



ECLIPSE CLASSROOM ACTIVITIES

CREATE DYNAMIC ART USING THE ECLIPSE!

OBJECTIVES

- Design a dynamic work of art
- Gain an understanding of how sunlight is projected through a hole
- Use critical thinking skills to create something unique

TIME FRAME

- This activity can take anywhere from **a few minutes to an hour or two** depending on how much time you want to spend on your art piece.
- You may want to **test your design on a sunny day** before the eclipse takes place, so plan ahead.

GET EXCITED!

If you were to poke a hole in a piece of paper and let the sunlight shine through it, what would you see? You probably expect to see a circular spot of light projected through the hole — and that is indeed what you would see. But while you might think the circle arises from the hole's shape, in fact it is a “pinhole projection” of the Sun's image. Therefore, when the Sun is partially covered by the Moon on eclipse day, you'll see an image of the eclipsed Sun instead of a full circle! This activity expands upon this concept, giving students the opportunity to make a pattern of small holes that will become a work of art that changes before your eyes on eclipse day.

Note 1: This is a great way to occupy time while waiting for totality. People of all ages can show off their designs and watch as their works of art change as the Moon covers the Sun.

Note 2: Because this activity involves pinhole images, you may wish to first try the [milk carton camera activity](#) to gain a better understanding of how and why pinhole images are made.

WHAT YOU'RE GOING TO NEED

- Safety pin or other pointing object to poke small, circular holes.
- **Cardboard, poster paper, or stiff paper** in which to poke your holes for your art piece.
- You may also wish to find other **objects that have holes in them**, such as spaghetti strainers.
- A **larger piece of whiteboard, cardboard, or white poster paper** on which to project your image; size can vary depending on the size of your artwork.
- **Optional- Binoculars:** each pair can project two images of the Sun.

