Make a Solar Viewer

Create a solar viewer to safely observe the Sun!

The Sun (also called Sol) is the star at the center of our Solar System. Its gravity holds the solar system together. The Sun's warmth and light make life possible on Earth.

Never look directly at the Sun! It can seriously hurt your eyes.

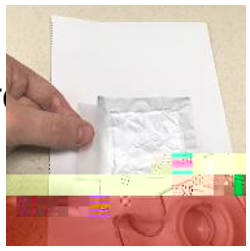
Materials Needed:

Solar Viewer printable (or draw your own), aluminum foil, scissors, tape, thumbtack, markers or colored pencils. Optional: cardstock or recycled cereal box.

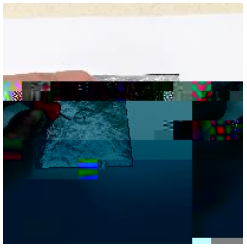
Instructions:

Step 1: Cut out the viewer template, including the square in the middle. If you are making your own, cut a rectangle 8 inches by 6 inches (20 cm by 15 cm) Cut a 2 inch (5 cm) square in the center.

Hint: You can glue the viewer to cardstock or a recycled cereal box to make it sturdier. Do this before you cut out the middle square.



Step 2: Cut a 3 inch (7.5 cm) square of aluminum foil. Turn the viewer over and tape the foil over the empty square. Make sure the foil is smooth!



Step 3: Have a grown-up use a thumbtack to make a small hole in the middle of the foil.

Step 4: Decorate your solar viewer. Be creative, but make sure not to cover up the hole in the foil!

Step 5: Use your solar viewer to observe the Sun! See the next page for instructions and ideas.

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How to Use Your Solar Viewer

Never look directly at the Sun! It can seriously hurt your eyes.

- Go outside on a clear day. Stand with your back toward the sun, and hold your viewer above your shoulder.
- length away. Line up the paper so the sunlight comes through the viewer and onto your paper.

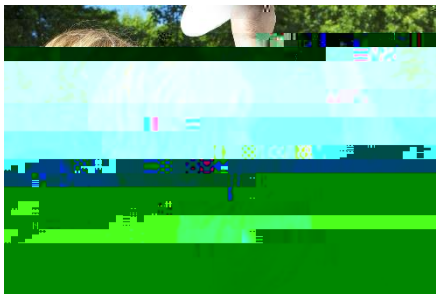
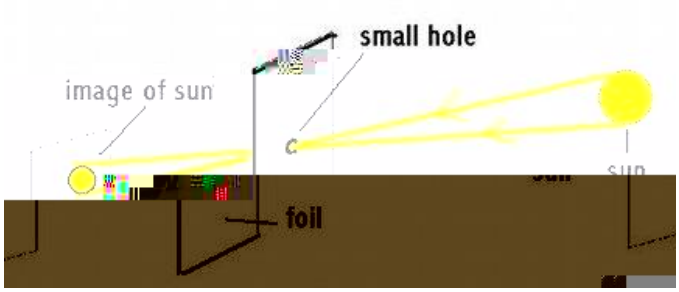


Image: Alexandra Floersch / The Forum

- The light you see on the paper is the Sun! To make the image larger, hold the paper further away from the viewer.

Try This: Pick a spot to stand. View the Sun through your solar viewer, and mark its location on your paper. Come back an hour later, stand at the same spot, and mark the S
move?
do you think the Sun appears to move?

How Does A Solar Viewer Work?



A solar viewer, or pinhole viewer, works by projecting the image of the sun onto a surface behind the small hole. The smaller the hole, the sharper the image will be. Light rays from the top of the sun go to the bottom of the image and light from the bottom of the sun creates the top of the image. The image you see is actually upside-down, but because the Sun is basically symmetrical, this effect is not noticeable.

Information and image from J. Heffernan, Kenan Fellows Program.

