



STATEWIDE STAR PARTY

A “HANDY” WAY TO MEASURE THE SKY

Activity Instructions

<http://www.ncsciencefestival.org/starparty/>

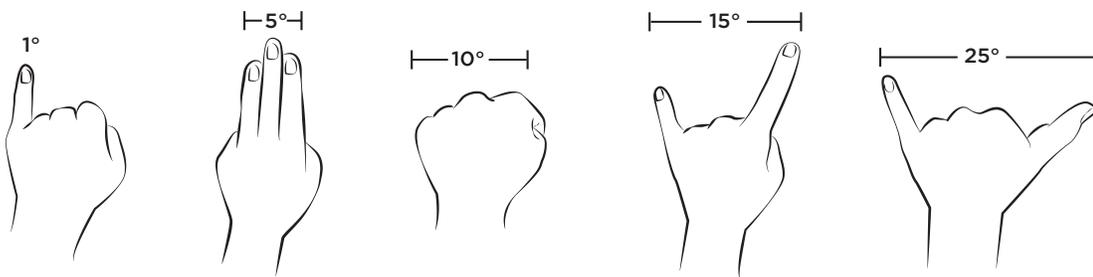
Similar to how a road map can tell you the distance between cities, a sky map can tell you the distance between stars—not actual distance, but their *apparent* distance, or separation, from each other.

Astronomers measure the separation (“angular distance”) between objects in the sky using *degrees* ($^{\circ}$). A circle has 360 degrees, which means there are 90 degrees between any point on the horizon and the very top of the sky, the *zenith*.

Finding your way in the night sky is easier when you know how to measure degrees in the sky. Your hands are all you need!

Here’s how to do it:

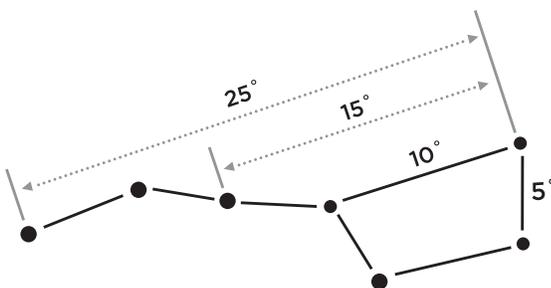
1. Practice putting your hand into these positions:



2. Hold your hand at arm’s length, and close one eye. Note that you can use two hands to combine measures, such as in this photo showing 10° fist width + 25° thumb-to-pinky = 35° total.



3. Find the Big Dipper in the sky, and confirm your specific hand measures. For example, maybe your hand won’t spread a full 25 degrees from thumb to little finger.



Now try these challenges:

1. Cover the Moon with just a finger.

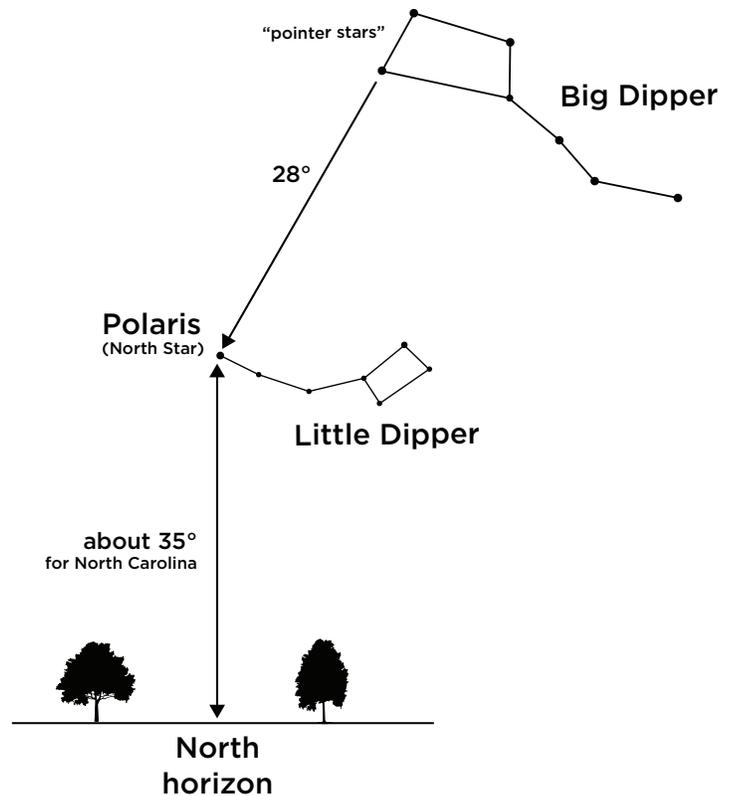
The tip of your little finger held at arm's length covers about 1 degree. You should be able to easily cover the Moon, because it's only $\frac{1}{2}$ degree across. Believe it or not, $\frac{1}{2}$ degree is also roughly the amount of sky you can see at one time through a backyard telescope.

2. Find the zenith.

The zenith - the point marking the top of the sky, directly overhead - is 90 degrees above the horizon. Starting at the horizon, stack your fists on top of each other. It should take about 9 fist widths to reach the zenith.

3. Find the North Star.

From the Big Dipper's "pointer stars" (the ones that form the side of the bowl), draw an imaginary line covering 28 degrees in angular distance. You'll land on Polaris, the North Star (part of the Little Dipper).



4. Measure your latitude.

Measure the North Star's height above the horizon in degrees. That number of degrees = your latitude! North Carolina's latitude ranges from around 34 to $36\frac{1}{2}^\circ$ North, depending on your specific location.

5. Find the International Space Station.

Check for the next time the International Space Station will be visible from your location. The website <http://spotthestation.nasa.gov/> will tell you how many degrees above a given horizon the ISS will first appear (and then later disappear), as well as the maximum height in degrees it will reach above the horizon.



The Statewide Star Party is made possible by the generous grant support of the North Carolina Space Grant.