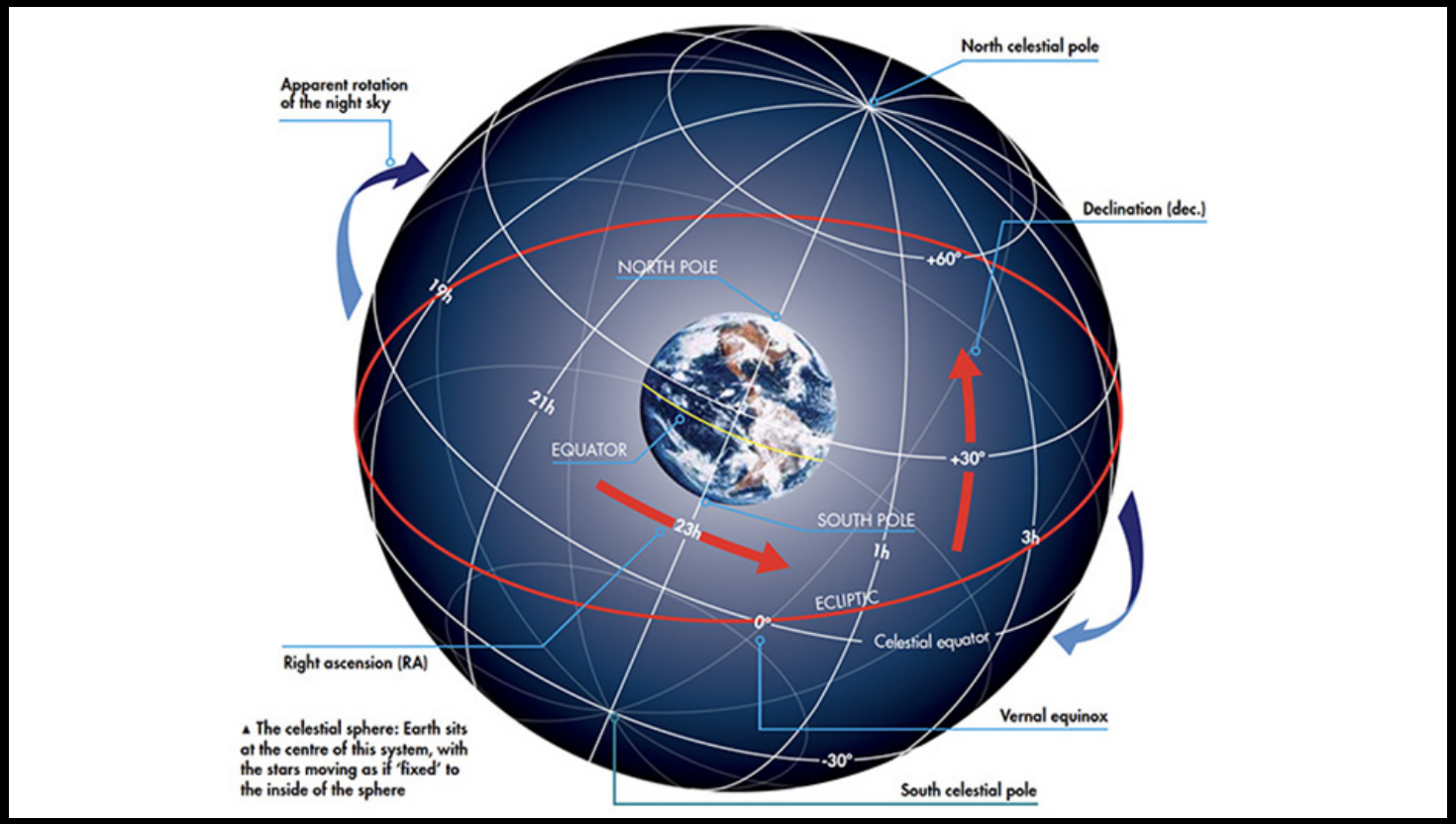
Sky Coordinates



▲ The celestial sphere: Earth sits at the centre of this system, with the stars moving as if 'fixed' to the inside of the sphere

