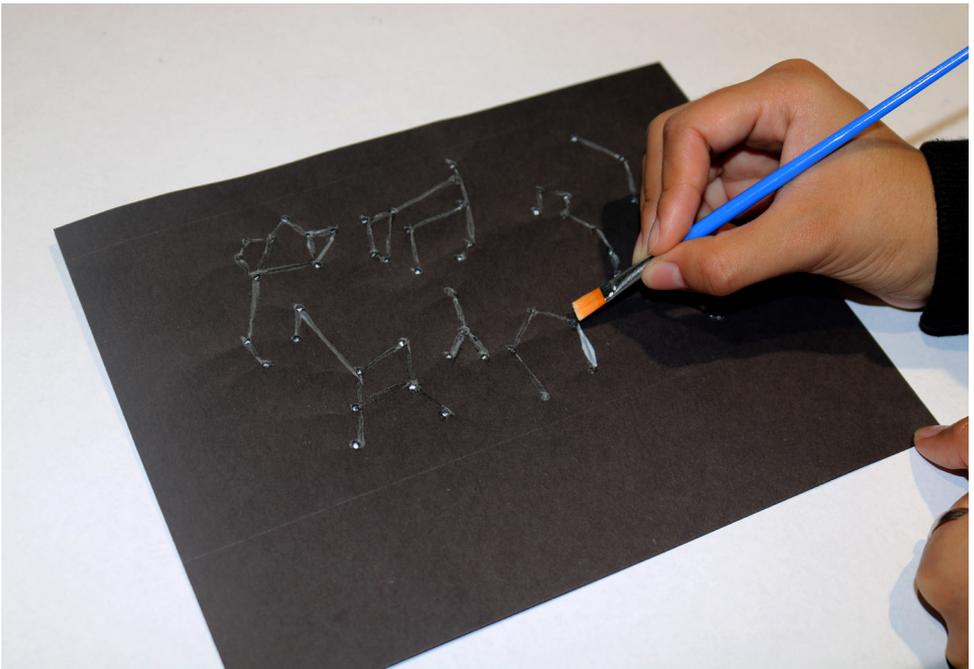


TAKE & MAKE KIT

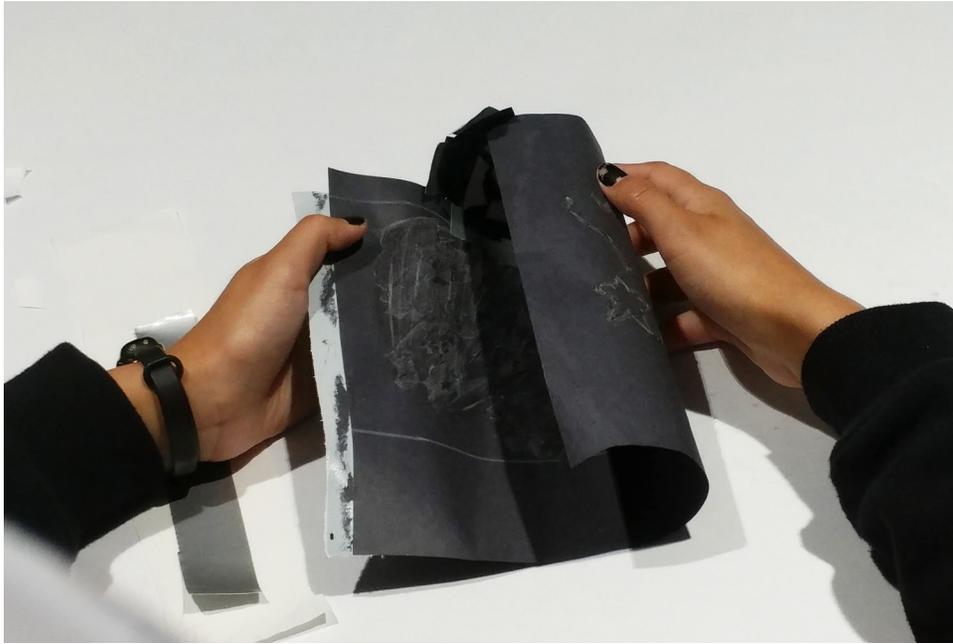
Constellation Lamp

TIME: 30 min

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What's in this kit?

