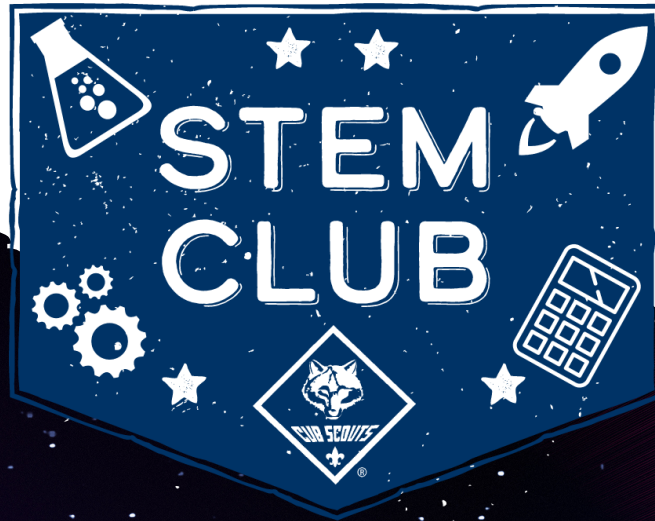


LEADER

CUB SCOUT MEETING GUIDE



WEEK 4

OUT OF THIS WORLD

PRE-MEETING EMAIL

SEND 1 WEEK PRIOR + A REMINDER DAY OF:

Pack (enter #) Families,

Our next meeting is (enter date) at (enter time). Please log-in using this Zoom Code (enter zoom code). I, (enter name), will be the meeting host. Our meeting theme is Out of This World and we will be making a Sextant. Please ensure scouts have the following materials ready to use during our meeting:

- Scissors
- String
- Protractor
- A small weight like a washer or nut
- Tape

Out of This World will introduce Cub Scouts to the wonders of space and space travel. We will learn about both solar and lunar eclipses, what a sextant is and how to build one, and constellations.

See you at our meeting,

(Your Name)

ZOOM MEETING TIPS

WHEN SETTING UP YOUR MEETING:

- Prior to meeting:
 - Set up your meeting and email meeting code, only email to those in your Cub Scout Pack, set up a new meeting in Zoom for each meeting, so there is a new secure code
 - Pre-assign other adults to help as co-hosts, ask them to do specific tasks (monitor chat room, help present w/assigned slides)
 - Take a look at the slide deck and script before the meeting. Read through it once or twice and think about questions your den may ask. You know them best!
- In settings turn off:
 - Annotation (prevents Scouts from writing on screen)
- At beginning of meeting
 - Mute everyone and select "do not let participants unmute themselves"
 - Make additional adults co-hosts
 - Give scouts basic chat courtesy rules: Use it only for questions and on topic conversation. Don't type your response over and over - this makes it hard to see what your friends are saying!
 - You can keep the chat open, but likely you will want to close the chat to "host only", the Scouts tend to spam the chat

MEETING SPECIFIC RESOURCES

<https://spacecenter.org/try-this-at-home-part-3-build-a-sextant/>

SLIDE DECK SCRIPT

SLIDE 1

Welcome to our Cub Scout Meeting! We will start at (enter time). This week, we will be highlighting the Out Of This World Cub Scout NOVA Award. NOVA Awards are something fun that Cub Scouts can earn by studying various fields of STEM. STEM stands for Science, Technology, Engineering and Math. Each week we will focus on something new.

We will not be completing the NOVA awards with these meetings, they are meant to be a fun introduction!

SLIDE 2

Alright, now let's get started with this week's focus, Out of This World. The Out of This World NOVA is all about discovering the wonders of space exploration. Today, we will learn about both Solar, and Lunar eclipses. We will learn how they happen, and we will look at the 2017 Total Solar Eclipse. We will also be learning about Sextants, and how everyone from sailors in the 1400's all the way to astronauts landing on the moon used sextants for navigation. After that, we will build our own sextants to use for navigation at home. We will also be learning about constellations. where they came from, why they are important, and how scientists use constellations today to find other stars and other objects in space. Let's get started!

