STEM Activity Clearinghouse Collection Unboxing Webinar

SEAL Virtual Training

GORDON AND BETTY MOORE FOUNDATION

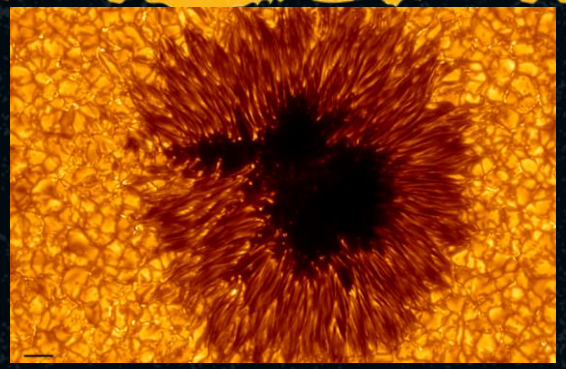
STAR net

SEAL
Solar Eclipse Activities for Libraries

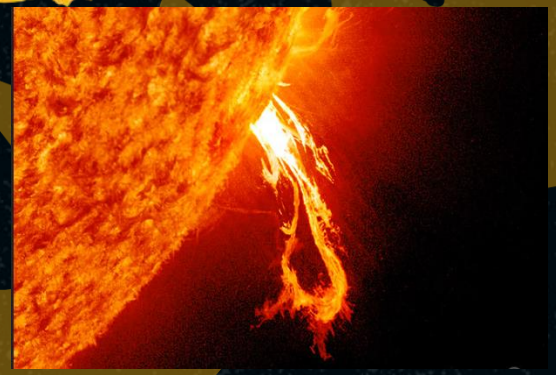
Agenda

- Introduction/Icebreaker
- SEAL Project Information and Resources
- The SEAL Collection on the Clearinghouse
- Activities
  - Demonstrations
  - Passive Paper Crafts
  - Project Activities
- Q&A

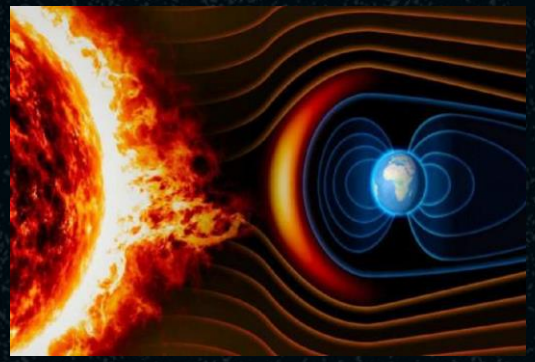
Icebreaker:
What solar feature do you feel like today?



1. Sunspot: (relatively) cool, calm, and collected; embracing change and transition



2. Solar Prominence: showy and bright, while also feeling grounded and connected



3. Coronal Mass Ejection: powerful and influential; ready to mess things up!

4. Sun's Corona: Gassy and Sassy. You won't let anybody's shadow dim your light.

The SEAL Project

- Free eclipse glasses for libraries
- In-person trainings in all 50 states and 4 territories
- Recorded training videos and virtual workshops
- Circulating kits in state libraries with solar telescopes, books, and activities
- Access to scientists, volunteers, eclipse subject matter experts, and other librarians through the *STAR Net* online community

SEAL Resources

STEM ACTIVITY Clearinghouse

STAR net

www.clearinghouse.
starnetlibraries.org

STAR_net
Science-Technology Activities & Resources For Libraries

In partnership with Cornerstones of Science
awakening curiosity, enriching lives

STEM ACTIVITY Clearinghouse

Search

VIEWED ITEMS

Diversión con Burbujas

¡Diviértate con Burbujas de Explora...

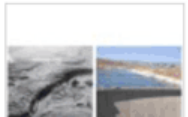
Water Cycle Paper Craft

Patrons learn about how the water...

UV Kid

In this activity, children use common...

NEW ITEMS



Walk Through Time: Water in the Four Corners Region Virtual Photo Gallery

Browse and Filter All Activities

In the STEM Activity Clearinghouse, librarians and library staff can find high quality, vetted STEM activities that are appropriate for library use. STEM stands for **S**cience, **T**echnology, **E**ngineering, and **M**ath.

You can search by audience, content level, and difficulty, among others. You can also browse collections that we've curated just for you! Almost all the activities in the Clearinghouse have pictures or videos of real libraries doing these activities. Activities developed outside the STAR_Net Project will include tips and tricks for implementing in your library, and will link you back to the original source content so you can explore more.

FEATURED COLLECTIONS

All Collections >

Take & Make

We Are Water

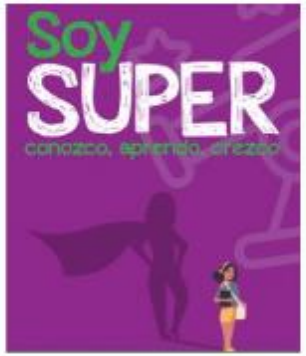
I'm Super

We're Super Creative

FEATURED COLLECTIONS

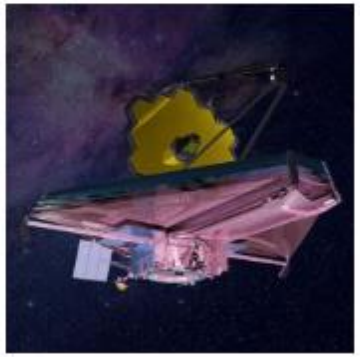
All Collections >

We Are Water



I'm Super

We're Super Creative



Look Up! Explore Our Universe

Moon, Mars, and Beyond

Solar Eclipse Activities for Libraries

NASA Inspires Futures for Tomorrow's Youth

Discover Exoplanets

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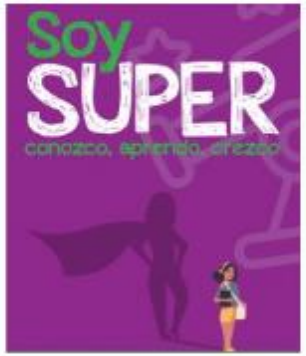

