

# Star Wheel and Binoculars Presentation

A planisphere (Star Wheel) is a type of star chart that can be set to show the location of objects in the sky for any given date and time. It is small, portable and easy to use, providing a very convenient tool for identifying objects seen in the sky, or locating specific objects of interest. Planispheres are designed to be accurate for specific latitudes.

Initially developed around 200 BC as the metallic 'planispheric astrolabe', the modern-day planisphere is usually made of card or plastic discs with a rotating oval 'horizon' to reveal the stars visible overhead.

These cost about \$10 - \$15 and are designed for specific Latitudes. There are two basic design types of Star Wheels:

- **Whole Sky** – These show the entire visible sky in one view. To accomplish this there is distortion of the constellations around the edge of the window (horizon).
- **Split View (Recommended)** – The front side of the wheel represents the northern view of the sky, while the back represents the southern view of the sky. This minimalizes distortions and spreads out the night sky so it doesn't seem quite so busy and as a result is easier to read.

## Whole Sky Star Wheel



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## Split Sky Star Wheel

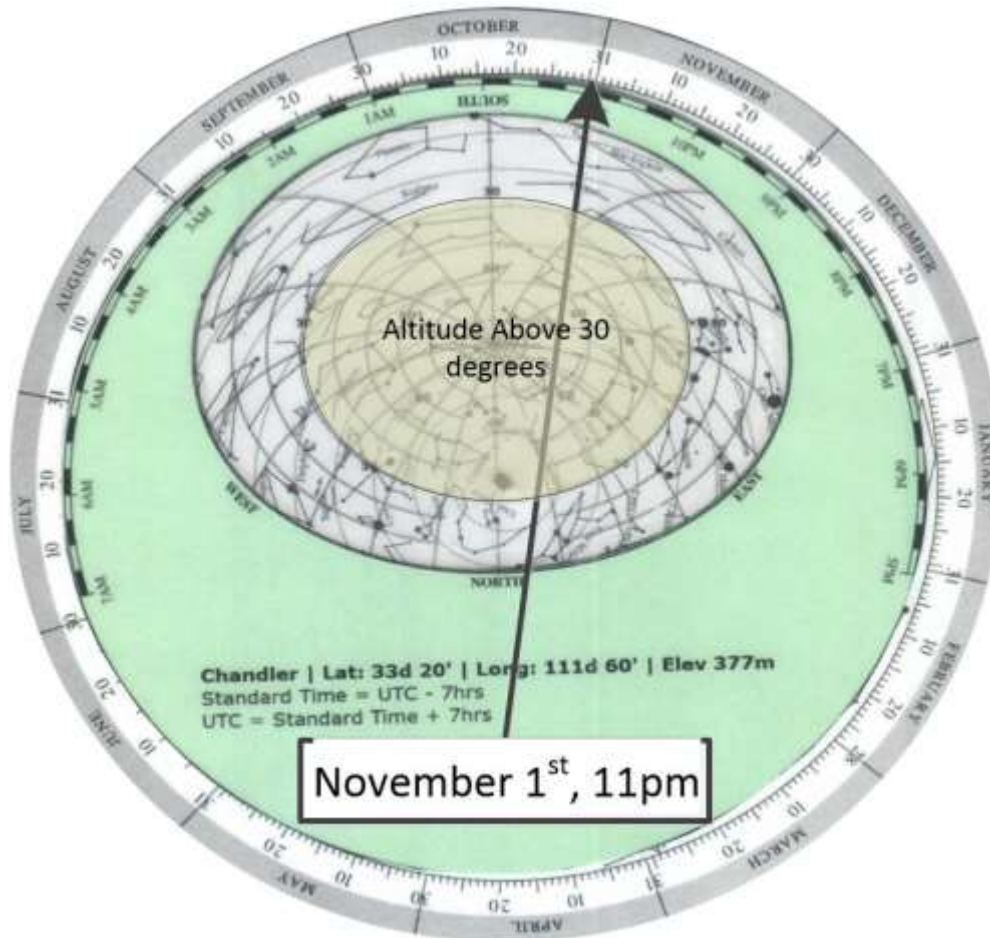
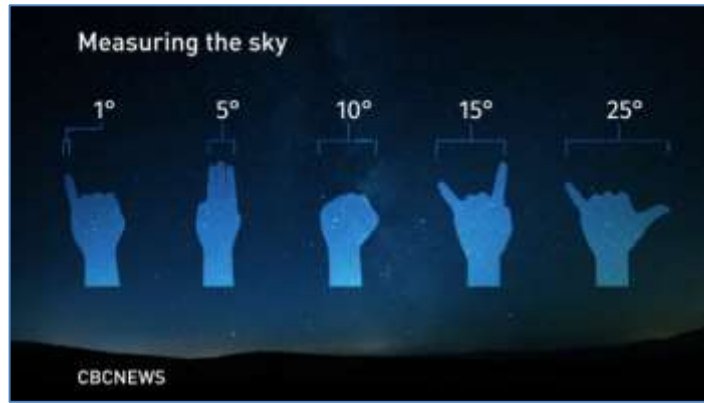


## Using a Planisphere

- **Get Oriented** - Locate the North Star in the sky.
- **Set the Planisphere** - The inner wheel contains the time and the outer wheel has the date printed on it. Locate the current time on the inner wheel and rotate it until it is matched to the current date. The sky in the window should now represent what should be up in the sky.
- **Hop to your destination** – Finding new constellations or objects in constellations you are not familiar with can be challenging. A technique known as Star Hopping can be an effective technique for locating new objects.
  - Locate a constellation in the sky you are familiar with. Ideally close to the object you are interested in.
  - Using stars in the reference constellation to point to the constellation of interest (target constellation).
  - Note the distance – On the star wheel take note of the distance between the reference stars used to point to the target relative to the distance from the reference stars. Using your outstretched hand, use your fist, thumb, fingers to approximate the distance from the reference stars to the target object.



