

Summer Camps 2020

Space Ace

Kendall County Outdoor Education Center * www.kcoutdoored.org * dbazan@roe24.org

Camp week designed by SarahAnn O'Malley

At Home Activities:

- Build a rocket lander and come to KCOEC to drop it
- Crater measurements using beads and flour
- Phases of the Moon
- Sun paintings
- Eat like an Astronaut

At KCOEC Activities

- Sun the size of a grapefruit
 - <https://studylib.net/doc/5380744/if-the-sun-was-a-grapefruit>
- Egg drop from wall
- Paper cup planetarium

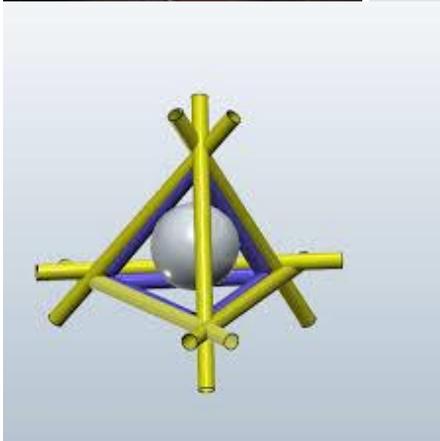
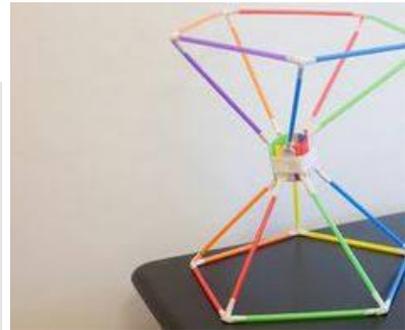
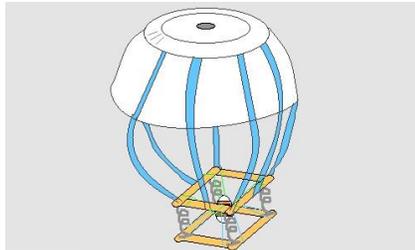
Both:

- Orbit Observer
- Create a sundial

Build a Rocket Lander

(and come to KCOEC to test it)

When a rocket lands somewhere like the moon, it needs to land very gently to keep the astronauts inside safe! Your job is to use things around your home like toilet paper tubes, toilet paper, cotton balls, straws, paper, and whatever else you'd like to build a space lander for an eggstronaut! Be sure an egg can fit safely inside your lander then do a few test drops to see if your lander keeps the egg safe! Once you feel confident in your lander, come to the outdoor ed center to put it to the ultimate test! We have a 12 foot wall here that (with our help) you may climb and drop your lander from! If you do not feel comfortable on the wall but would still like to drop your lander, we can drop it for you. Attached on this page there are a few examples for you to get ideas from!