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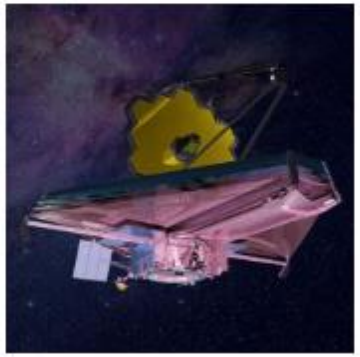


Look Up! Explore Our Universe

Moon, Mars, and Beyond

Solar Eclipse Activities for Libraries

NASA Inspires Futures for Tomorrow's Youth

Discover Exoplanets

Big Sun, Small Moon?

★★★★★ *1 Review(s)*

If you've ever seen a picture of a solar eclipse, you may have noticed that the Moon comes very close to covering the entire Sun.

Check It Out

How-to Video

Eclipse Chalk Art

★★★★★ *1 Review(s)*

Use a circular template and chalk to create your very own eclipse art!

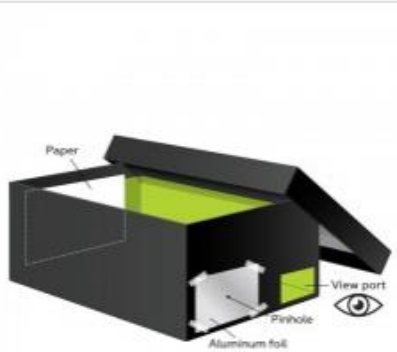
Check It Out

How-to Video

Guide to Building Solar Eclipse Viewers

There are many ways to build your own solar eclipse viewers that project the Sun's image in an area safe for your eyes to view! Check out this guide to find what will work best for you.

Check It Out



Pinhole Viewer: Shoebox Version

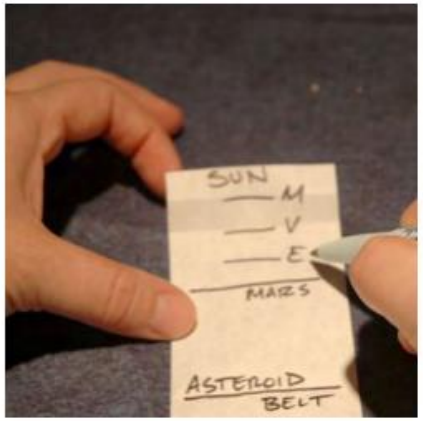
★★★★★ *1 Review(s)*

Use a shoebox and other common materials to create a safe way to view the Sun.

Check It Out

How-to Video

Solar Eclipse Activities



Pocket Solar System

★★★★★ *1 Review(s)*

Using a strip of paper, patrons construct a quick scale model of the distances between the objects of our solar system.

Check It Out

How-to Video

Implementation Guide

Make Your Own Sun Clock

In this activity, patrons construct their own Sun Clock – small enough to keep in their pocket – and explore how to orient their clocks correctly for them to function accurately.

Check It Out

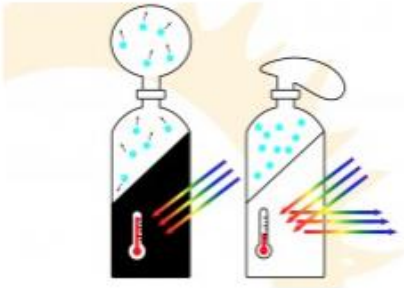
UV Kid

★★★★★ *2 Review(s)*

In this activity, children use common craft materials and ultraviolet (UV)-sensitive beads to construct a person (or dog or imaginary creature).

Check It Out

How-to Video

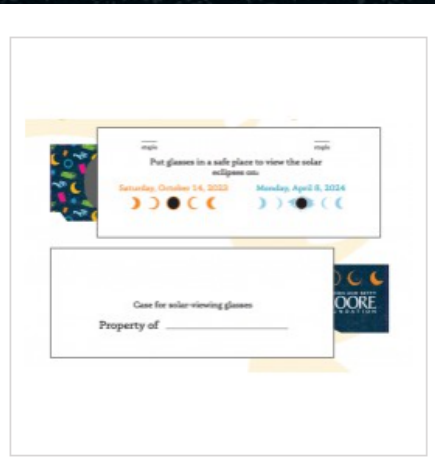


Solar Energy Quick Facilitation Guide

Patrons will be able to see how different colored objects passively absorb sunlight at different rates. It's easy to set up!

Check It Out

General Solar Science Activities



Make a Protective Case for Your Solar-Viewing Glasses

This activity has patrons make a personalized protective case to keep their Solar-Viewing Glasses safe.

Check It Out

Exploring Earth: Bear's Shadow

In this hands-on activity designed for younger visitors and their families, participants move a flashlight around an object to make and experiment with shadows. Connect the activity to a storybook about a little bear exploring his shadow!

Check It Out

How-to Video

Implementation Guide

Paper Craft: Parker Solar Probe

NASA's Parker Solar Probe is humanity's first-ever mission to a star, where it is directly exploring the Sun's large atmosphere. It will eventually zoom to within just 3.9 million miles of the Sun's surface, facing heat and radiation like no spacecraft ever has! Follow the instructions in this activity guide to build your own paper model of the Parker...

Check It Out

Passive Activities

Every activity is available in Spanish

Construya un horno solar

¡Los mecenas construyen un horno solar con una caja de pizza para cocinar con el sol! Esta actividad viene con instrucciones paso a paso, recetas de hornos solares y una extensión para construir un alambique solar que puede purificar el agua.

