

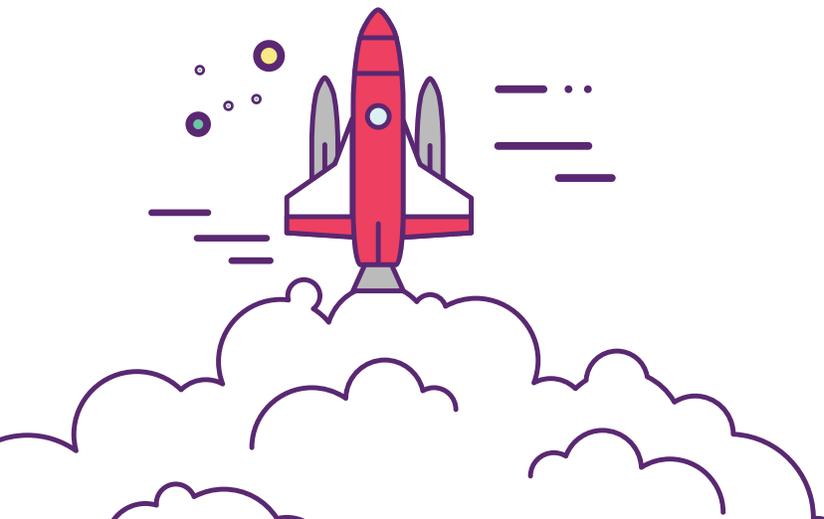
Science Museum Oklahoma

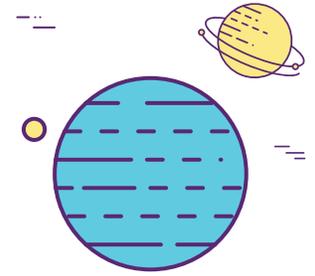
Space Days

What an amazing time for space exploration! The last couple years have seen astounding advances in our understanding of the universe. With more discovery, often comes more wonderful mysteries to solve. As we prepare for astonishing images of our world, it's a great time to look at our own solar system and beyond. In fact it's a great time to investigate just how we see the wonder of the universe and our place in it.

As we made advances to return to the moon and eventually go to Mars, how we view the universe and our place in it is changing. We can view details of celestial objects through telescopes here on the surface of Earth. We can view details of celestial objects through data collected from space telescopes. We can find out about the atmosphere of celestial bodies from probes and rovers.

Join us May 6-7, 2022 as we explore how light brings distant worlds to us through a variety of hands on activities at Science Museum Oklahoma as we create nebula inspired art, view activity on the sun using protective filters, investigate the tools we use to understand deep sky objects, hold a meteorite, and much more.





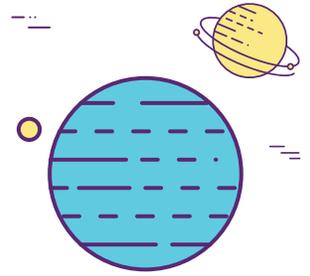
Space Day Teacher's Resource Guide

Whether continuing experiences started at the Science Museum Oklahoma as part of Space Days or exploring the galaxy from your classroom, our world is amazing. The three activities on the following pages can be performed in a classroom or at home. Also, keep an eye out on social media and the Science Museum Oklahoma YouTube page for more activities celebrating Space Days supported by Allied Arts.

Before we jump into hands on activities, space exploration has made great progress lately. Here are a few recent discoveries and things to keep your eye on.

