Project Exploration creates transformative learning opportunities for youth underrepresented in the sciences --particularly students of color and girls -- by equipping them with the skills, practices, and mindset needed for a lifelong pursuit of learning. STEM@Home makes activities around science, technology, engineering, and math accessible and fun to do at home. This STEMbook activity, resources, and more are available at www.projectexploration.org/stemathome.

In this activity, you will:

Use a few simple supplies to make a pinhole projector.

independent activity

Supplies Required:

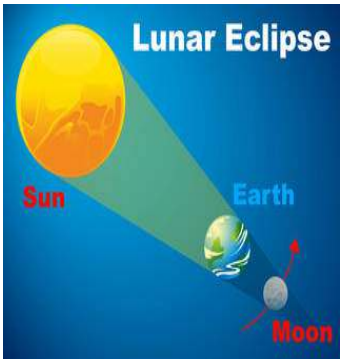
2 pieces of 8x11 paper or larger white card stock
Aluminum foil
Tape
Pin or paper clip

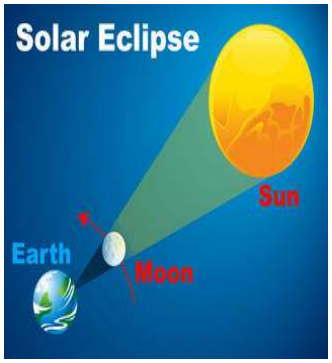
Video

Follow along as the passage is read aloud: https://tinyurl.com/ydx57kvh
Learn how to make a pinhole projector: https://tinyurl.com/ydgr6f4c

Overview

Scientists use solar eclipses as a opportunity to view the sun's corona/the sun's top layer. A solar eclipse happens when the moon gets in the way of the sun's light and casts its shadow on the Earth. The sunlight becomes blocked. Solar eclipses happens every 18 months and lasts for a few seconds. A partial eclipse is when the moon doesn't completely cover the sun. This happens at least twice per year somewhere on Earth. In the read aloud you learn about the lunar eclipse as well. In a lunar eclipse, the moon's light is blocked because the Earth gets in the way of the sun's light hitting the moon. The moon can also look reddish because Earth's atmosphere absorbs the other colors while it bends some sunlight toward the moon. You will be making a piece of equipment that allows you a safe and easy way to view the sun at any time. The pinhole (projector) forces any point of light to form a small point on the film so the image is crisp. Made correctly you will be able to see round spots of light--pinhole images of the sun!





Instructions

1. Fold and cut a small square or rectangle in the middle of one of your pieces of cardstock.
2. As shown in the video, you will cut out a slightly larger square or rectangle of aluminum foil.
3. Tape the foil over the hole.
4. Using a pin or paper clip poke a small hole in the foil.
5. Grab everything and go outside with an older sibling or an adult--A PINHOLE PROJECTOR ONLY WORKS ON CLEAR DAYS.
6. Place your second piece of cardstock on the ground and hold the piece with aluminum foil above it (FOIL FACING UP).
7. Stand with the sun behind you and view the projected image on the cardstock below.
8. The farther away you hold your camera, the bigger your projected image will be!
9. To make your projection a bit more defined, try putting the bottom piece of cardstock in an area where there is shadow, while you hold the other piece in the sunlight.
10. For extra fun try poking multiple holes in your foil, making shapes , patterns or other designs.
11. Each hole you create will turn into its own projection of the eclipse, making for some neat effects!!
12. **DO NOT LOOK THROUGH THE PINHOLE AT THE SUN! LOOK ONLY AT THE IMAGE ON THE PAPER!**

Additional Resources

1. To find out more about how a pinhole camera works: https://tinyurl.com/vgome3w
2. This video will show you in more detail how to safely watch a solar eclipse: https://tinyurl.com/y8rwvuch
3. Listen to this to find out why you SHOULD NOT stare at the sun with the naked eye: https://tinyurl.com/rxjhb3y

Share It Out

Explain the sun's light and how it can cas it's shadow on the Earth. Grab a helper to take photos of your pinhole camera and your designs. Record yourself or get your helper to record you talking about the solar eclipse and the safety measure you should take while viewing it!

Share on social media using the hashtags:

#EclipseReadAlong
#ProjectExploration
StemAtHome

Join PE's character contest!
Design a STEM character who will lead kids through activities and be featured on our website and in our STEMbooks. Cash prizes will be awarded to the top 3 finalists. Learn more at: www.projectexploration.org/character-contest.

Share via PE's website: Students who complete STEM@home activities and share what they learned with the PE team via our website will earn points which can be traded in for cash prizes at the Explore Store. Your project number is 109. Learn more at www.projectexploration.org/explore-store

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