

While star charts and planispheres pack a lot of info, apps such as Stellarium and SkySafari provide a ton more information. With those apps you can get detailed info on stars, planets and deep sky objects, simulate the exact field of view of your instrument, easily move back and forward in time, and even control your mount.

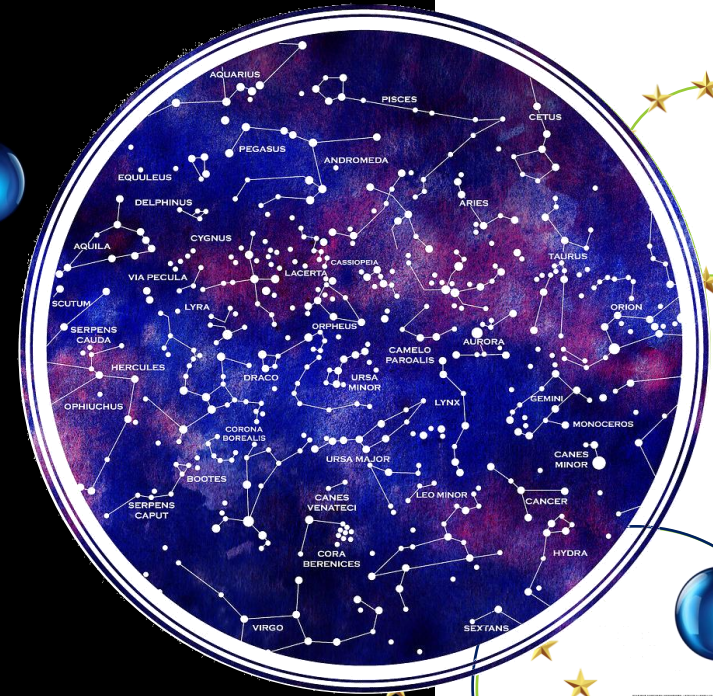


Astronomy apps for smartphones are also much easier to use: simply point your phone at the sky to see on screen what is in the part of the sky you are framing.

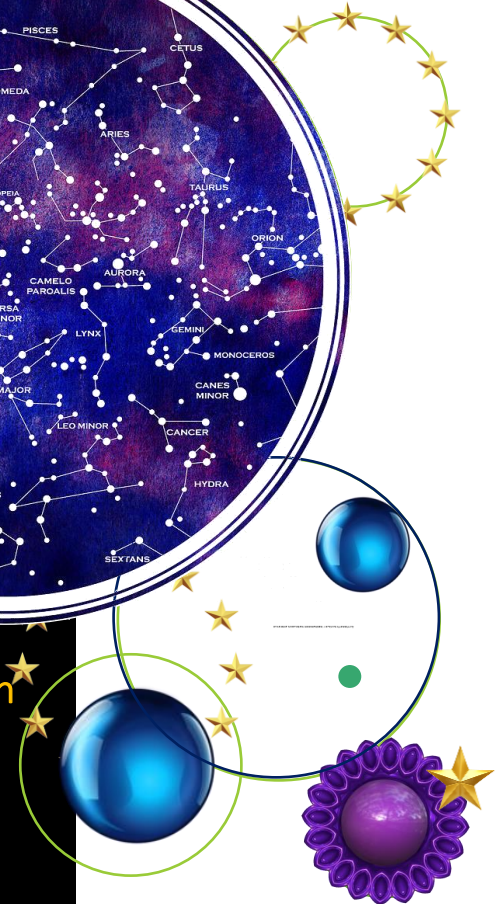
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CHARTING THE COSMOS



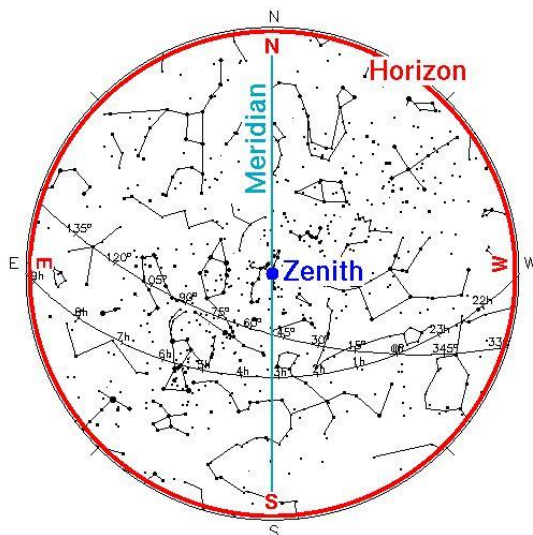
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READING CHARTS

It helps to think of the sky as a dome around the Earth upon which stars and planets reside. As the night progresses, this little dome turns so that the stars seem to rise in the east and set in the west.