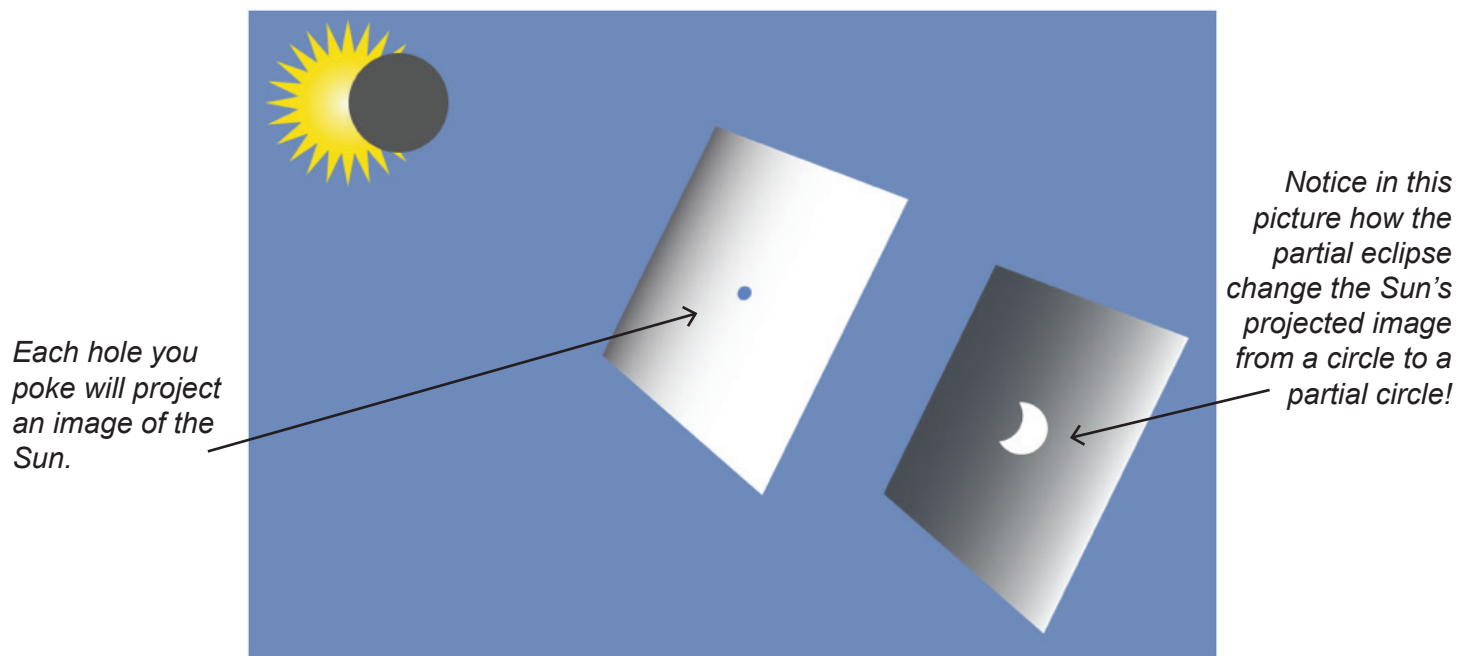


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PRE-ECLIPSE PREPARATION

STEP 1 - BRAINSTORM IDEAS

- Take some time to think about different shapes or drawings made out of many holes that you can poke into a piece of cardboard, stiff paper, or poster paper. Think about what would look interesting.
- Remember that, during a partial eclipse, the projection of a single hole will look something like this:



- Now think about the kinds of patterns you could make by poking many holes in your sheet.

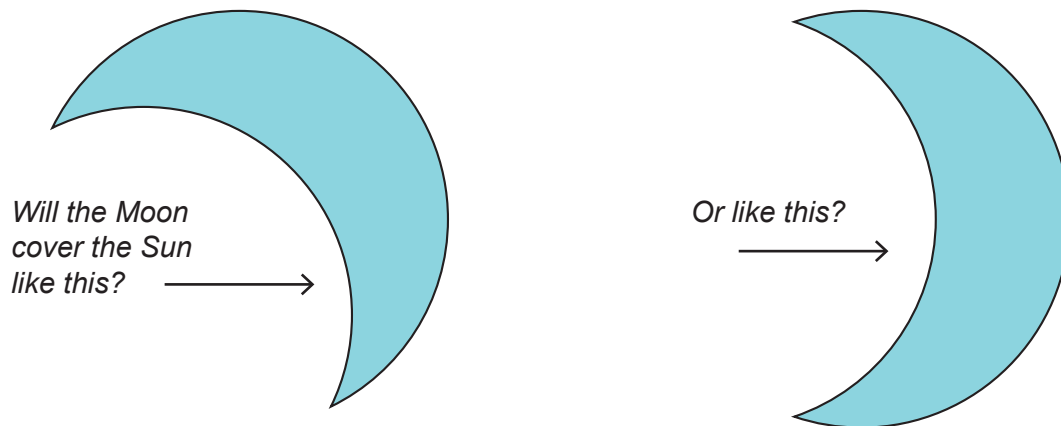
STEP 2 - GATHER MATERIALS AND SKETCH

- Gather the materials for your art piece. Remember to consider different objects with holes in them already. Try to think outside the box!
- Sketch out your design on your sheet of paper or cardboard. Draw dots at each point where you will later poke holes.
- Be sure to think about how your image will change as the Moon moves in front of the Sun during the eclipse.