Peterborough Astronomical Association

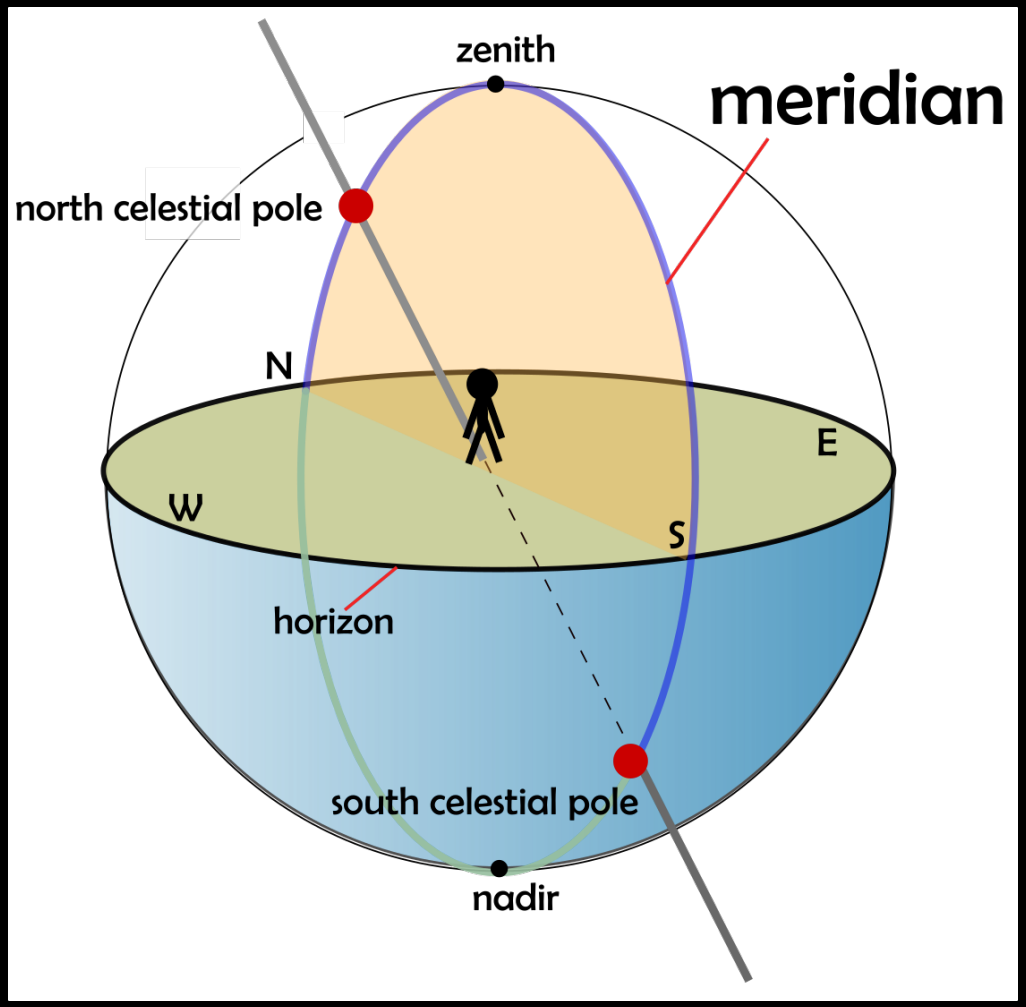
Novice Astronomy Class

December 5, 2025

Brett Hardy