Moon Craters

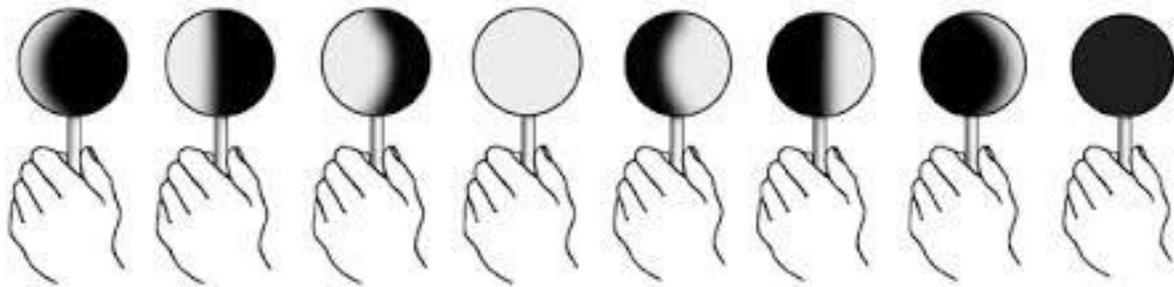
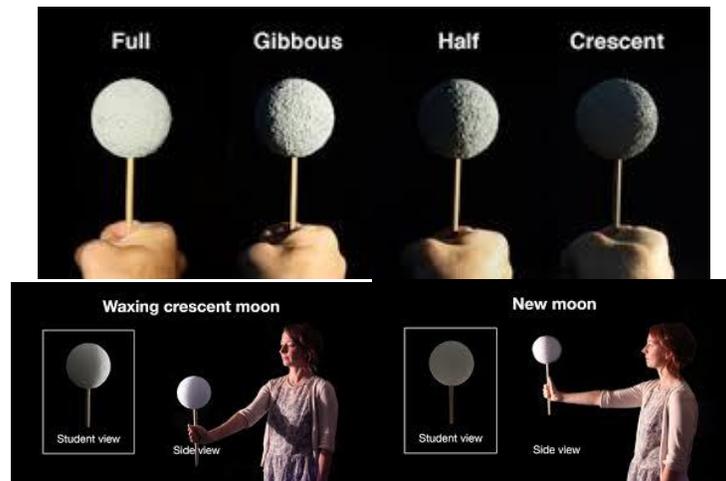
Craters occur on the moon and other planets because unlike us, they have no atmosphere which means they have nothing to stop meteors and other objects from crashing into them. When an object flying through space hits something else, it will cause damage to whatever it hits often creating a crater. In this experiment, you will be creating your own craters. **You will need: a ruler, a pan or bowl with edges, and 3 different sized spheres like 3 different sized beads, marbles, or bouncy balls.** In this experiment, you will see how different sizes of meteors and different heights/speeds effect craters. Fill your pan with a layer of flour and make it as smooth as you can. Next, take your smallest sphere and drop it from a high place and a low place into the flour. Now take your ruler and measure the size of both craters then record these sizes in the table below. Which is bigger, the one dropped from a high place or the one dropped from a low place? Now, use your ruler to smooth out the flour then drop your middle sized sphere from the same high place and low place. Measure both crater sizes and record it in the table below. Use your ruler once more to smooth out the flour and drop your largest sphere from the same high place and low place. Record your crater size in the table below, What caused the biggest crater?

Why do you think that?

Crater Sizes:	
Crater size from high place with small sphere:	Crater size from low place with small sphere:
Crater size from high place with medium sphere:	Crater size from low place with medium sphere:
Crater size from high place with large sphere:	Crater size from low place with large sphere:

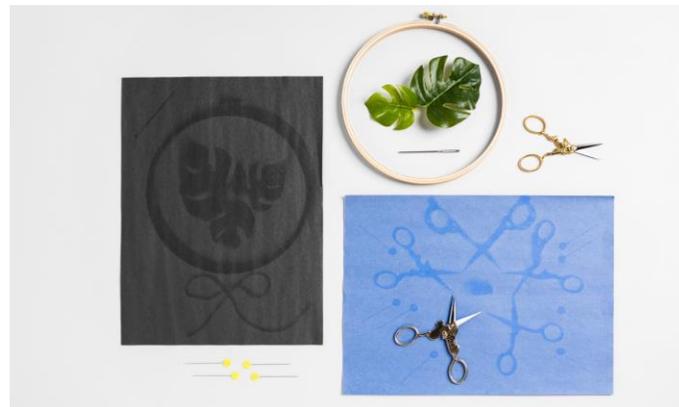
Phases of the Moon

Have you ever looked at the moon several nights in a row and noticed that over those nights, the Moon has become a different shape? Why is that? Well, it's because the moon revolves around us as we on Earth revolve around the sun! To see what I mean, you will need a sphere of some kind, a dark room, and a flashlight. The flashlight will represent the sun, your head will represent the Earth, and the sphere will represent the moon. Hold the sphere out in front of and slightly above your head you between you and the flashlight. Then slowly begin turning to your left, watch what happens to the shadows on the "moon". For a more in-depth description, watch this video: <https://www.youtube.com/watch?v=wz01pTvuMa0>



Sun Paintings

To create a sun painting, you will need dark paper, a sunny spot, and objects that will not blow away or fall over in the wind. At the KCOEC we used some plastic toys, pipe cleaners bent into fun shapes, rocks, and a leaf weighed down by rocks but feel free to use whatever you would like! Place your dark paper outside in a place that receives lots of sun, then place your chosen objects on the paper. You can leave this paper for a few hours or a few days to see the difference, the longer you leave this in the sun the more of a difference you will see! Stop by the KCOEC to look at our sun painting and see if you can match the objects to their shape on the paper!



