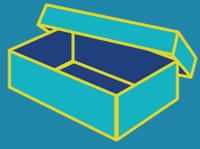


# Make a Shoebox Sun Projector

Make a simple projector so you can enjoy August's solar eclipse!

## MATERIALS



SHOEBOX



SCISSORS



WHITE PAPER



ALUMINUM  
FOIL



TAPE



PUSH PINS

## STEPS

**1** Open the box and tape the white paper so that it covers one of the inside short ends.

**2** Cut a large notch into the other short end of the box.

**3** Cover the notch with a single layer of aluminum foil and tape the foil to the box.

**4** Carefully poke a hole into the aluminum foil with the pin. Do not tear the foil.

**5** Stand with your back to the Sun. Point the shoebox up so that the end with the hole in the foil points towards the Sun. Move the end with the white paper around a little until you see a tiny image of the Sun projected onto the white paper screen. Don't let your head get in the way!

## WHAT'S HAPPENING?

The pinhole acts like a lens and produces a tiny focused image of the Sun. The size of the image will be 1 percent of the length between the pinhole and the screen. A 60-inch-long box will give you an image that is 0.6-inch wide. **Remember, do not look through the pinhole at the Sun and do not look directly at the Sun!** If you do, you may permanently damage your eyes. Use the pinhole to project an image of the Sun.

During the eclipse, look for images of the Sun produced on the ground by tiny holes in the leaves on trees. Try using a kitchen strainer or colander. Try using cookies or crackers with holes in them. There may be sources of pinholes all around you!

## TRY THIS!

Give these changes a try to see what happens to the projected image:

- Use a longer or shorter box.
- Poke a larger or smaller hole.
- Use a material other than aluminum foil. Check that junk drawer!
- Project images of other light sources such as bright light bulbs or a bright TV screen.
- Project an image of the Full Moon.

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