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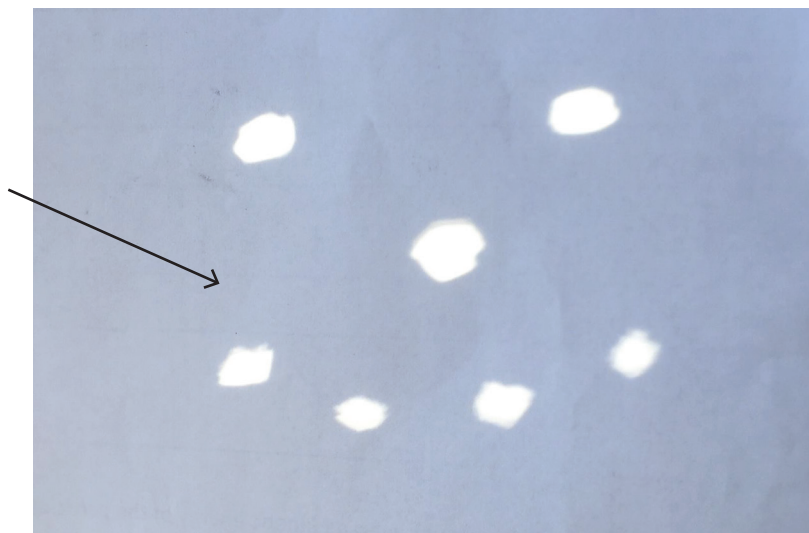
Important Note: You may want to consider what direction the Moon will begin to cover the Sun. How will this affect your projected image? How can you find this out?



STEP 3 - FINISH YOUR ART PIECE AND TEST IT OUT

- Carefully poke holes through each of the dots you've made in your sketch. Be sure to clean up any stray paper or cardboard, so the holes are cut cleanly.
- Now you are ready to test it out. Take your art piece out on a sunny day, and see how your projection looks.
- You can take a photograph of your projection, as we've done here for a smiley face design:

How might the image of this smiley face change as the Sun gets covered?





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DURING THE ECLIPSE

STEP 4 - WATCH YOUR DYNAMIC ART COME ALIVE!

- You have seen what your artwork looks like under normal sunlight. Now it is time to watch as your design changes with the eclipse!
- Try taking a series of photos to show how it changes in appearance as the eclipse progresses.
- Compare your design with others who are doing this activity too.

EXTENSIONS

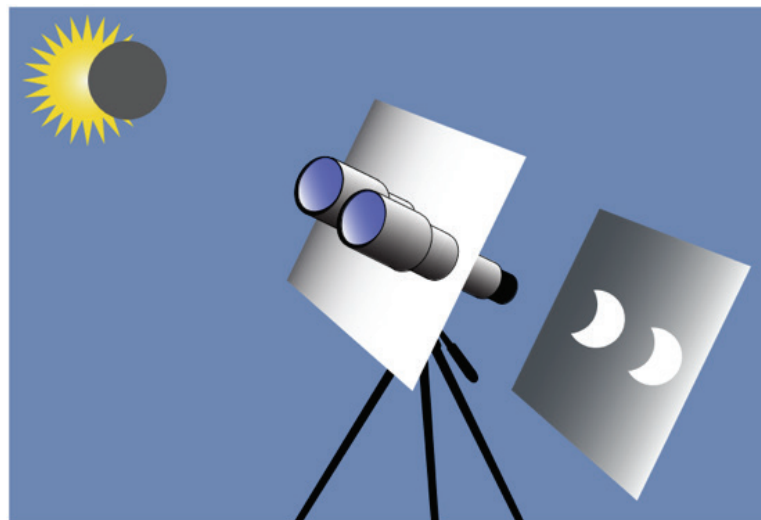
ADVANCED CHALLENGE: FIBONACCI SEQUENCE

If you are a math whiz, or just want something to impress people with on eclipse day, then here's an idea!

- Follow the same guideline that this activity lays out, but create a design that uses the famous *Fibonacci sequence*!

USING BINOCULARS TO ADD TO YOUR ART PIECE

Binoculars will allow you to project larger images of the Sun, as shown in the figure below. You can therefore use one or both of the binocular images as one feature of your art piece by poking holes in a pattern around the binoculars. Or, consider setting up multiple sets of binoculars to work together. You might also watch [this video](#) that gives more detail on how to set up your binoculars for the eclipse.



CRITICAL THINKING QUESTIONS

- From what direction will the Moon begin to cover the Sun where you plan to observe?
- What happens to light as it passes through a hole?