Check It Out

Bricolaje estuche protector para sus gafas de visión...

Esta actividad hace que los usuarios hagan un estuche protector personalizado para mantener seguros sus anteojos de visualización solar.

Check It Out

RELATED PROGRAMMING RESOURCES

Hints for uses in your library	Include this activity during your Storytimes for younger audiences by reading the book Moonbear's Shadow by Frank Asch
Related Links	SEAL: Solar Eclipse Activities for Libraries NASA Space Place: What is a Solar Eclipse? NASA Solar System Exploration: Eclipses 2023 Annular Eclipse Simulator 2024 Total Eclipse Simulator American Astronomical Society: Safe Eclipse Viewing
Originating Source	National Informal STEM Education Network
Related Books [Suggest a book]	Moonbear's Shadow by Frank Asch Astronomy Activity Book for Kids by Aurora Lipper Me and My Place in Space by Joan Sweeney and Christine Gore Looking Up! The Science of Stargazing by Joe Rao and Mark Borgions The Moon Book by Gail Gibbons CatStronauts: Mission Moon by Drew Brockington

REVIEWS

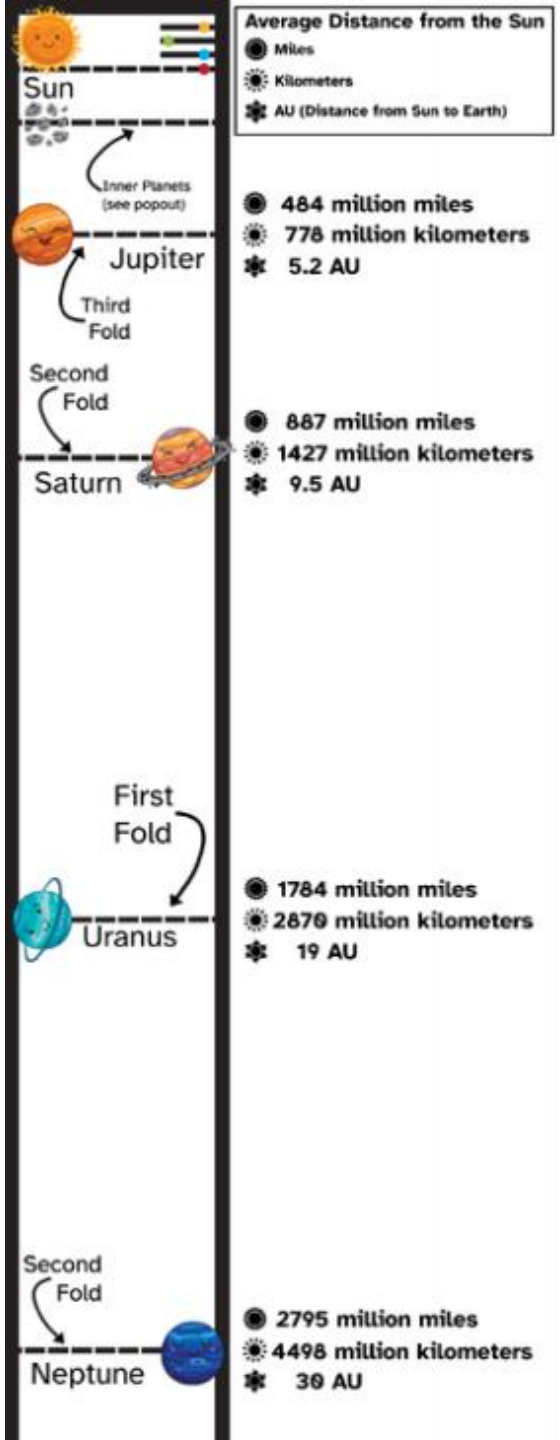
Be the first to write your review!