In this kit you will learn about stars and constellations while creating a lampshade with your very own luminous constellation designs.

You will learn:

- Constellations
- Luminosity

Let's Get Started!

Materials

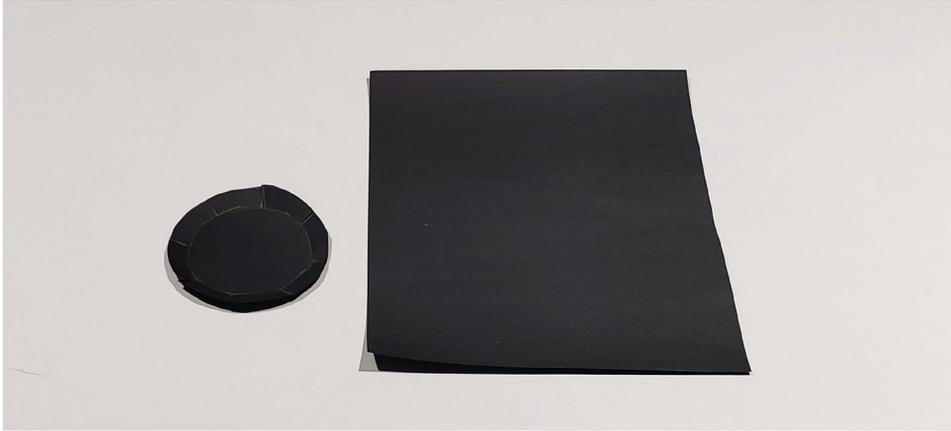
Glow-in-the-dark paint
Construction Paper
Tea Light
Tape
Reflective tape
Constellation Sheet
Template

Tools

Scissors
Paintbrush
Ruler
Pencil/toothpick
Glue (optional)

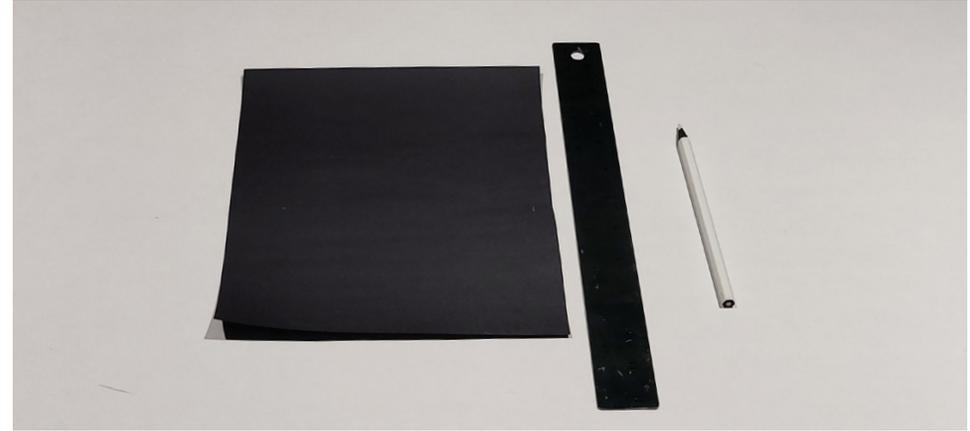
Step 1 - Cut out template

Cut and trace the lampshade stencil onto a corner of the black construction paper. This is the lid of the lampshade. Trim the remaining paper so it is a rectangle.



Step 2 - Mark the safe zone for decorating

Decide how tall you want your lampshade to be. We recommend making your lampshade no more than 7 inches high. Trim the construction paper to the desired height.



Did You Know?

Constellations are patterns of stars that appear in the sky. One of the most common constellation pairs is the Ursa Minor and Ursa Major, also known as the Little and Big Dipper. Constellations have often appeared in folktales and myths. Some ancient cultures believed that the characters depicted in constellations were heroes. These heroes either became a part of the sky, or were rewarded by the Gods with their portraits embedded into the night sky.

Use a pencil to mark off 2 inches of room from the bottom of the lampshade and $\frac{1}{2}$ an inch from the top. This is so when you add the light source, the light will travel up the lampshade and light up the stars. If you add decorations and cut out holes too close to the bottom, the light will escape before reaching the top.



