Try This at Home Science:

Make Your Own Planisphere

Activity Overview:

Create a planisphere to help you find stars and constellations in the night sky!

Materials:

- Template for location (the template for Metro-Detroit is included at the end)
    - Visit In-The-Sky.org to download a template for your location
- Scissors
- Tape
- Brass fastener or split pin (optional)

Try this!

1. Print off the template provided for your location.
2. Cut out the holder and the star wheel.
3. Poke a hole in the shaded area on the holder to help you cut out the oval viewing window.
4. Fold the holder in half, and then use some tape to secure the sides.
5. Place the star wheel in the holder. To secure it and make it easier to spin, you can use a brass fastener or split pin to poke a hole through the open circles in the middle of the star wheel and through the back of the holder.

What's happening?

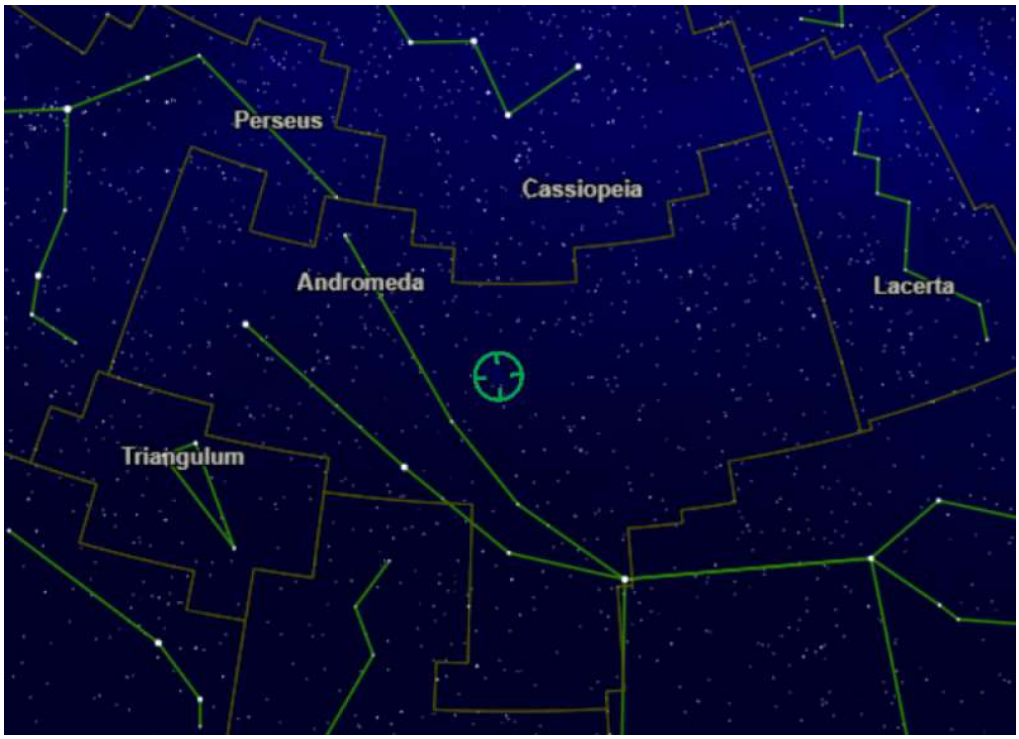
You've created a sky map! A planisphere is a simple hand-held device which shows a map of which stars are visible in the night sky at any particular time for a specific latitude. What we might see in Detroit (closer to the North Pole) will be very different compared to someone else's view in Ecuador (near the equator) or in Tasmania (closer to the South Pole). By rotating the star wheel, it shows how stars move across the sky through the night, and how different constellations are visible at different times of year.

How does this relate to astronomy?

We use constellations to help us locate objects. Constellations are not just the star patterns that we can see, but they are also specific regions of the sky. Much like a map of the United States might show us the boundaries between states, the constellations are like the states that make up the night sky and the stars are like the major cities.

There are other patterns of stars that we might see in the sky that are just as helpful when trying to locate things. What we might know as the *Big Dipper* is only a part of the constellation Ursa Major. The seven stars that make up the dipper are very bright and easy to find; making it a great tool to help us find other stars like Polaris (the North Star) and Arcturus. The *Big Dipper* is actually an asterism, or a recognizable star pattern that is not an official constellation.

To find our closest galactic neighbor, simply look for the constellation Andromeda. You can use the asterism of the *Great Square of Pegasus* to help you! Andromeda and Pegasus share a star called Alpheratz. Draw a line out from this star to find 3 "stars" in a row. One of the stars looks like a fuzzy dot. That fuzzy dot is the Andromeda Galaxy which is about 2.5 million light-years away. It is the furthest object that you can see with the unaided eye!