Activities

Demonstrations

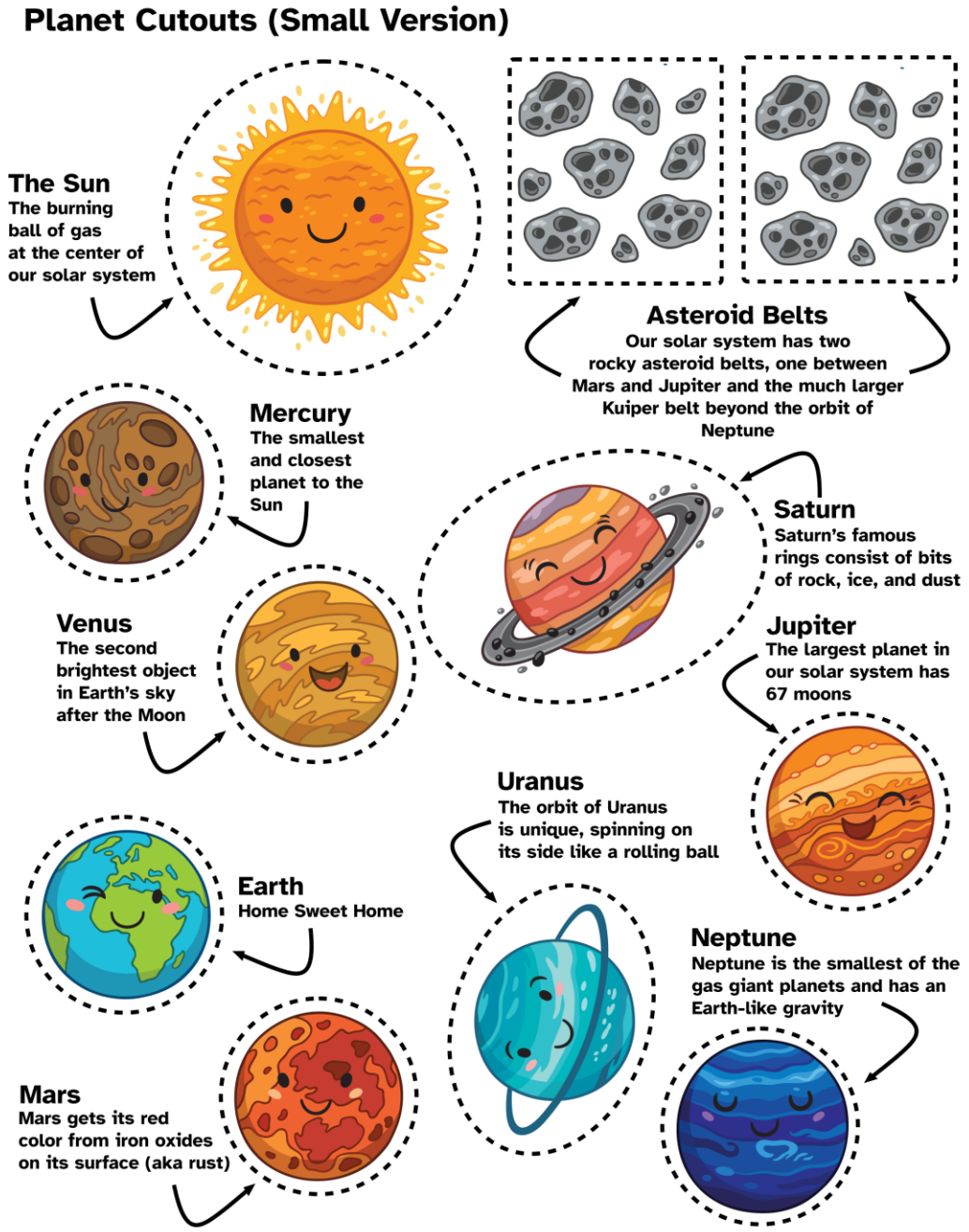
- Pocket Solar System
- Solar Energy

Pocket Solar System



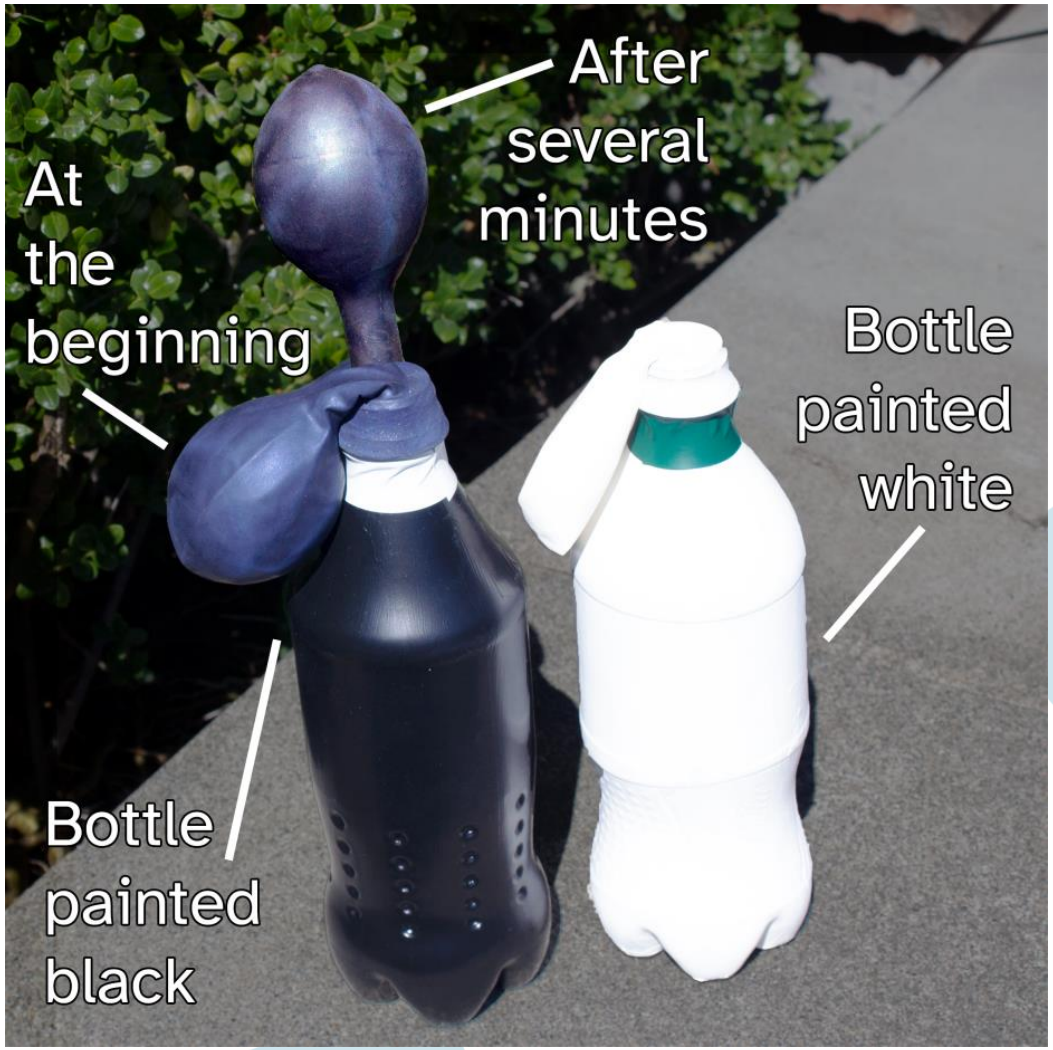
- Create a scale model of the solar system by folding a long strip of paper
- Learn about different measurement scales (miles, kilometers, astronomical units/AU)

