)
- thumbtack or pushpin
- masking tape
- aluminum foil
- scissors (if you want)
- bright sunny day

What do I do?

1 Take the plastic lid off the Pringles® can and wipe out the inside. (Save the lid!)

2 Draw a line with the marker all the way around the can, about 2 inches up from the bottom. Have a grown-up cut along that line so the tube is in two pieces.



4 We're going to use the plastic lid as a screen. If your lid is clear, you may need to apply a piece of wax paper, white tissue paper, or vellum to the lid to act as a translucent screen. Put the plastic lid onto the shorter piece. Put the longer piece back on top. Tape all the pieces together.

5 To keep light out of the tube, use a piece of aluminum foil that's about 1 foot long. Tape one

3 The shorter bottom piece has a metal end. With the thumbtack, make a hole in the center of the metal.

end of the foil to the tube. Wrap the foil all the way around the tube twice, then tape the loose edge of the foil closed. If you have extra foil at the top, just tuck it neatly inside the tube.

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6 Go outside on a sunny day. Close one eye and hold the tube up to your other eye. You want the inside of the tube to be as dark as possible-so cup your hands around the opening of the tube if you need to.

Look around your yard through the tube. The lid makes a screen that shows you upside-down color pictures!

7 Hold your hand below the tube and move it very slowly upward. Your hand is moving up, but you'll see its shadow move down the screen!

What's Going On?

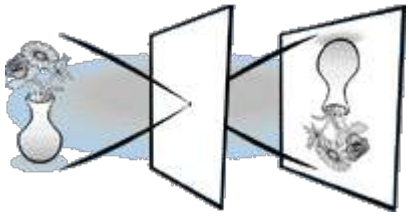
How does a hole in the bottom of a Pringles® can make a picture of the world?

The hole doesn't make the picture. The hole isolates a small part of the light, sorting a single image from the jumble. Only a few of the light rays reflecting off each point on the rose are traveling in a direction that will let them pass through the hole. The same is true for light bouncing

The image of the world is always there. All the hole does is make it possible for you to see it.

Suppose you point your Pringles® Pinhole at a brightly lit bouquet of flowers. Light reflects off the red rose, the blue iris, the white daisy, and the green leaves. If you hold a piece of white paper near the bouquet, some of that reflected light will shine on the paper-but it won't look like anything. That's because light bouncing off the red rose ends up overlapping with light bouncing off the blue iris, the white daisy, and the green leaves. There are many images of the bouquet on the paper-but they overlap with one another, and the colors all blend together, making a jumble of light.

off all the other flowers in the bouquet. On the other side of the hole, these light rays reveal an image of the bouquet.



Wow! I Didn't Know That!

You've made a camera! This kind of camera is called a camera obscura-which is Latin for "dark chamber." The first camera obscuras were small rooms that were completely dark except for a tiny hole in a wall that let in a dot of sunlight. People in the room saw an image of the trees and sky on the wall opposite the hole-and were amazed when the image disappeared at sunset!

The Home Scientists in the Graff family improved their Pringles® Pinhole by using a foam soda can holder as an eyepiece. It made the inside of the tube dark, and was easier to use for people who wear glasses.

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