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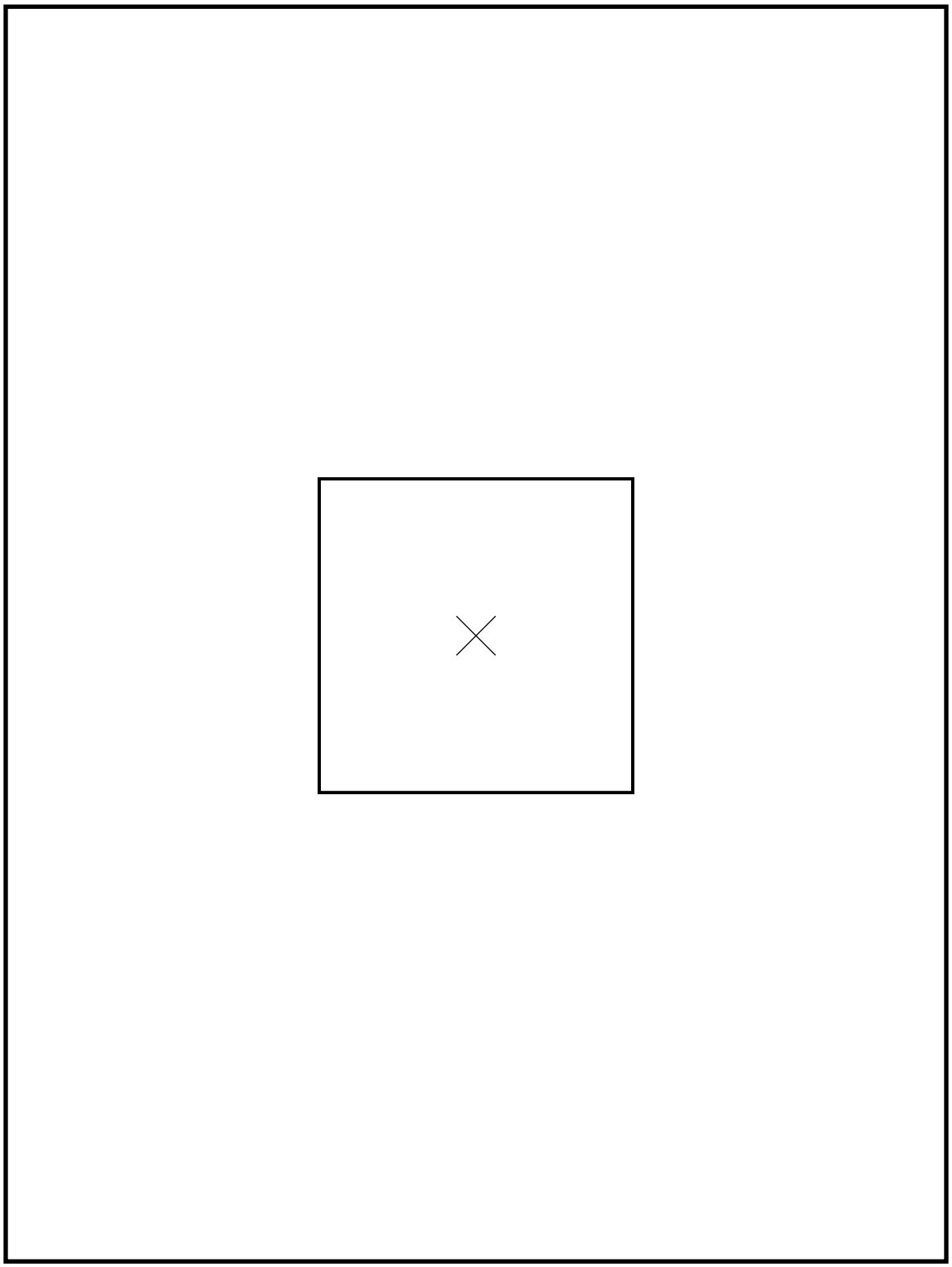
Solar Viewer Printable



The Sun: Our Star

The Sun (also called Sol) is the star at the center of our Solar System. Its gravity holds the solar system together. The Sun's warmth and light make life possible on Earth.

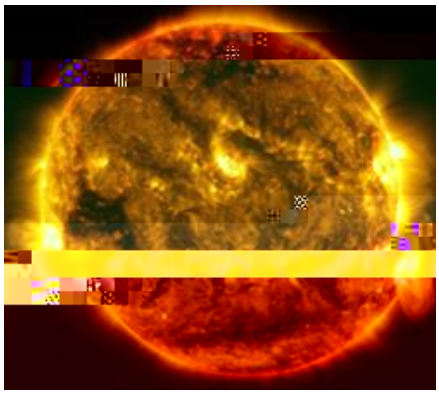


Image: NASA/SDO.

The Sun is a type of medium-sized star called a yellow dwarf It is about 4.5 billion years old.

The Sun contains 99.8% of the matter in the Solar System.

The Sun is 109 times wider than the Earth and 330,000 times as massive. Over one million Earths could fit inside the Sun.

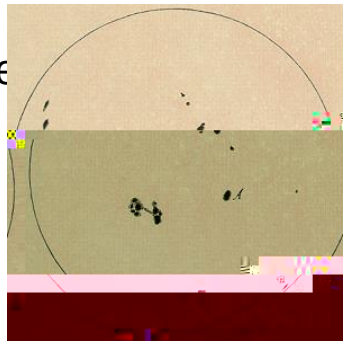
The Sun's gravity keeps everything in the Solar System in its orbit, including eight planets, at least five dwarf planets, tens of thousands of asteroids, and billions of comets.

The Sun is composed of hydrogen (70%) and helium (28%).

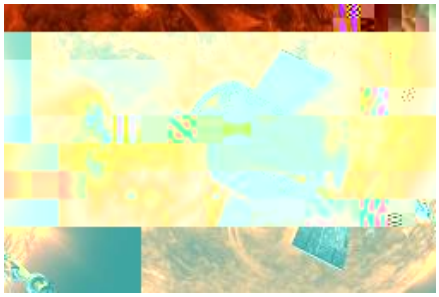
The temperature inside the Sun can reach 15 million degrees Celsius (27 million degrees Fahrenheit).

The Sun has a very strong magnetic field. Its surface sometimes has dark sunspots, which are areas of intense magnetic activity.

The Sun generates solar wind: a stream of charged particles traveling through the solar system at about 450 kilometers per second.



One of Galileo's 1613 sunspot drawings.
Image: Rice University



Many spacecraft constantly observe the Sun, helping us keep an eye on space weather that can affect satellites and astronauts.

Image: NASA.

Information from NASA: solarsystem.nasa.gov/solar-system/sun/in-depth/