This difference occurs because of the UV or ultraviolet rays from the sun. These UV rays are so powerful that they can break down chemical bonds and cause things to lose color! That is one reason it is so important for us to wear sun screen; these UV ray scan bleach paper but they can also cause us to become sun burnt!

Eat Like an Astronaut

Astronauts are often in space for many weeks or even months at a time. Because of this, much of their food is freeze dried to help it last even longer! While on board a space station, an astronaut can rehydrate and heat up meals which usually takes around 20-30 minutes! In space, there is no gravity so astronauts cannot just leave their food on a dinner table like you and I would; they have to keep their food secured down! Each food container is secured down to a tray which is then attached to a wall or to the astronaut's lap. To learn more about how this happens, visit this website: <https://science.howstuffworks.com/astronauts-eat-in-space.htm#:~:text=In%20space%20travel's%20early%20years,they%20weren't%20handled%20correctly.>

If you would like to eat like an astronaut all you need to do is have a quick trip to the grocery store! There are many stores that sell freeze dried fruits and even cheeses. Additionally Amazon has a great deal of freeze dried foods (including ice-cream!) Choose which foods you and your family would like to eat like an astronaut. Astronauts cannot just let their food float around and you can simulate this at home! Place a strip of Velcro or ribbon across the table and be sure that each time you set a food item down, it gets placed on that strip so it doesn't float away!

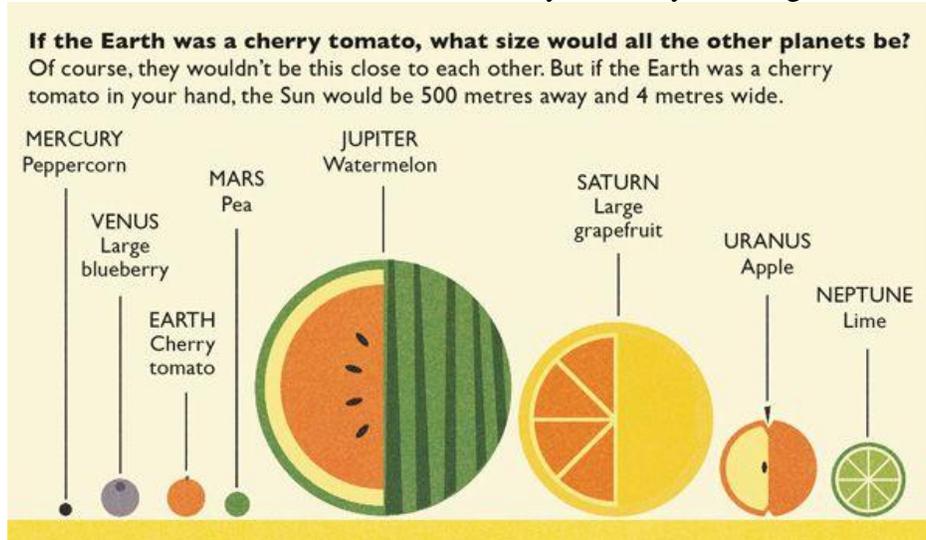


If the Sun was the Size of a Grapefruit...

