

WestFest

SCIENCE & SUSTAINABILITY

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Astronomy

Monday, October 17th, 9:30-10:00 a.m.

Saturday, October 22nd, 9:30-10:00 a.m.

Register at <https://go.osu.edu/register4wf>



Materials

String	30 Bouncy Balls
UV Beads	Diffraction Glasses

Earth – Moon Scale Model

- 30 Bouncy Balls
- 1 UV Bead
- String

What is a scale model? When we think of a model of something we usually do not think of an object that is full sized but something we can hold in our hands. One of the models we may have around are toy cars or toy trains. These are close to the shape of an actual car or train but they are much smaller and can fit in our bedrooms or on the table. If we want an accurate scale model, the ratio of sizes should stay the same as the original object. An example would be if a train engine has a length that is equal to 10 of its wheels, then when we shrink it down to fit on our table the smaller model train's length will still equal 10 of its smaller wheels.

We want to get an idea of how big the Earth and Moon and how far apart they are, so we are going to make a scale model of the Earth Moon System.

Instructions:

There are 30 1-inch bouncy balls in the kit. Any one of these will represent the Earth, so pick your favorite. One of the smaller UV beads is about the size of the Moon,

compared to the 1-inch Earth. There should be about 4 Moons that cross the diameter (all the way across) the Earth. You can place 4 beads in a row, and they should be the same approximate size as the bouncy ball.

There are two ways to do this next part. The first we are going to try to line up all 30 bouncy balls in a line. They will roll around a little but start with your Earth and then stack all the other balls to one side. At the end of that row you will place a UV bead. This is how far apart the Earth and Moon are. 30 Earths fit between the Earth and the Moon.

Another way to do this is to tie the string on the bouncy ball. Then wrap the string around the ball 10 times. At this point you can tie a moon bead at that point in the string. If you cut off the rest, you can make a bracelet for the next activity. Now you can hold the Earth and see the Moon on the string. This is the farthest that Humans have ever been from the Earth into space. At this scale, the Sun would be 300 yards away and be 100 inches across. Space is REALLY big.

Exploring the Light Around You

- Diffraction Glasses – NEVER look at the Sun
- UV Beads
- String

Instructions:

For this activity it is all about exploration. There are two components, one is to look at the light in your house or in your neighborhood with the yellow diffraction glasses and the other is to see what lights make the UV beads change colors.

The UV beads are sensitive to ultraviolet (UV) light, the same light that gives us sunburns. The beads are normally white but change colors when they are exposed to ultraviolet light. Inside your home the beads will likely stay white, but if you go outside,



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they will immediately change colors, even on a cloudy day. Some UV light can go through clouds. You should investigate if UV goes through windows, if lights in your home produce UV, and do other fun experiments. You can even try smearing sunscreen over them and see if it makes them change color more slowly.

With the diffraction glasses you will see rainbows from everything. These glasses break up the light into the colors that make it up. When we see white lights on our computer screen, it is made of mixtures of Red, Green, and Blue to make all the colors we see. You should investigate all of the lights in your house and at night in your neighborhood. You should also look at a phone screen or computer screen in a dark room to see what colors make up the images you see on the screen. It will surprise you!