

# Amaze Your Brain *at Home!*

**ACTIVITY**

**ALL AGES**

## **BACKYARD STARGAZING**

To observe stars and planets using easily accessible supplies and equipment.

### **MATERIALS**

- Scissors
- Tape
- Printed template



### **INSTRUCTIONS**

1. To make your Star Wheel, first cut out the star chart disc.
2. For the holder, cut along the solid lines and remove all paper with the grids. Texas is in the 30-50 degree latitudes. Make sure you use the correct holder. (Holder for the 50-70 degree latitudes is for more northern areas).
3. Fold holder along the dotted lines, and tape the side edges together.

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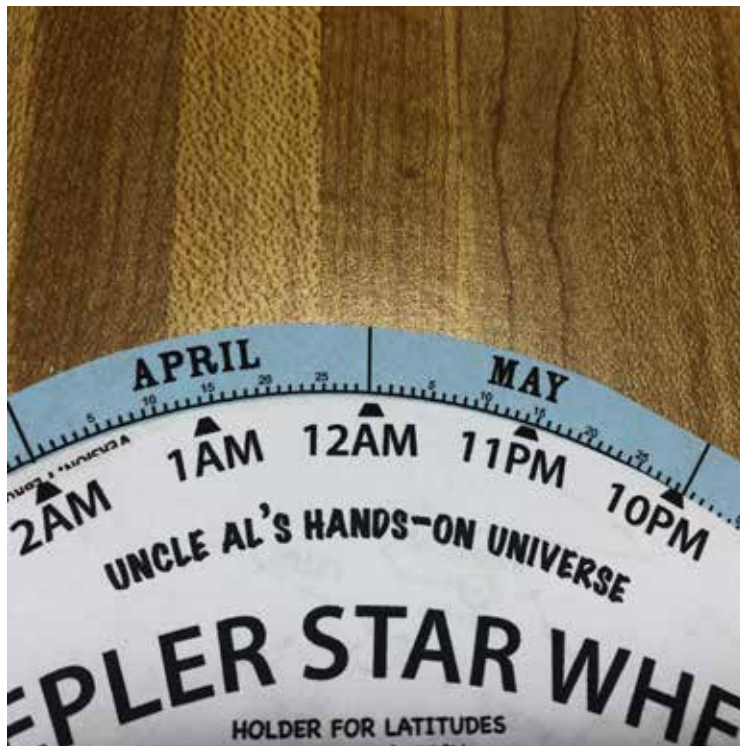
## ACTIVITY

ALL  
AGES

## BACKYARD STARGAZING (CONT.)

### HOW TO USE YOUR STAR WHEEL

1. Notice the months and dates along the edge of the star chart disc, and the hour times along the edge of the holder.
2. Insert disc into the holder, and line up the current date with the time you are stargazing.
3. Using the star chart, look for a constellation you wish to find.
4. Rotate the entire map so that the horizon the constellation is closest to is at the bottom. Use a phone or compass to ensure you are facing the correct direction.
5. You should be able to begin matching the stars to the map.
6. As the night gets darker, use a red flashlight to see the star wheel.



Kepler Star Wheels reproduced with permission from NASA Kepler Mission and University of California, Lawrence Hall of Science.

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## **BACKYARD STARGAZING**

### **MATERIALS**

- Kepler Star Wheel
- Red flashlight (or smart phone with color adjustment settings)
- Compass (or smart phone with compass application)



Find a good spot. Whether on your balcony, in your backyard, or if you drive out somewhere farther away from the city, having a good spot is key. You will want someplace with a nice open view of the sky and not too many buildings or trees to block your view. Take a blanket or lawn chairs to sit on, weather appropriate clothing depending on the time of year, and maybe even some snacks if you plan to be outside a long time!

The star wheel has a map of the most prominent constellations we see in the Northern Hemisphere. Because the Southern Hemisphere is on the other side of the planet, their constellations are different because they face a different portion of the night sky. So if you were to visit Australia, you would actually see completely different stars!

As the hours tick by, our view of what stars are visible will change slightly because of the Earth's rotation. So rotating the star wheel to keep the date aligned with the time will help you keep track of the sky as it changes.

Using a red flashlight to see your star wheel is important for your night vision. Humans do not have very good night vision, and it can take nearly 20 minutes for our eyes to adjust to the dark so we can see the starlight. Bright white/blue light from phone screens can make it harder to see stars since their light is very dim compared to phones. Red light, however, is not as harsh on the eyes, so it allows us to still see, without needing to let our eyes readjust. Most smart phones have nighttime settings that could help, and some even have color settings you can change to turn your phone screen into a red light!

If you have a smartphone, you can even download a stargazing app, many of which are inexpensive or even free! Those apps usually have a nighttime setting to allow your eyes to stay adjusted to the dark.

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