Pocket Solar System



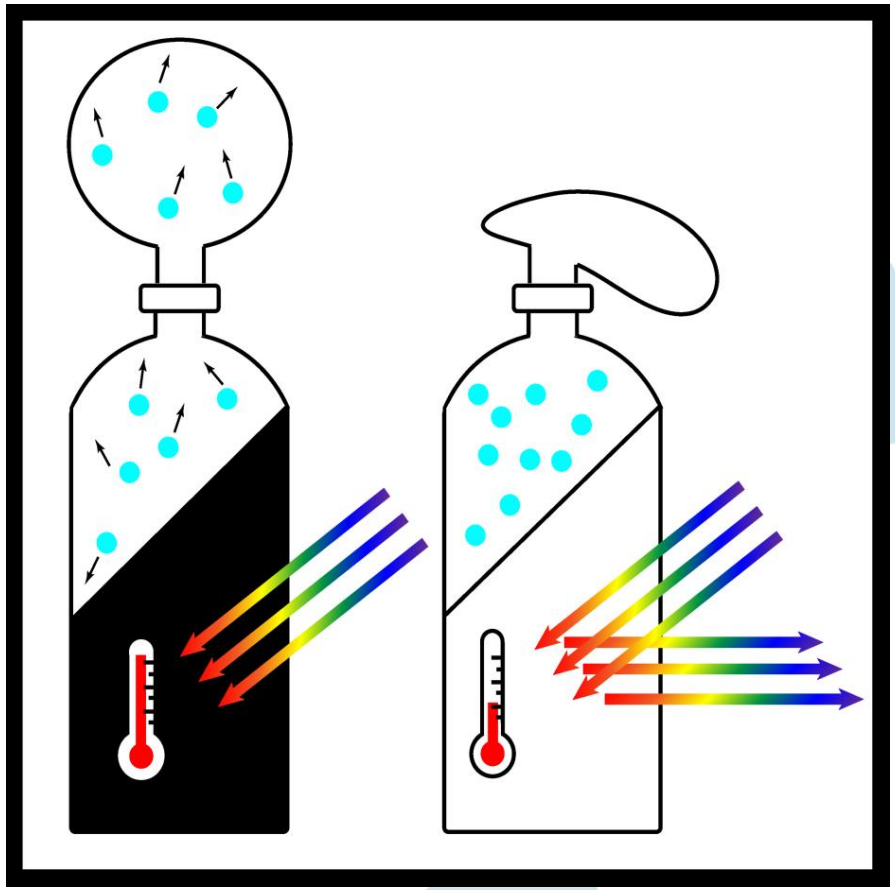
Solar Energy

- 2 empty plastic bottles of the same size
- 2 balloons of the same size
- Paint brush
- Black and white paints
- Flexible tape like duct tape or electrical tape (optional)



Solar Energy

- Demonstrate solar energy converting to heat
- Black bottle absorbs solar energy while white bottle reflects it
- Real world connections to climate change and energy efficient architecture



Passive Paper Crafts

- Eclipse glasses case
- DIY Sun Clock

Solar Viewing Glasses Case

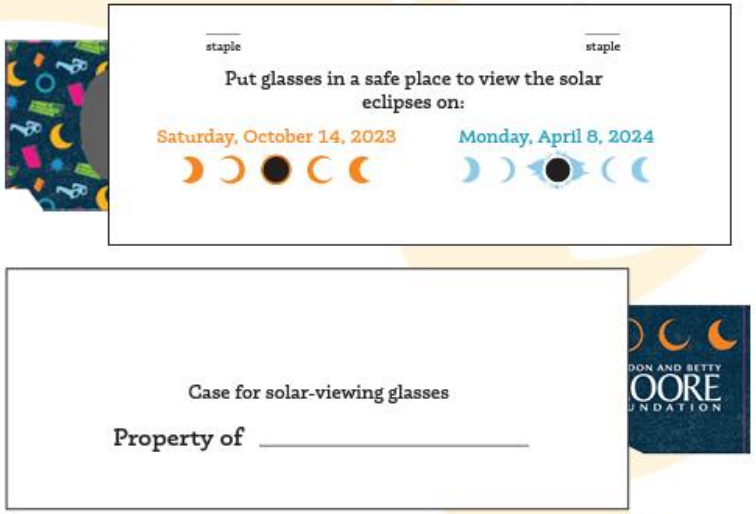
- Template for patrons to make a personalized protective case to keep their Solar-Viewing Glasses safe
- Opportunity to discuss safe viewing
- Commemorative and connects the two eclipse events

Can be passive or part of a program for all ages

Low-cost, printable materials

Solar Viewing Glasses Case

Make a Protective Case for your Solar-Viewing Glasses
Table Sign



1. Cut out the protective case as described on the ***Protective Case template***.
2. Fold as directed and then staple as indicated on the side of the protective case.
3. Add your name and any personal designs to the outside of the protective case.
4. Slip your ***Solar-Viewing Glasses*** into the protective case for safekeeping.

D.I.Y. Solar-Viewing Glasses Case

SEAL
Solar Eclipse Activities for Libraries

Protect your solar-viewing glasses from damage with a case of your own! Keep them safe and secure to ensure they last for both the 2023 and 2024 eclipses!

1. Carefully cut along the solid lines as directed on this paper.
2. After cutting, fold the paper toward the inside of the case along the dotted lines. Fold the small tab first and then the long side of the case. This will form the basic shape of the glasses case.
3. Secure the two sides of the paper together with staples at the indicated places.
4. You can personalize it to your liking with stickers, crayons, markers, and other materials.
5. When you're done decorating, your glasses case is finished! Put your glasses in it and you're ready to go.

