



MAKE AND USE A STAR WHEEL TO TOUR THE NIGHT SKY

Overview (Activity Level of Difficulty: Medium)

A star wheel (sometimes called a “Planisphere”) is a handy tool to help you identify the stars and constellations available in your night sky during the time you plan to stargaze. The circular star wheel can be adjusted to see the rise and fall of the night sky as our Earth spins and even the change in the night sky due to seasonal changes.

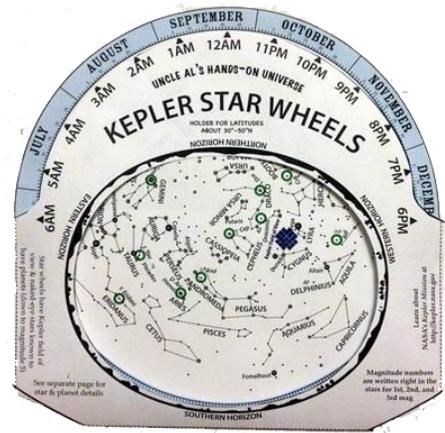
In this activity, make your own star wheel for FREE. Use your star wheel to tour the night sky.

What You Need

- A “star wheel” pattern from one of these websites:
 - National Park Service (Northern Hemisphere only):
https://www.nps.gov/subjects/nightskies/upload/Junior-Ranger-Night-Explorer_2016-2018-2.pdf
- OR
- Uncle Al’s Starwheel (Northern or Southern Hemisphere):
https://www.lawrencehallofscience.org/do_science_now/science_apps_and_activities/star_wheels
- A flashlight to read the star wheel (a red light is preferable)
 - Optional: A compass to help you find North

What to Do

1. Download, print and make your star wheel:
 - a. Download your preferred star wheel from one of the choices provided above (double check that the star wheel that you are downloading is for your hemisphere)
 - b. Print and assemble your star wheel according to the instructions
2. Before you go outside, calibrate your star wheel to the correct date/time:
 - a. Decide the time at night that you wish to stargaze. (When deciding your time, allow at least 30 minutes after sunset before starting to stargaze).
 - b. Locate your preferred viewing time on the star wheel. For example, 9:00 pm at night.
 - c. Locate the month and day on the star wheel that you plan to stargaze
 - d. Rotate the inner “wheel” until the month and day that you plan to stargaze is aligned to the time that you want to stargaze.
 - e. Once the date and time are aligned, the stars that you see in the viewing circle of the star wheel will match the stars available in the night sky.
3. Find your darkest location for viewing the night sky. The best location will have:
 - a. No buildings or trees blocking your view of the horizon
 - b. No porch lights or streetlights that you can see





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4. Use your star wheel for stargazing:
 - a. Make sure that date and time on your star wheel are correctly aligned for the time you plan to stargaze
 - b. Go outside with your star wheel and tools
 - c. Find North:
 - i. If you have a compass, use your compass to find North
 - ii. If you do not have a compass, face the direction of where the Sun set. Once facing the direction of sunset, turn a quarter turn to your right and you will be facing an approximate North.
 - d. Orientate your star wheel by doing the following:
 - i. Find the word “North” on the star wheel
 - ii. Holding the star wheel in front of you, rotate the wheel so that the word “North” is nearest the ground
 - iii. Continuing to hold the star wheel in front of you with the word “North” nearest the ground, use your other hand to hold the side of star wheel that has the word “South”
 - e. Continuing to hold the chart in front of you with both hands as noted above:
 - i. Face the direction of North
 - ii. Look above you at the night sky
 - iii. Continuing to face North, raise the chart directly above you so that are looking up at the sky while also looking at the chart.
 - f. Your chart is now ready to use:
 - i. The stars and constellations above you will match what you see on the chart.
 - ii. The dashed line called the “ecliptic” that traces across the chart is the Sun’s path during the day. This is where the planets and Moon will be at night, if they are available

Did You Know

As the Earth travels around the Sun and rotates as part of our day/night cycle, the stars rise four minutes earlier each night. This slight shift in the night sky each evening may not seem like much but will cause the sky above us to completely change with every change season.

Learn more: <https://www.space.com/10821-night-sky-changing-seasons.html>

More Resources

- Visit <https://skyandtelescope.org/> to learn more about viewing the night sky.
- Download another popular sky chart from www.skymaps.com