Space is incredibly huge. So huge that I am going to scale our solar system down so that our Sun is only the size of a grapefruit. If our sun was the size of a grapefruit, the closest planet to it, Mercury, would only be the size of one grain of salt 18 feet away from the grapefruit. This is just one example, if you would like to walk the rest of our solar system, come to Hoover Forest preserve and we will have a scale version of our whole solar system for you to experience. All of the measurements can be found on this website: <https://studylib.net/doc/5380744/if-the-sun-was-a-grapefruit>



Here is another scaled down version of our solar system only showing size, not distance:



Paper Cup Planetarium

Come to the Kendall County Outdoor Education Center and build a paper cup planetarium. You will need to choose a constellation for your planetarium; each constellation has a story behind it so choose your favorite constellation and recreate it by punching holes into your paper cup. Below are the stories of how 4 common constellations came to be! If you choose a different constellation for your planetarium, feel free to look up the legends of how it came to be! To complete this activity, you will need a paper cup, a pencil, and to choose a constellation template. Place the template on the bottom of the paper cup, poke holes into it, then shine a flashlight through the cup to see your constellation projected onto wherever you shine it!

The big dipper (Ursa Major) and the little dipper (Ursa Minor):

Zeus, King of the Gods, fell in love with Callisto and had a child named Arcas. This made Hera, Queen of the Gods upset. She turned Callisto into a bear. One day, Arcas went into the woods and found his Mother the bear. She greeted him by going up on her back legs, but Arcas thought this meant he was under attack so he readied his bow. When Zeus saw this he turned Arcas into a little bear and placed both Callisto and Arcas into the sky to keep them safe.

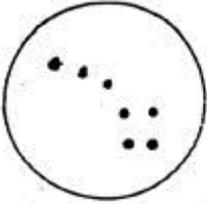
Draco the Dragon:

Draco represents Ladon, a hundred-headed dragon. He was guarding a golden apple tree for Hera, but was put to sleep by Hercules playing music. Hera punished him by sending him up to the stars. Where he still sits today.

Orion the Great Hunter:

Orion was a great and very successful hunter, he hunted and provided food for the Gods. One day while trying to impress Artemis- the goddess of the hunt, he hunted every animal he saw. As soon as Artemis saw this she was very angry because she was also the protector of animals and she punished those who killed more than they could eat! Because of this she caused Scorpio the scorpion to sting him and kill him. However because of his service to the gods, Zeus placed him in the sky to honor him.

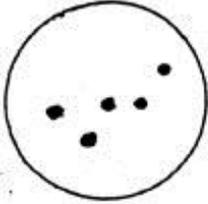
Little Dipper



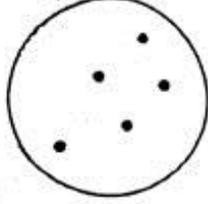
Big Dipper



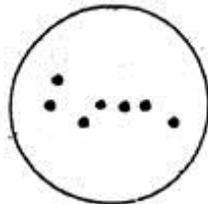
Cassiopeia



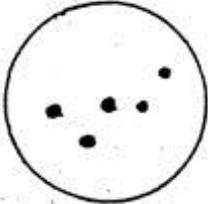
Cepheus



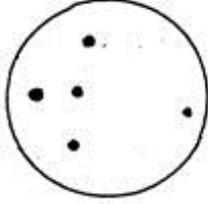
Big Dipper



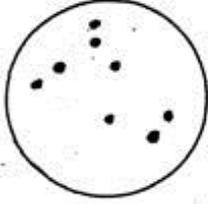
Cassiopeia



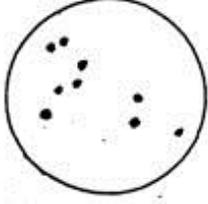
Cygnus



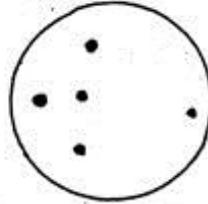
Gemini



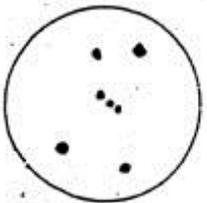
Leo



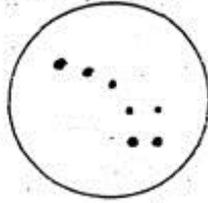
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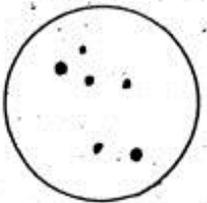
Orion