GORDON AND BETTY MOORE FOUNDATION NASA@ My Library STAR*net*

Cut solid line

Fold on dotted line

Fold on dotted line

Cut solid line

Cut solid line

Make Your Own Sun Clock

Use the Sun's orientation to tell the time with this pocket-sized Sun Dial

Make Your Own Sun Clock

Make a Sun Clock!

Table Sign

1. Fold along the dotted line, making sure the print is on the inside.
2. Take 7 inches of string and place the ends through both notches on the Sun Clock. Adjust the string so that the two panels of the Sun Clock make a 90-degree angle, then tape the string's end to the back of the Sun Clock.
3. Use your Sun Clock to tell the time! Go outside, hold the clock level on your hand and rotate it until the shadow of the string on the clock face reads the correct time.

What direction (north, east, south, or west) does the clock need to face for the shadow to tell the time?

Note: If it is Daylight Savings Time (Sunday, March 13, 2023 – Sunday, November 6, 2023), subtract one hour from what your Sun Clock is showing you to get an accurate time.

Pocket Sun Clock 1

Use this Sun Clock if you live in: Southern California, Southern Nevada, Arizona, New Mexico, Oklahoma, Texas, Arkansas, Louisiana, Tennessee, Mississippi, Alabama, Georgia, Florida, North Carolina, and South Carolina.

Try as Take and Makes

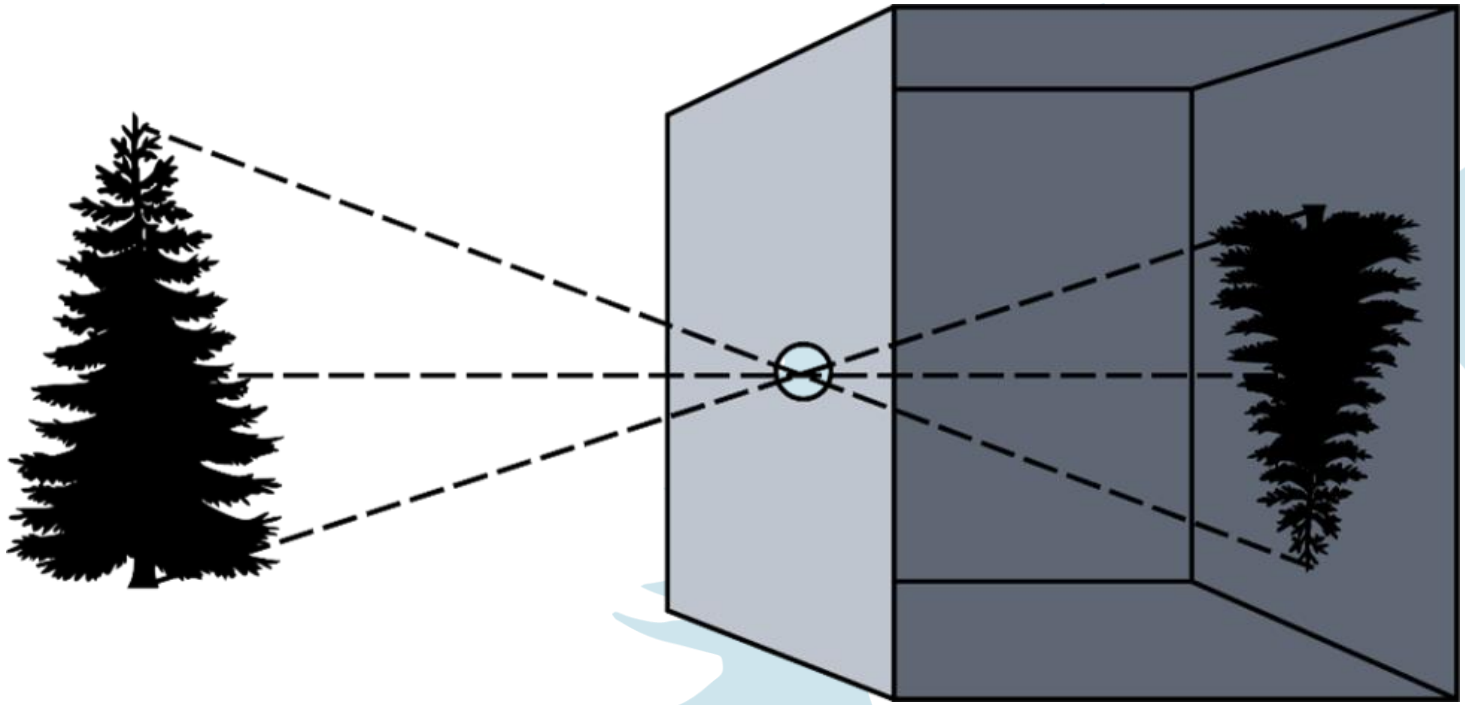
- Printable activities are easy to turn into take and make kits!
- Pocket Solar System
  - Include slip of paper and solar system cutouts
- Solar Sun Clock
  - Include string

Project Activities

- Pinhole Viewer Design Challenge
- Solar Oven

Pinhole Viewer

- Create a “camera obscura” projector out of any box
- Materials required: box, scissors, paper, foil, tape



Pinhole Viewer Design Challenge

1. Projection Screen
2. Aperture
3. Viewing Window

- Three essential parts of pinhole viewer
- Create many different designs from any box