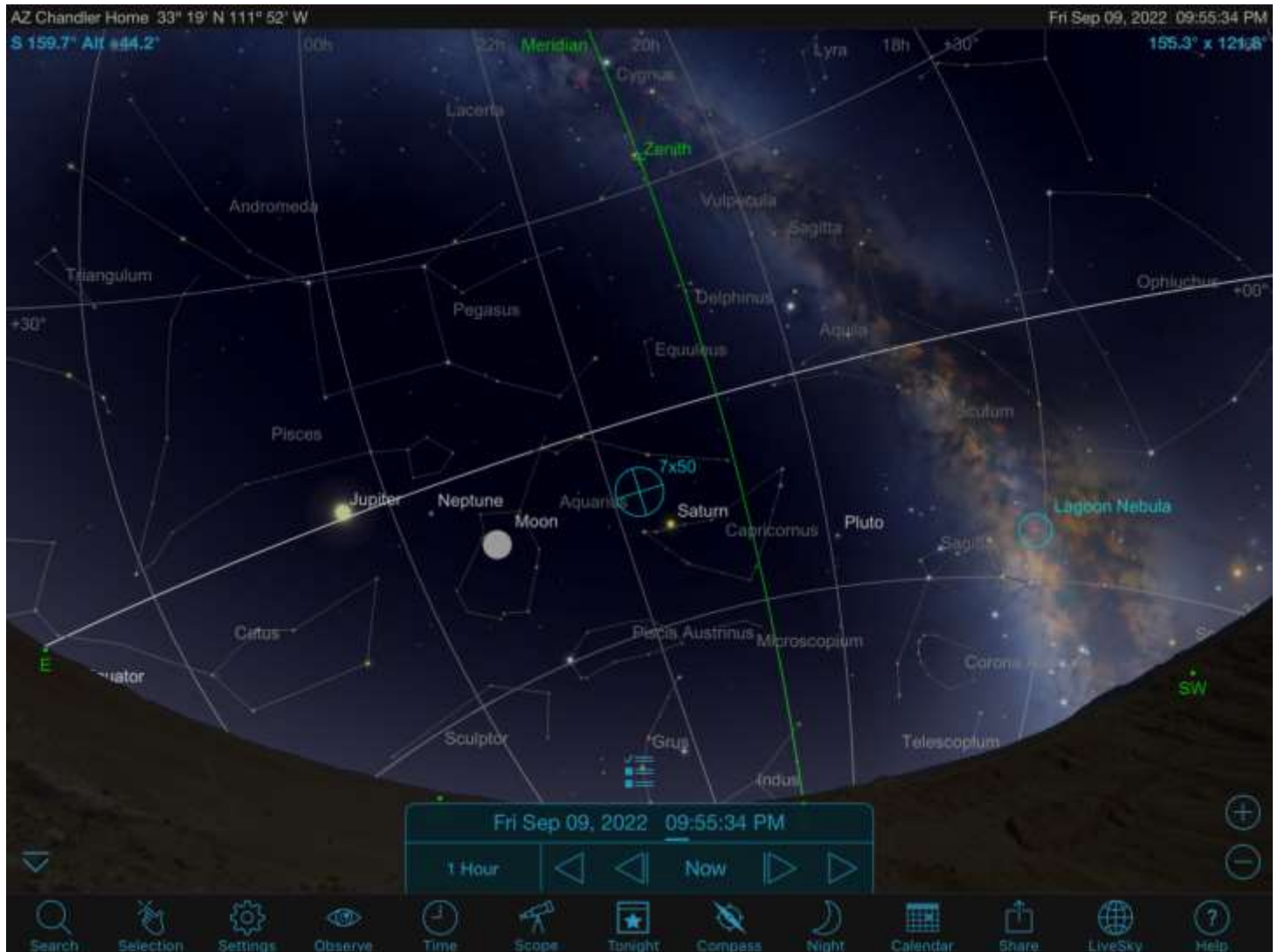
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Modern Solutions – Applications

[SkySafari](#) (\$5 - \$50) – Android, iOS & PC (website subscription)



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## Binoculars

### Advantages Binoculars have over telescopes

- Compact and portable
- You probably already have a pair
- Usable for other things like bird watching
- Tend to have a wider field of view ( $10\times 50 = 6.5^\circ$ )
- Easier to find objects (because they tend to be larger and brighter)

### Disadvantages of Binoculars compared to telescopes

- Fixed magnification
- No tracking
- Dim and small objects cannot be viewed

### Appropriate targets for Binoculars

- Features on the Moon
- \*Sun Spots (with appropriate filters!)
- Open Clusters
- Limited Number of Large Bright Deep Sky objects
  - Andromeda Galaxy
  - Orion Nebula
  - Comets
  - Multiple Star Systems

### Things to consider when purchasing binoculars for Astronomy

- Eye Relief – The fixed distance between your eyes and the lens of binoculars. If you wear glasses a minimum of 16mm or more is needed.
- Exit Pupil - The exit pupil is the cylindrical beam of light that comes out of the eyepiece of a binocular and enters your eye. Ideally the exit pupil should match your pupil. General trend of the size of a dilated pupil for a person is based on age
  - Under 30 years old, 7mm dilated pupil
  - 50 years and above: 5-6mm dilated pupil diameter
- Image Stabilization – The process where binoculars compensate for movement in your hands minimizing blur. These tend to be very expensive.
- Optics – Refers to glass and coatings in the Binocular