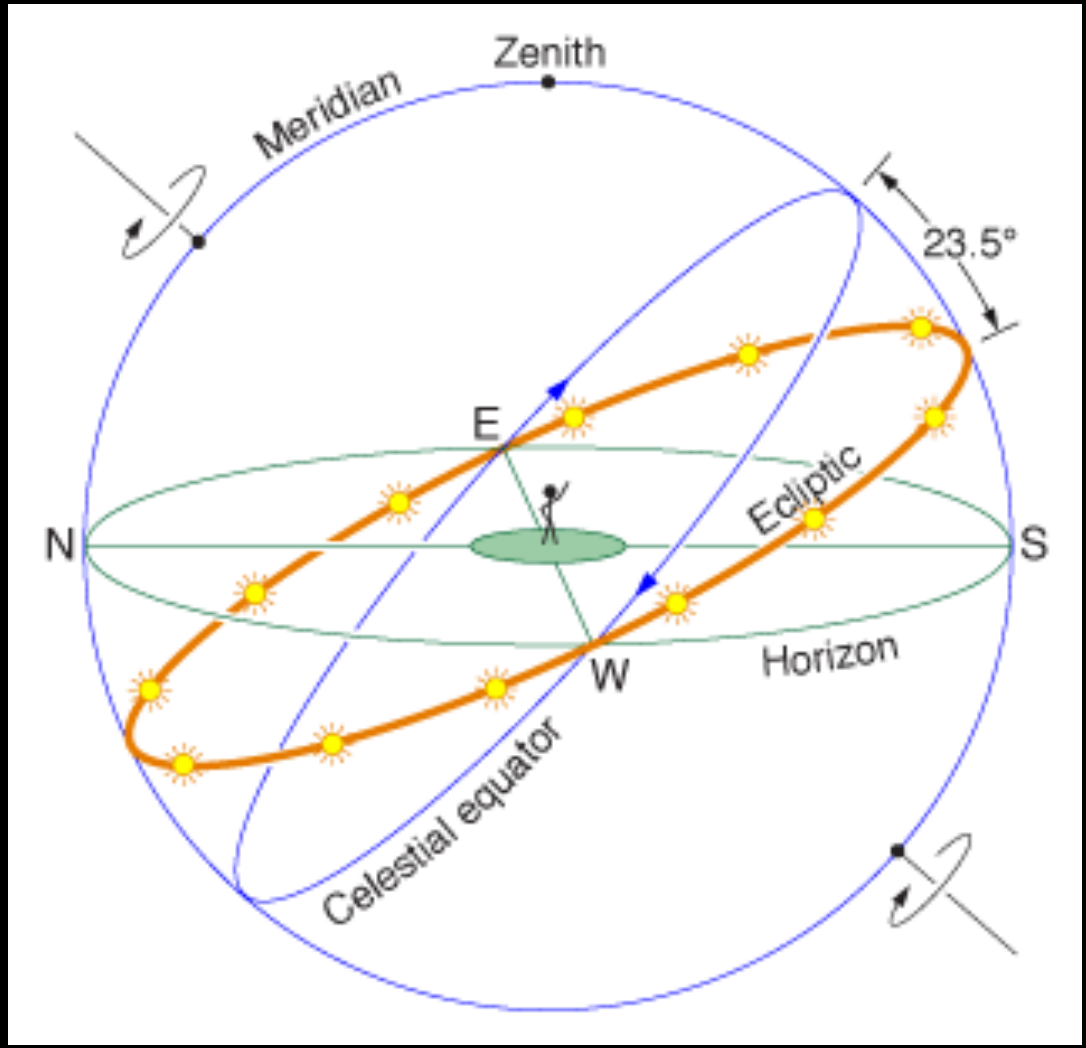
Celestial Sphere

- Cardinal directions
- Meridian
- North Celestial Pole
  - Polaris (North Star)
- Zenith
- Horizon