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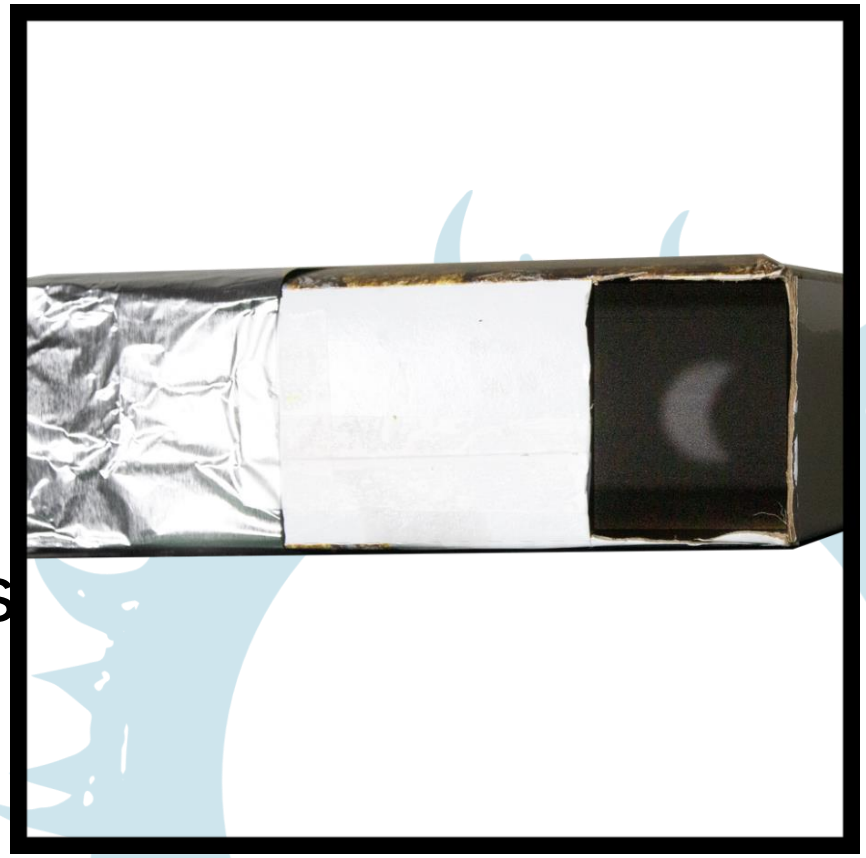


Pinhole Viewer Design Challenge

1. Projection Screen
2. Aperture
3. Viewing Window

Pizza Box Solar Oven

1

Reflection

The foil lining of your solar oven reflects and concentrates the light energy from the sun.

2

Absorption

The black paper at the bottom of your solar oven acts as a heat sink, absorbing the solar energy and allowing it to become heat or infrared energy that cooks your food.

3

Retention

The plastic film that covers the opening of your solar oven not only allows light to be absorbed but also prevents heat from escaping.

Solar Oven Materials

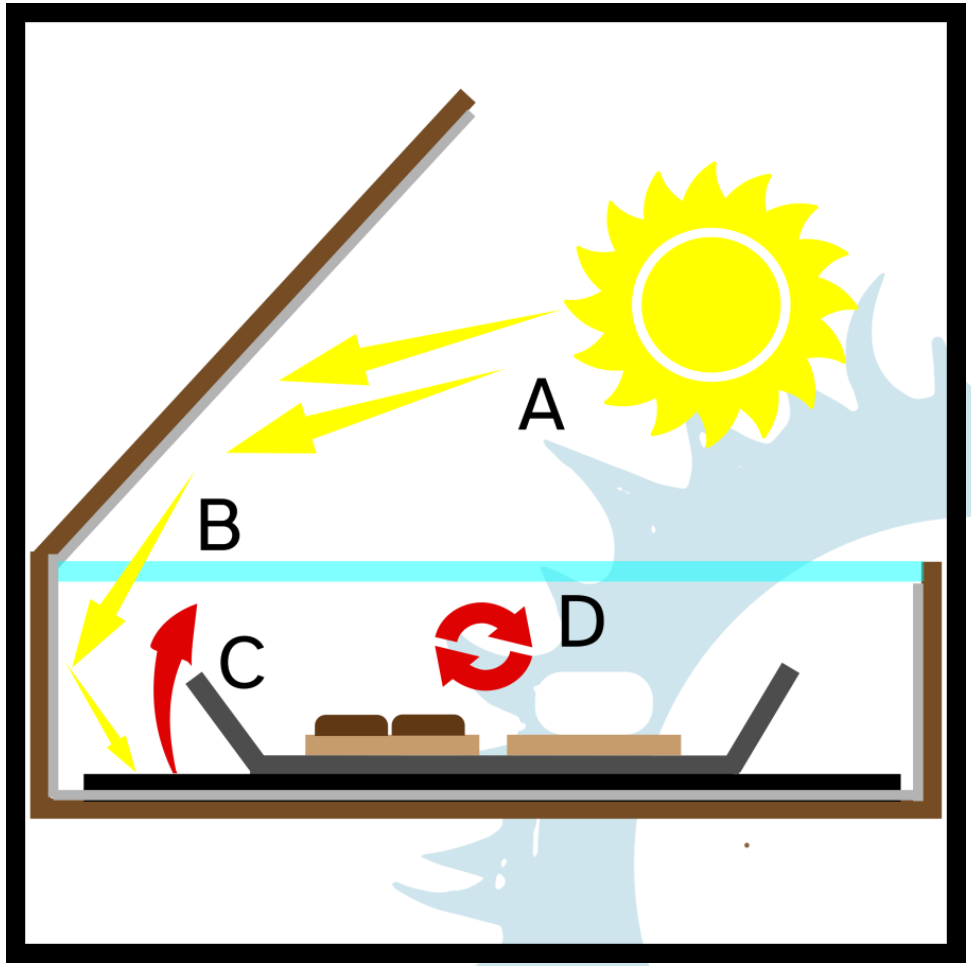
Pizza Box Solar Oven

A. Sun's energy reflects off foil

B. Foil refracts light in oven

C. Black paper converts energy to heat

D. Heat trapped in oven cooks food



Pizza Box Solar Oven

- 3 recipes
  - Nutty for Solar Science Cookies
  - Sun-baked S'mores
  - Tortilla Eclipse Quesadillas
- Printable recipe cards for each

