

Discovery Room



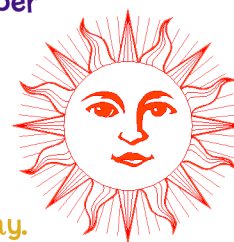
HOW TO MAKE A CAMERA OBSCURA



1. Use scissors to cut a small hole (about 1 inch by 1 inch) in one end of the cardboard box.
2. Now cut a larger square hole (about 3 inches by 3 inches) in the other end of the box.
3. Cut a square of aluminum foil (about 2 inches by 2 inches). Use a sharp pencil or awl to pierce a tiny hole in the foil (about this size ●).
4. Put the pierced aluminum foil over the box's smaller hole and tape into place.
5. Cut a square of tracing paper (about 4 inches by 4 inches) and tape it over the big hole.

You will need:

- a cardboard box about 8 inches long with a top that closes
- scissors
- a ruler
- aluminum foil
- a sharp pencil or awl
- tape
- tracing paper



Your camera obscura will work best on a sunny day.



Stand in a room with the lights off and point the pinhole end of the camera out the window. Hold camera about 6 to 12 inches from your face and look at the tracing paper. You should see the scene outside upside down on the tracing paper.

WHERE DO CAMERAS COME FROM?

All cameras come from a tool called the camera obscura. The camera obscura wasn't invented by any one person, but the effect had been noticed by a lot of people throughout history. In the fifth century B.C.E., the camera obscura effect was written about by Mozi in China. Aristotle, the Greek philosopher, took note of it in the fourth century B.C.E. In the tenth century, Arabian mathematician Alhazen actually did experiments with it. And Leonardo da Vinci sketched its uses in the fifteenth century in Italy.

WHAT IS A CAMERA OBSCURA?

The term *camera obscura* comes from the Latin for *dark room*. This 'room' could be an actual room, a box, or even a tent—any dark space with a small hole to let in light can serve as a tool to view the camera obscura effect. In this phenomenon, light reflects off a brightly lit scene outside the 'dark room,' passes through the hole, and projects an inverted image against an inside surface. The use of glass lenses in the 1500s made camera obscuras small and portable. These devices also used mirrors to reflect the image right-side up. Artists began using camera obscuras as aids for drawing, viewing the image inside with a frosted piece of glass (see illustration). In the 1800s, camera obscuras became the first image-capture devices—devices known today as cameras.