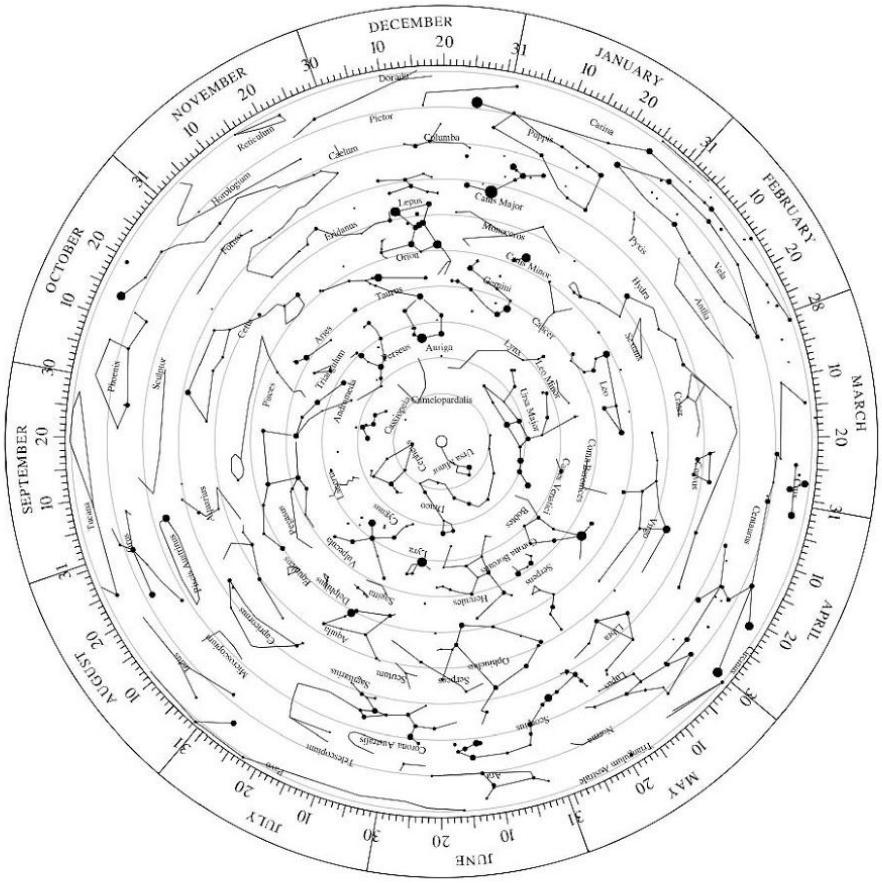
Now try…

- Next time you take a trip, create a planisphere for your destination's location!
- Use Stellarium to help you find more objects in the sky! You can use the Web or Phone app or download the program onto your computer for free!

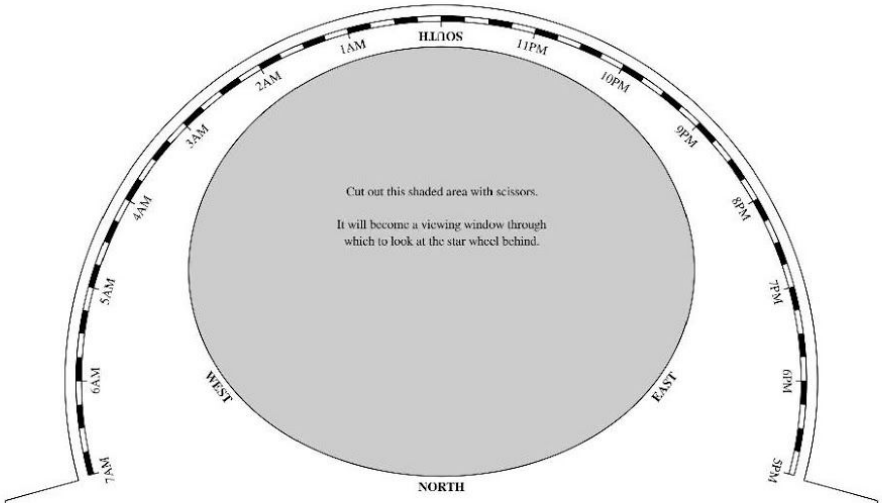
Additional Information

Visit In-The-Sky.org for more planisphere templates and information about stars, constellations, and deep sky objects and how to find them!

For more "Try This at Home Science" activities, visit www.mi-sci.org



The planisphere's central star wheel, which should be sandwiched inside the folded holder.



PLANISPHERE 40°N

1

Turn the starwheel until you find the point around its edge where today's date is marked, and line this point up with the current time. The viewing window now shows all of the constellations that are visible in the sky.

2

Go outside and face north. Holding the planisphere up to the sky, the stars marked at the bottom of the viewing window should match up with those that you see in the sky in front of you.

3

Turn to face east or west, and rotate the planisphere so that the word "East" or "West" is at the bottom of the window. Once again, the stars at the bottom of the viewing window should match up with those that you see in the sky in front of you.

For more information, see https://in-the-sky.org/planisphere

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The constellations of the night sky revolve around the celestial poles once every 23 hour and 56 minutes. The idea of representing the night sky as a flat map, which is turned to emulate the night sky's rotation, dated back to the ancient Greek astronomer Hipparchus (circa 150 BC). The fact that this rotation takes four minutes less than the length of a day means that stars rise four minutes earlier each day, or half-an-hour earlier each week. Through the year, new constellations become visible in the pre-dawn sky, and disappear into evening twilight.