Fun Facts

1. On April 19th, 2021 Ingenuity, a small robotic helicopter, took its first flight on Mars. Ingenuity is part of NASA's Mars 2020 mission along with the rover Perseverance. As of April 9th, 2022, it has made 25 successful flights. This helicopter, along with many other spacecraft and telescopes, use solar panels to keep them powered on their journeys.
2. December 25, 2021, the James Webb Space Telescope, the most powerful space telescope ever built and expensive too at \$9.7 billion, was successfully launched from French Guiana. The James Webb Space Telescope will primarily view the universe through infrared with resolution and sensitivity far greater than any space telescope that has come before it. Keep your eyes out for the first images from the James Webb Space Telescope to be revealed this summer! We will be celebrating this event at Science Museum Oklahoma too!
3. On March 21, 2022 NASA confirmed the existence of 65 more exoplanets, or planets outside our solar system. This pushed the total of known exoplanets to 5005, and counting! The first exoplanet was discovered in 1992. In the last 30 years, humans have located over 5,000 exoplanets. Just imagine what new discoveries will be made in your lifetime
4. NASA's Artemis program will land the first woman and the first person of color on the moon. Collaborating with international and commercial partners, the goal is to establish a long-term presence on the moon allowing for more lunar exploration than ever before. Returning to the moon is next step before the giant leap of sending the first astronauts to Mars. Keep your eyes on the sky for NASA to launch Artemis 1 in the coming weeks. This mission will send an uncrewed Orion capsule around the moon to study how the spaceflight will affect astronauts. This launch will utilize the most powerful ever built, the SLS or NASA's Space Launch System!
5. Technology is letting us play our own role in this exciting stage of space exploration. Did you know that citizen science allows you to be part of the action and discoveries? NASA GLOBE Observer <https://scistarter.org/nasa/globe-observer-nasa> allows you to work with your school or for families to keep watch over our planet while sending images to NASA. This is just one of many ways to be part of citizen scientist. For more opportunities check out <https://science.nasa.gov/citizenscience>



Marshmallow Constellations

What you'll need:

- Mini marshmallows
- Toothpicks
- Pictures of constellations, you may use a computer, tablet, or phone for this
- Plates or trays

What to do?

1. Observe Constellations.

Look at pictures of constellations. What shapes do they create? How much space does it appear is between each star?

2. Give out marshmallows and toothpicks.

Each constellation only needs a small handful of marshmallows (which will represent stars) and toothpicks (which will represent connections between stars).

3. Build a constellation.

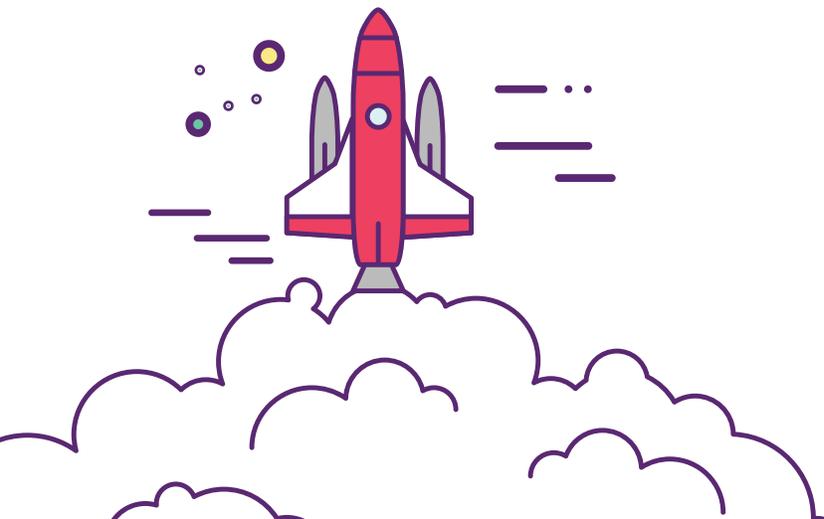
Push a toothpick into a marshmallow and add a marshmallow to the other end. Keep doing this in various directions until you have formed a constellation. Try to mimic a constellation we have in our night sky or have fun making up your own.

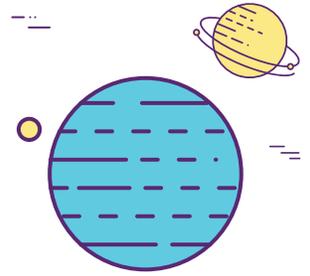
4. Name and identify your constellation.

If you made up your own constellation, try to identify what it looks like and give it a name. If you mimicked an existing constellation, compare it to the real version to see how close you got.

What is happening?