Mark $\frac{1}{2}$ inch of space across one side of the paper. You will tape and fold over this side at the end to connect the lampshade together.

Step 3 – Decorate your lampshade

Draw out constellations in the safe zone of your lampshade. Use a pencil to mark the dots for the stars. You can refer to the constellation sheet provided or invent your very own constellations. Feel free to add planets, suns, moons, and comets too.

Start thinking about what shapes you want to cut out to reveal the light later on. The more you cut out the more light will escape from the lamp. Try to be selective about what you will reveal.



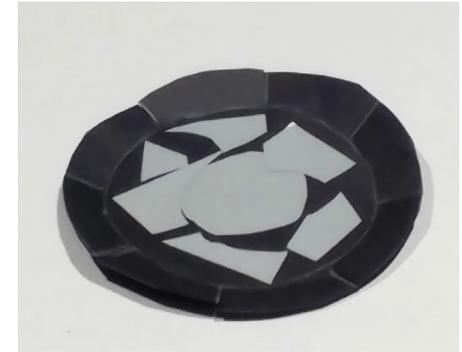
Why are constellations useful?

Constellations can be used as a way to tell what time of year it is. Zodiacs can be associated with seasons because they appear in different places of the sky each season depending on where you live. Some constellations may disappear from your view all together during certain times of the year!

Constellations can be used to track our rotation as well as the movement of celestial bodies. They can also serve as a map for locating specific stars. For example, the North Star, also known as Polaris, sits at the end of the Little Dipper's handle. You can use this star to determine what direction you are walking in during the night. Many sailors, explorers, and campers use the constellations in the night sky to navigate their directions.

Step 4 – Reflecting light

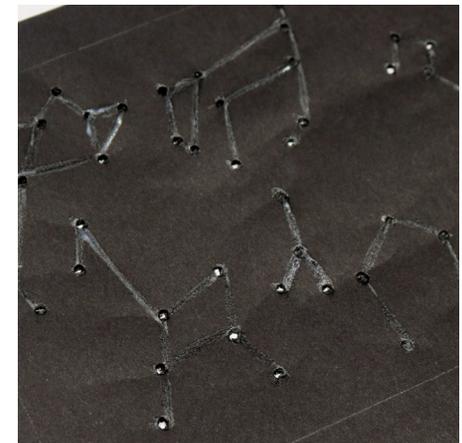
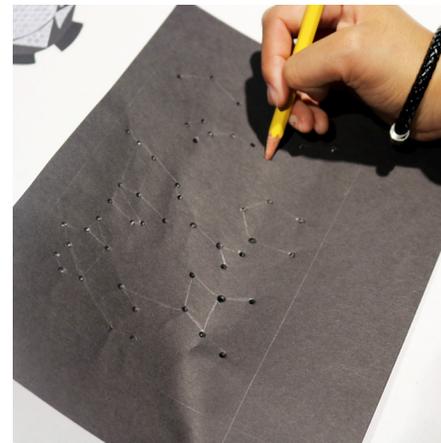
Add the square of reflective tape to the inside part of the circular lid. Without it, the lid will absorb the majority of the light but the reflective tape bounces the light back down, producing brighter stars.



Step 5 – Time to form the stars!

Use a pencil or toothpick to punch out constellations you drew. Though you could cut out star shapes, the lampshade will fold a lot easier if you poke out holes for the stars instead. Remember, the more you cut out, the more light will escape and the less bright your stars will shine.

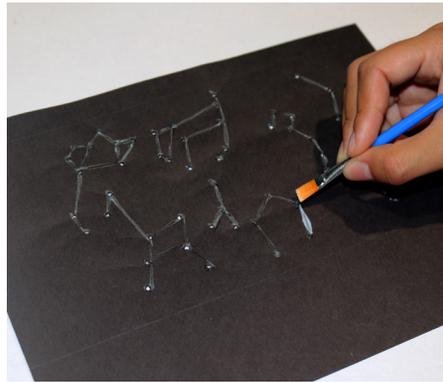
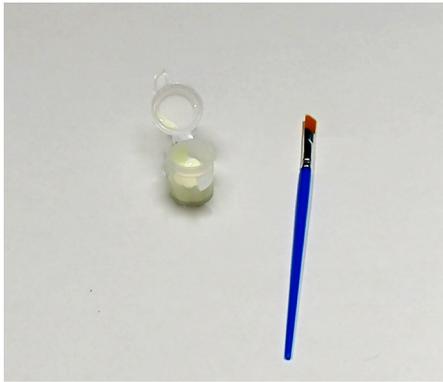
Note: Instead of cutting out your entire planet shapes, you can punch out parts of the outline to keep more light inside.