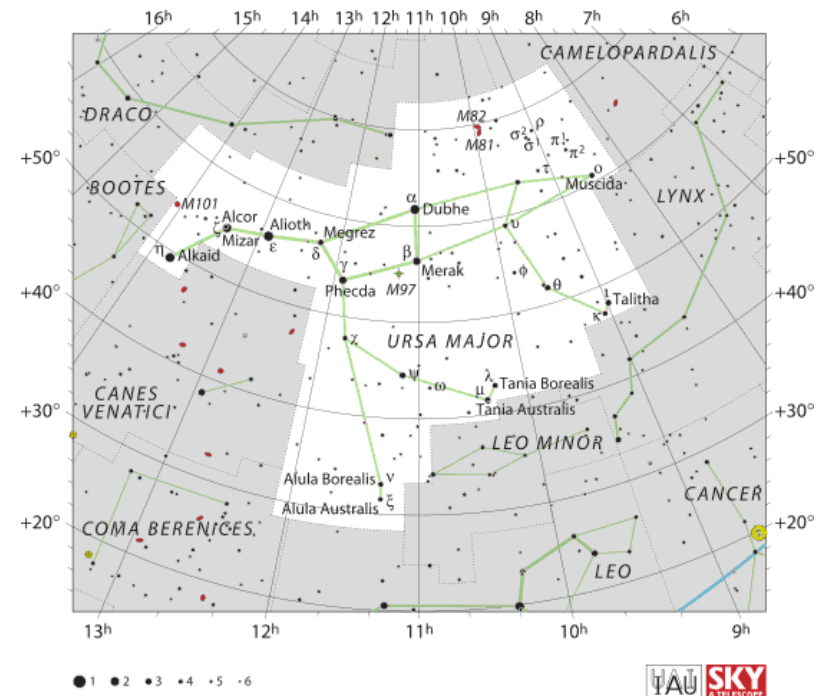
Since the sky is above our heads, your star chart is designed to be held overhead when you read it. The point directly overhead is called the Zenith and can be found in the center of the chart. The outer edge of a circular map represents the horizon.



Charts can be obtained for the northern hemisphere and southern hemisphere. Wherever you are, the chart is read in the same way. To use the map, make sure you are facing the right direction. Turn the map in your hands such that 'N' on the map is oriented towards the north. You'll see that East and West in the map are the exact opposite of what we have here on Earth, which is because Earth maps are designed to be put on the ground whereas your star chart is to be held up in the sky.

READING CHARTS

A good way to start to read a star chart is to identify the bigger, brighter stars and constellations. You can try starting your search with the Big Dipper- the group of seven bright stars in the constellation Ursa Major.



Once you locate it in the night sky, try spotting it on your star chart. When you've found it, orientate the chart so that it matches your view of the night sky. From there, the Big Dipper can be used as your anchor to come back to if you get lost, and it's a great jumping-off point to see other stars. Remember, the chart only shows naked eye objects but if you suffer from light pollution you may not be able to see everything on it. Keep in mind too that you'll need your night vision intact to see the sky chart effectively, so only do so with a red flashlight.

TIPS

The map might very well look like the remains of spilled ink. Take a step back to look at the bigger dots. These are the brighter stars and constellations that you should be able to spot easily.

If you find it hard to keep comparing the star chart with the night sky, go ahead and draw lines on your map so that you don't miss your constellation among the thousands of visible dots. Once you get a better handle on this, you will swiftly go through these constellations with ease.

Always try starting your search by knowing what to look for, including the right ascension and declination coordinates. It makes the entire experience more rewarding and less frustrating. It is easy to get lost in the vastness of space, especially if you are looking through a tiny eyepiece!

Once you get comfortable identifying the brightest stars and constellations from your star chart, try hopping from bright stars to fainter, more exciting objects.

Observe under the darkest skies you can, where the big constellations are easy to see. Go armed with a red LED flashlight to read your maps in the dark nights!

Star charts also provide information on Magnitude — a measure of the brightness of a celestial body. It's important to familiarize yourself with these figures to understand what you can and can't see with the naked eye or with your specific telescope.

These are the essential pointers you need to start identifying planets and other celestial objects in the night sky using star charts. Keep practicing, stay patient and remember — the sky's not the limit, it's the destination.

DECIPHERING CELESTIAL MATHEMATICS

Star charts depict three vital celestial elements: Right Ascension (RA), Declination, and Magnitude.

Right Ascension (RA) is similar to longitude on Earth, providing an object's east-west location. It's measured in hours, minutes, and seconds.

Declination corresponds to latitude in terrestrial terms, indicating a celestial body's north-south position. It's measured in degrees.

The Magnitude of a celestial object signifies its brightness. The lower the number, the brighter the star.

Here's a handy markdown table to encapsulate these concepts:

CELESTIAL ELEMENT	TERRESTRIAL CORRELATION	UNIT OF MEASUREMENT
Right Ascension (RA)	Longitude	Hours, minutes, seconds
Declination	Latitude	Degrees
Magnitude	N/A	Numerical (Lower is brighter)

Location is key in using star charts effectively. Since they're designed to mirror the night sky as it appears to the observer, knowing your geographical coordinates will ensure you get the most accurate view. Whether you're in Urumqi or Utah, you need to know your latitude and longitude.

Star charts are also time-sensitive. Understanding the rotation of the Earth and how it influences the night sky is critical. Keep in mind that what you see at 9 PM tonight won't look the same at the same time next month. Updating the star chart according to the date and time will aid in your celestial navigation.