SLIDE 3

Let's start out by learning about constellations. People have been looking up at the stars forever. Way back in ancient Greece, when people would look up at the stars, they would start to see patterns in the stars.

<play video>

Knowing where constellations are, so you can find other stars is very important when using sextants. we will learn more about that later though.

SLIDE DECK SCRIPT

SLIDE 4

but before we move on from constellations, there is a super cool website on the screen right now that can be used to find out when and where astronomical events are happening. You can find all sorts of cool astronomical events happening all over the place, including eclipses, which are really cool. We'll talk about eclipses in a little bit, but let's learn about sextants first.

Slide 5

So what is a sextant? a sextant is a tool that sailors used when they were crossing the ocean in the 1800's. It was invented in 1759, which is a long time before GPS, so it was super helpful for sailors to know where they were when they were sailing and couldn't see land. They would use Polaris, which is also known as the "North Star" to determine their latitude and longitude. Sailors would use the two lenses in the sextant and point one at the horizon, and one at the north star. then they could use the sextant to help them figure out where they were in the ocean. But it wasn't only sailors that would use sextants. Even astronauts use sextants. When sailing, the sextant was used to figure out what the ship's latitude and longitude was. Latitude is how far away you are from the equator, and longitude is the distance you are from Greenwich England.

SLIDE 6

Astronauts started experimenting with sextants on the Gemini missions in 1965 and 1966. There was actually a sextant installed on the Apollo missions, many of which landed on the moon! The only problem was that there is no horizon in space, so the astronauts couldn't use the horizon to figure out where they were. that meant that they would have to use a combination of multiple stars, the moon, and the earth instead.

Let's watch this short video about the sextant on the Apollo missions.

<Play Video>

SLIDE DECK SCRIPT

Slide 7

Let's build our sextants. Let's take a minute to get all of our materials. You will need a drinking straw, protractor, some string, a steel washer or something heavy you can tie to the end of the string, some tape, and for use later, you can find a map or use a website like www.latlong.com to use your sextant.

<Cut screen and build Sextant>

Build Instructions

- **take your string and cut a piece about 8-12 inches long.**
- **tie the washer or weight to one end of the string.**
- **(There are 2 options for this step)**
 - **feed the non weighted end of the string through the small hole along the center line of the protractor, then tie the string off on the back side of the protractor, or use tape to secure the part of the string that you passed through the protractor.**
- **-OR-**
 - **use a piece of tape to secure the string to the center of the flat section of the protractor. there should be a straight line along the protractor. the string should be taped at the center of the line so that it comes off the line at a 90 degree angle and can hang down past the curved section of the protractor.**
- **use a few pieces of tape to tape the straw to the flat end of the protractor. make sure it is as parallel to the flat portion of the protractor.**
- **The sextant is now done. looking through the straw at the north star, the string should hang down along the protractor. Use the angle that the string lands on is the angle you can use to determine your latitude and longitude**

SLIDE DECK SCRIPT

SLIDE 8

Now let's learn about one of the coolest astronomical events that we can see, an eclipse! There are two different types of eclipses. There are Solar and Lunar eclipses. Let's watch a short video on how eclipses happen.

<Play Video>

To recap, there are two types of eclipses. a Solar eclipse is when the Moon comes in between the Sun and the Earth. With a solar eclipse, the moon blocks the sun. we had one of these happen here in America in 2017. we'll look at that in just a minute.

A solar eclipse is when the Earth comes between the Moon and the Sun. With a lunar eclipse, the earth casts a shadow on the moon, making it look red.

SLIDE 9

Now let's watch a super cool video of the 2017 Solar Eclipse!

<Play Video>

SLIDE 10

Thanks for coming to today's meeting. It was a lot of fun. The Out of This World NOVA is all about discovering the wonders of space exploration. Today, we learned about both Solar, and Lunar eclipses. We learned how they happen, and we looked at the 2017 Total Solar Eclipse. We learned about Sextants, and how everyone from sailors in the 1400's all the way to astronauts landing on the moon used sextants for navigation. We built our own sextants to use for navigation at home. We also learned about constellations. where they came from, why they are important, and how scientists use constellations today to find other stars and other objects in space.

See you next time!



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