

Make a Star Wheel*

By the Editors of Sky and Telescope, April 15, 2007

Like most people, you probably enjoy getting out under a clear sky to gaze up at the beautiful tapestry of stars and planets overhead. But what if you can't find Polaris from Pollux, or Saturn from Sagittarius? No problem! Using this simple, easy-to-make Star Wheel, you'll be navigating the night sky with confidence in no time.

The motion of the stars marks the passage of time during the night. As Earth turns on its axis, the stars appear to rise in the east and set in the west, just as the Sun and the Moon do. This means that you'll see different stars overhead at different times of the night. Likewise, as Earth make its annual trek around the Sun, you'll see different stars from month to month.

So what stars will be in your sky tonight? To find out, follow these simple directions to make a star wheel you can use tonight!



It takes just a few minutes to make this handy Starwheel, which helps you navigate the night sky with ease!

Kelly Beatty

Make a Star Wheel

The two parts of the Star Wheel are at the end of this activity:

Part 1 is the circular sky map.

Part 2 which is the Star Wheel's outer sleeve.

Each part for the Star Wheel is sized to fit on a single sheet of letter-sized paper. Print out both sheets and cut out the parts. For the sky map (Part 1), trim away the gray corners so that you're left with a circle 8 inches across. For the outer sleeve (Part 2), make sure you keep the large white rectangle at the bottom; also, cut out the white oval in the middle.

To make a Star Wheel, fold the white rectangle at the bottom of the outer sleeve so it's underneath the front. Then staple the rectangle to the front at the locations marked by short white lines to either side of the oval. Now slip in the circular sky map so it shows through the oval. That's it!

*Text and images have been taken from the original article that can be found at:

<http://www.skyandtelescope.com/astromy-resources/make-a-star-wheel/>

References to link to images have been left out as the images are included with this activity.

Using the Star Wheel

Pick the date and hour you want to observe, and set the Star Wheel so this date (on the rim of the circular disk) matches the time indicated along the edge of the outer sleeve. Use white hours when standard time is in effect and orange hours when clocks are set for daylight-saving (summer) time. [Note: Hawaii and most of Arizona do not observe daylight-saving time!]

The Star Wheel's large oval shows the whole sky, and the oval's curved edge represents the horizon you're facing. Once outside, hold the Star Wheel out in front of you and look at the yellow "Facing" labels around the oval. Turn the entire wheel so that the yellow label for the direction you're facing is on the bottom, with the lettering right-side up. If you're unsure of your directions, just remember where the Sun sets; that's west.

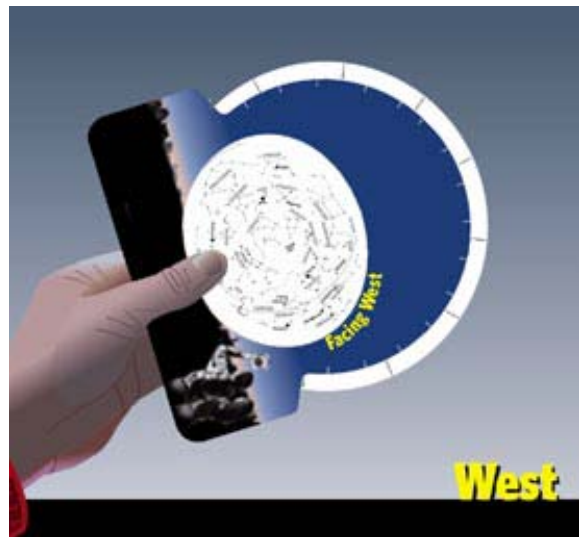
Now the stars above the map's horizon should match the real stars in front of you. Remember that star patterns will look much larger in the sky than they do on the map. The farther up from the edge of the oval the stars appear, the higher up they'll be shining in your sky. Stars in the center of the oval will appear directly overhead.

If you'd like a more visual guide, the website has a video on how to use a star wheel.

This Star Wheel is usable for northern latitudes between 30° and 50° , which covers virtually all the continental U.S., southern Canada, and Europe. It includes the names of the brightest stars and the most prominent constellations. Depending on how dark the sky is in your area, there may be more stars overhead than are shown on the map. Everyone's sky looks a little different. If there are fewer stars visible to you than appears on the Star wheel, try to find an observing site that is not flooded by house or streetlight. Also, the longer you're outside, the better the chance that your eyes will adapt to the darkness and the more stars you'll be able to see.



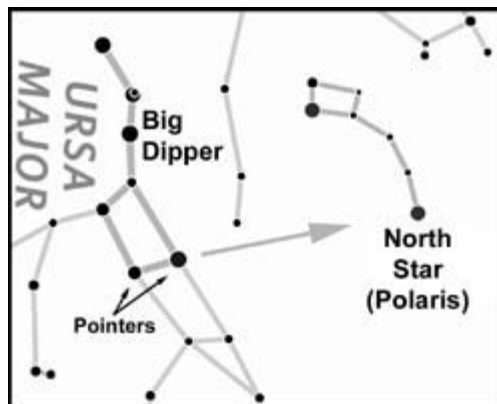
To use the Star Wheel, align the desired date with the desired time. This example is set for 10 p.m. (daylight-saving time) on June 15th. Kelly Beatty



Once you've set the date and time, turn the Star Wheel so the "Facing" label at the bottom of the oval matches the direction in the sky you're looking. Kelly Beatty

Stars in the northern sky do not rise and set—instead, throughout the night they seem to slowly turn counterclockwise around Polaris, the North Star, which seems to stay in the same place in the sky no matter what time of night or season of the year. So let's find the North Star!

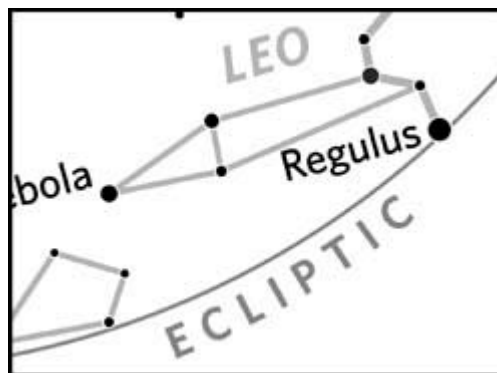
Begin by locating the Big Dipper. This giant spoon is actually part of a larger constellation called Ursa Major, the Great Bear. Find the two end stars in the Dipper's bowl—look opposite the handle. They're known as the "pointers." Why? Because a line drawn between them and extended away from the bottom of the bowl leads you to Polaris, the North Star. Now that you know how to find Polaris, you also know how to find due north, no matter where you are in the Northern Hemisphere!



By drawing a line through the "pointer" stars at the end of the Big Dipper's bowl, you can easily find the North Star.

Kelly Beatty

The Moon and the planets aren't shown on the map because their day-to-day movements are more involved than the motion of the stars. However, the curved line coursing across the map is called the *ecliptic*. It represents the path in the sky that brightest planets follow. If you see a bright "star" shining with a steady glow on or near this curved line, and the object isn't plotted on the Star Wheel, you're looking at a planet. The Moon likewise travels very near the ecliptic in its orbit around the Earth.



Planets aren't plotted on the Star Wheel, but they travel across the sky along an imaginary line called the *ecliptic*. Kelly Beatty

The Sky & Telescope article has a link to their interactive sky chart to see what's in the sky for your time and place. You may have to register for this.

No matter how well you know the sky, you'll find that a star wheel comes in handy for a quick check of "what's up" on any given night. If you'd like a better version of the star wheel you see here, you can find several star wheels at their online store.

<http://www.shopatsky.com/best-sellers/astronomy-gifts>