Nutty for Solar Science Cookies

Ingredients:

- 1 Banana (the riper the better)
- ½ cup oats
- ¼ cup nut butter (peanut butter, sunbutter, almond butter, etc.)
- 1/3 cup chocolate chips

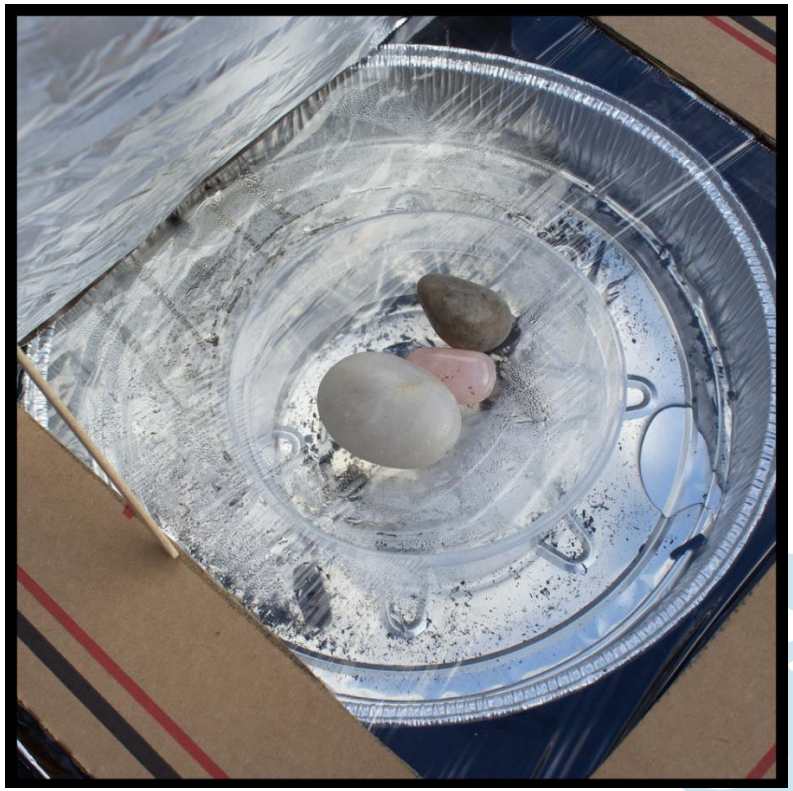
Instructions:

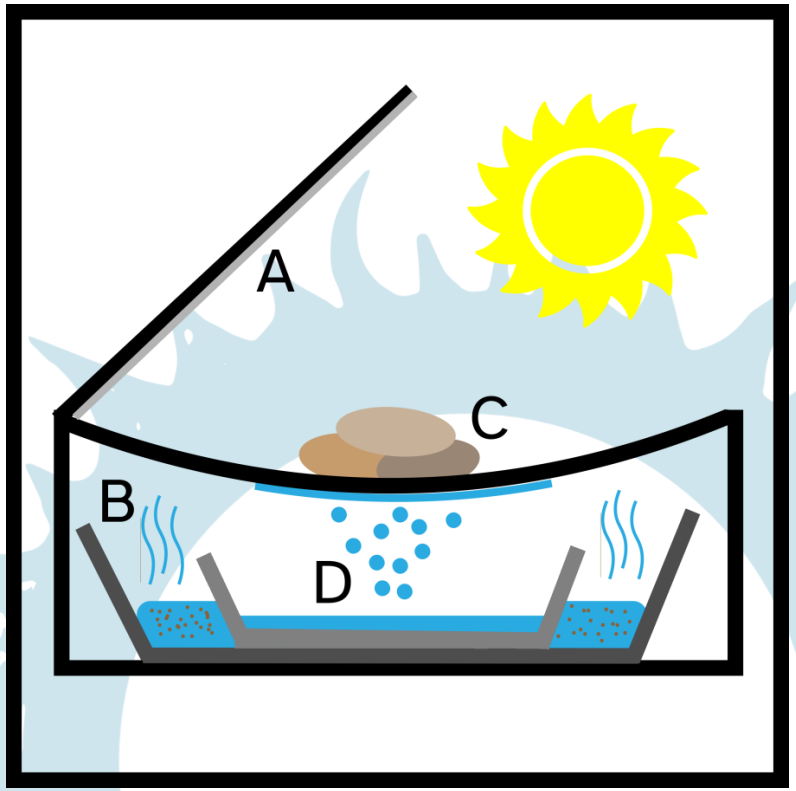
1. In a mixing bowl, smash the banana until the banana is completely turned to mush.
2. Mix the nut butter into the mushed banana until the nut butter and banana are combined.
3. Stir in the oats and chocolate chips.
4. Spoon your cookie mixture onto your solar oven cooking dish or pie tin, making each cookie about the size of a golf ball.
5. Move your cooking dish or pie tin to your solar oven. Your cookies are done when they are firm and the chocolate chips are all melty!

Pizza Box Solar Oven

Solar Still Extension

- Great for cloudy days where sun is not enough to cook food
- Stones concentrate condensation so evaporated water from dirty container drips into clean container





Share

Which of these activities would you like to run at your library (select all that apply)?

- Pocket Solar System
- Solar Energy
- Solar Viewing Glasses Case
- Sun Clock
- Pinhole Viewer
- Solar Oven

Upcoming Trainings

- Eclipse Ideas Share-A-Thon (September 12 ’23)
- Eclipse Books and Authors Webinar (September 12 ’23)
- What to Expect Leading Up to Eclipse Day (September 27 ’23)

Q&A