Step 6 - Paint your lamp

Add glow-in-the-dark paint to your design. Be creative and follow your own design. You can paint the opposite side that will become in the inside of the lamp or paint around the holes on the outside to add more brightness. You can highlight specific constellations by tracing the lines between them, making them easier to identify. Just make sure the first side dries before flipping it over and painting it on the other side.

Note: We suggest not painting over the reflective tape as it reduces some of its efficiency.



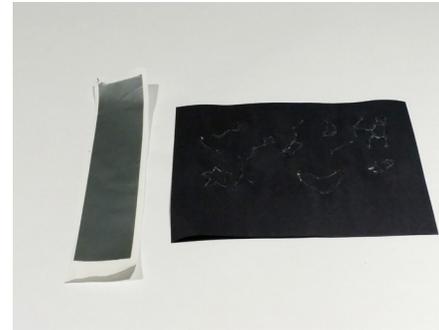
Luminosity

Luminosity is the amount of light emitted from a certain light source. In this kit our main light source is a battery operated light. The luminosity from the battery operated light is revealed through the constellations you cut out of the paper. The glow-in-the-dark paint also becomes luminous after it is charged by the light source.

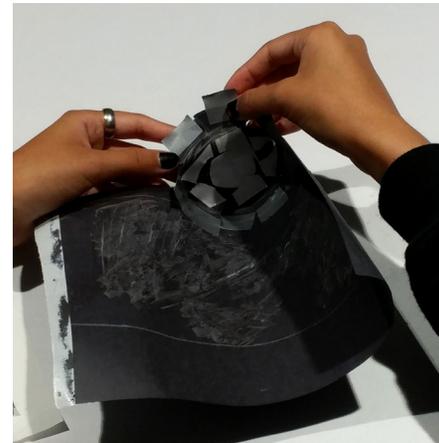
Are stars luminous? Yes, stars emit light because of the energy from their core. In the same way that this lamp has a battery operated light in its center, stars are creating energy with gases in their core which Astronomers measure to determine their brightness.

Step 7 - Build your lampshade

Prepare several small pieces of tape for the flaps of the lampshade lid.

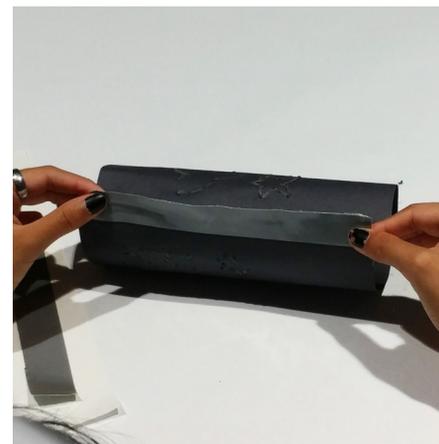


Add a long strip of tape to the inside along the $\frac{1}{2}$ inch line you marked on the side in Step 2.



Tape one of the flaps of the lid down to the inside of the lampshade. Make sure this is on the top side of the walls where you marked $\frac{1}{2}$ inch from the top.

As you wrap the paper around, continue to tape down the flaps of the lid. Be sure to leave as little space as possible so that excess light doesn't escape out from the top.