A constellation is a group of stars forming a recognizable pattern that is traditionally named after its apparent form or identified with a mythological figure. Modern astronomers divide the sky into eighty-eight constellations with defined boundaries. This activity will strengthen fine motor skills in young children as well as teach them about outer space.





Spectroscope

What you'll need:

- Empty paper towel roll
- Craft knife and/or scissors (with adult help)
- CD or DVD that is now longer needed
- Pencil
- Small piece of cardboard or cardstock
- Tape
- Paint (optional)

What to do?

1. (Optional) Paint the paper towel roll.

Painting the outside of the paper towel roll is completely optional, however, it should be done first and be given time to dry.

2. Prep the paper towel roll.

Use a craft knife (an adult should do this) to cut a thin slit at a 45 degree angle toward the bottom of the tube. The slit should span half of the tube and be at least one inch from the end of the tube at its lowest points. Directly across from the slit, make a small viewing hole using a craft knife. This can be a square with just enough room for an eye to see inside the tube.

3. Prep a cap to the paper towel roll.

On your small piece of cardboard or cardstock, trace one end of the paper towel roll then cut it out. Cut out a long, skinny rectangle in the center of your cardboard circle. Tape the circle to the top (side furthest from slit) of your spectroscope.

4. Insert a CD.

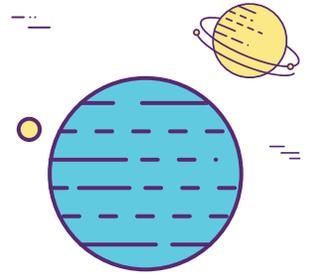
Insert the CD into the 45 degree angled slit with the shiny side facing up (toward the cap).

5. Test & Observe.

Take your spectroscope outside. Point the top cap up at the sky (not directly at the sun). Look through the viewing hole. You will see a rainbow inside. Try your spectroscope with other light sources like fluorescent, neon, and candle light. Compare what you see.

What is happening?

A spectroscope is an apparatus for producing and recording light spectra for examination. A CD is a mirrored surface with spiral tracks or pits. These tracks are evenly spaced and diffract light (separating the colors). Because the CD's surface is mirrored, the light is reflected to your eye.



Solar Oven

What you'll need:

- A cardboard box with a lid (i.e. shoebox or pizza box)
- Aluminum foil
- Box cutter or knife (with adult supervision)
- Scissors
- Permanent marker
- Ruler
- Glue
- Clear plastic wrap
- Black construction paper
- Tape

What to do?

1. Cut a hole in the box.

Using the ruler and a marker, draw a square on the lid of your cardboard box, leaving about one inch of border around each side. (With adult supervision) Cut through three sides of the square, using a box cutter or knife. Leave one line at the rear of the box attached.

2. Apply aluminum foil.

Fold back the flap you just made, so that it stands up when the lid is still closed. Apply glue to the underside of the flap and cover it with aluminum foil. Try to smooth out wrinkles and cut off any excess.

3. Apply clear plastic wrap.

With scissors, cut two square pieces of clear plastic wrap that are a little larger than the flap opening. Open the lid and tape one piece of plastic wrap to the underside of the lid so that it covers the entire opening. Close the lid and tape the second piece of plastic wrap over the top of the opening. Try to pull both sheets tight as you tape them.

4. Line the inside of the box.

Glue or tape a layer of aluminum foil to the inside bottom of your box. Cut off any excess. Glue or tape a piece of black construction paper on top of the foil you just placed, so it acts like the floor of your box.

5. Cooking.

On a bright day, place your solar oven outside in direct sunlight. Place an item you want heated on the black paper inside the oven, close the lid, open and adjust the foil flap to find the best ray-reflecting angle (you may need to use something to prop it up), and wait for the heating to commence. Fun things to heat up: Wax/crayons, thermometer, or chocolate.

What is happening?

Solar ovens harness the energy of the sun's ray to heat something inside of it. The aluminum foil on the flap will reflect sunlight into the oven. The double layer of clear plastic wrap creates a window that helps keep the sun's heat in the oven. The aluminum foil in the bottom of your box will insulate it and the black paper will absorb light and generate more heat inside the oven.