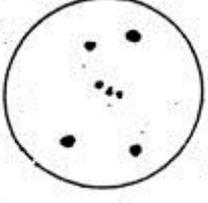
Little Dipper



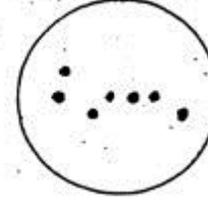
Lyra



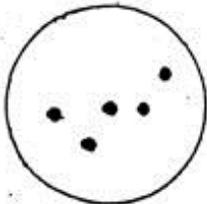
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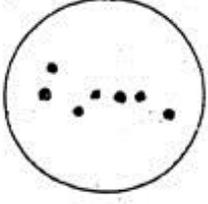
Big Dipper



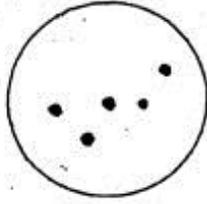
Cassiopeia



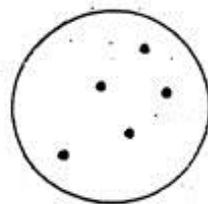
Big Dipper



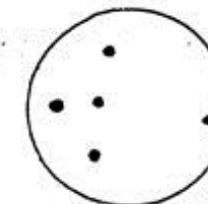
Cassiopeia



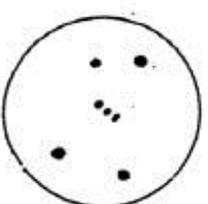
Cepheus



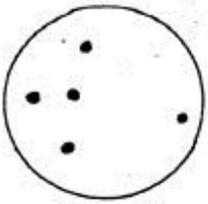
Cygnus



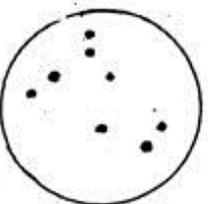
Orion



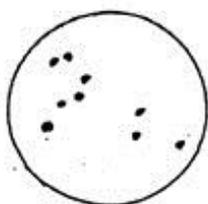
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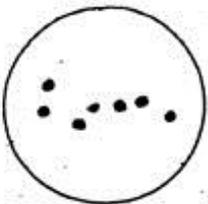
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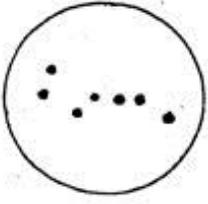
Leo



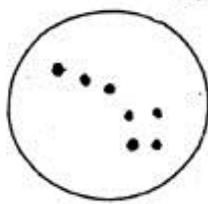
Big Dipper



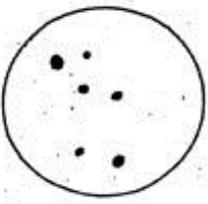
Big Dipper



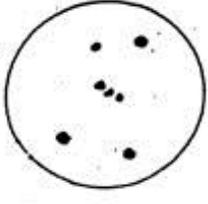
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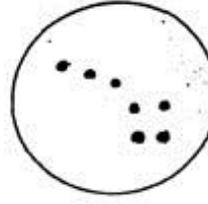
Lyra



Orion



Little Dipper



Orbit Observer

To become an orbit observer, you will need orange play dough for the sun, a blue bouncy ball for the earth, and a pie tin to create the orbit! Create an orange circle in the center of the pie tin, place the ball into the pie tin then begin moving the pan in a circle to watch the earth orbit the sun!



Create a Sundial

The Earth orbits around the sun which means it goes around it in a big circle. This orbit takes 365 days. While the Earth is orbiting the Sun, it also rotates on its axis which means as it is circling around the sun, its spinning in a circle around and around. This smaller circle takes 24 hours! As the Earth Rotates, it appears that the sun is moving across our sky. To track the Sun's movement, we will create a sundial! To create a sundial you will need play dough, a pencil, and chalk. All you need to do is place the playdough on the ground in a sunny spot, place the pencil right into the playdough then check it every hour! Each hour trace the shadow of the pencil and label it with the time! Predict which way the shadow will move! As the shadow moves, pay attention to its length, does it stay the same throughout the day?