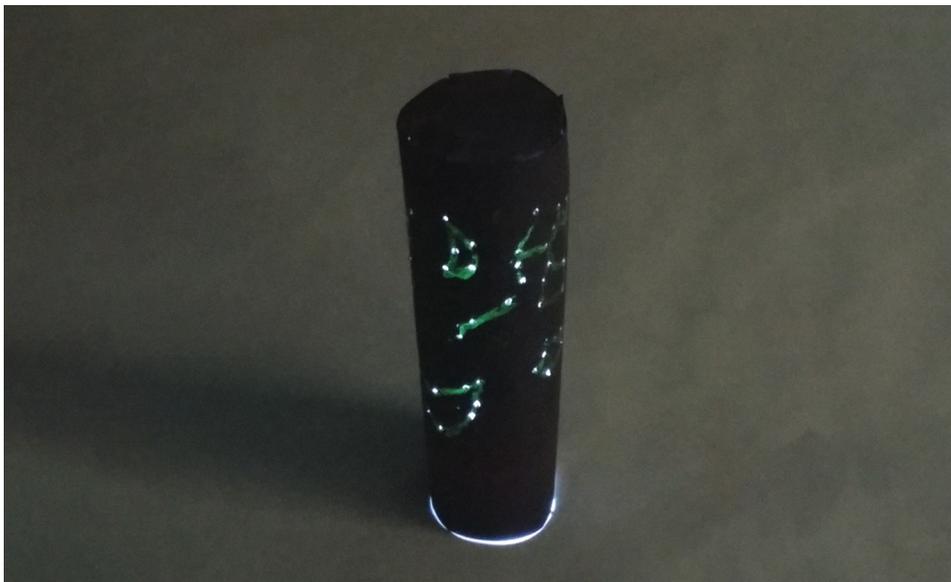
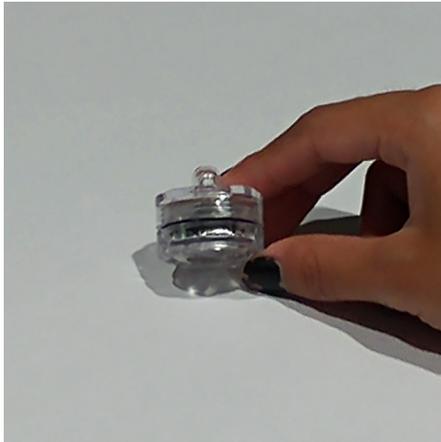
Roll over the paper and tape down the lid until the sides of the wall meet together. This step may be tricky but with some patience you'll get it right! You can add an additional piece of tape to secure it.

Note: You can also use glue but you'll have to hold the pieces together until they dry completely.

Step 8 - Show off your lampshade

Prep your light by twisting it open and removing the piece of paper from the inside. This will allow the spring and battery to make contact which will activate the light. To turn the light on or off follow the arrows on the bottom of the light.

Now that your light is prepped, turn it on and place your lampshade over it! Turn the lights in the room off or go someplace dark to see your constellations shine!

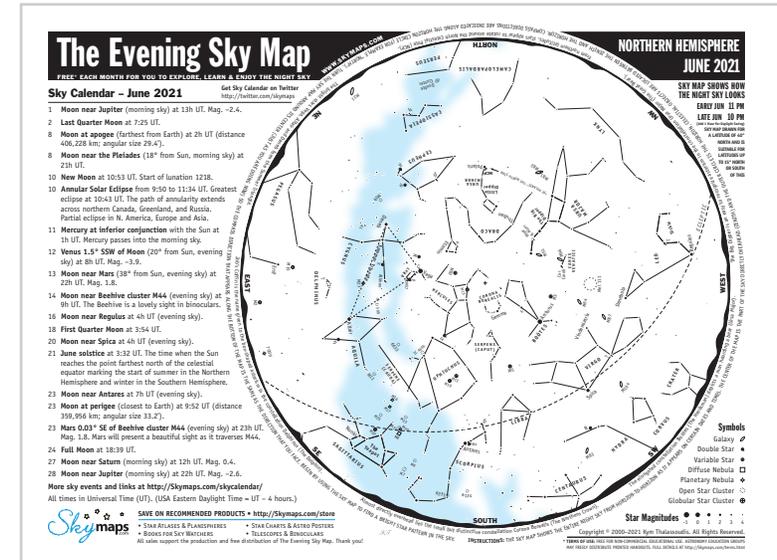


Go Beyond

Pick a day special to you. Go online and look up what the night sky looked like on that day (you can be specific to the minute if you would like). We used **skymaps.com** for a free download of the most current sky chart.

Copy the sky chart down - you can trace it, if you don't have a printer. Follow the same steps to make another lampshade. Place it somewhere in your home or gift it to someone special.

Sky chart June 2021



HANG OUT,
MESS
AROUND,
GEEK OUT.



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