Celestial Sphere

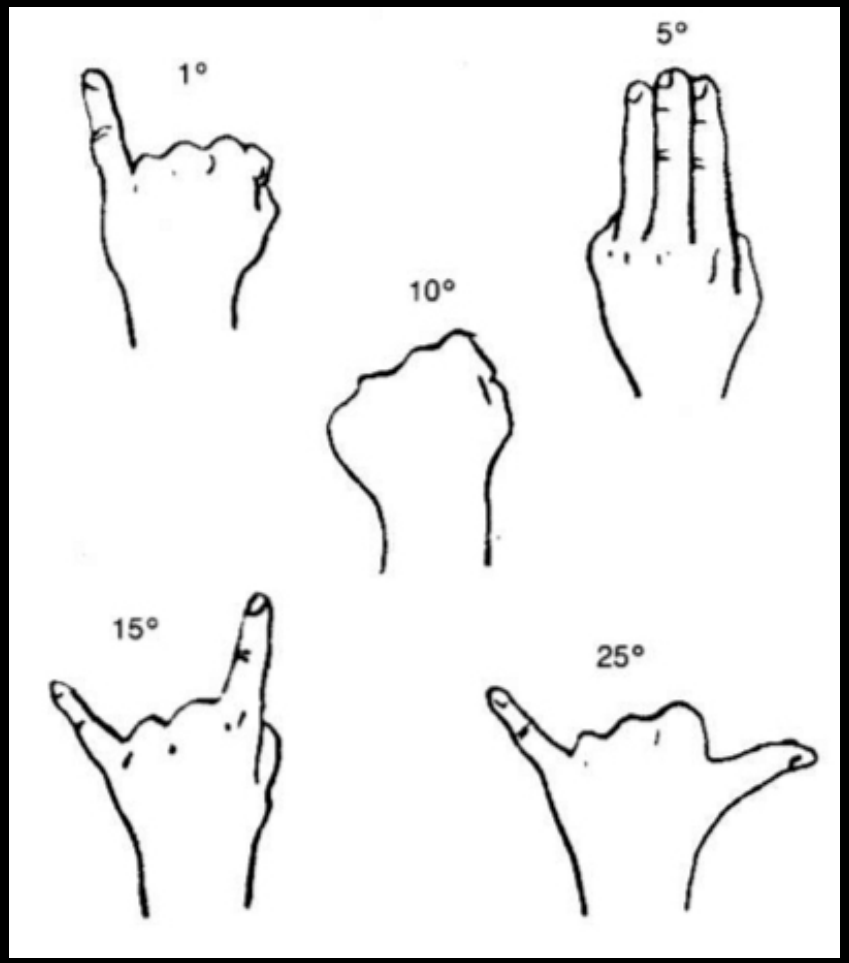
- Ecliptic
- Celestial equator



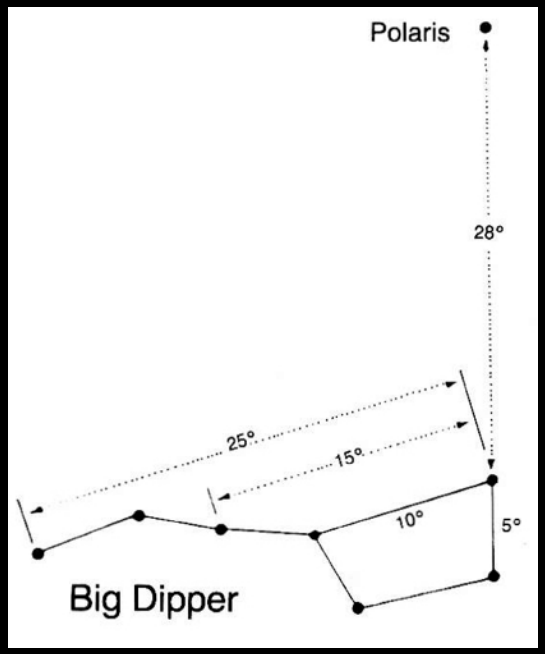
Daniel V. Schroeder

Navigating the Night Sky

- Distance measured in degrees
- 1° = 60’
- 1’ = 60”
- Moon = 1/2° = 30’
- Polaris (North Star) = observer’s latitude: 44° above north horizon

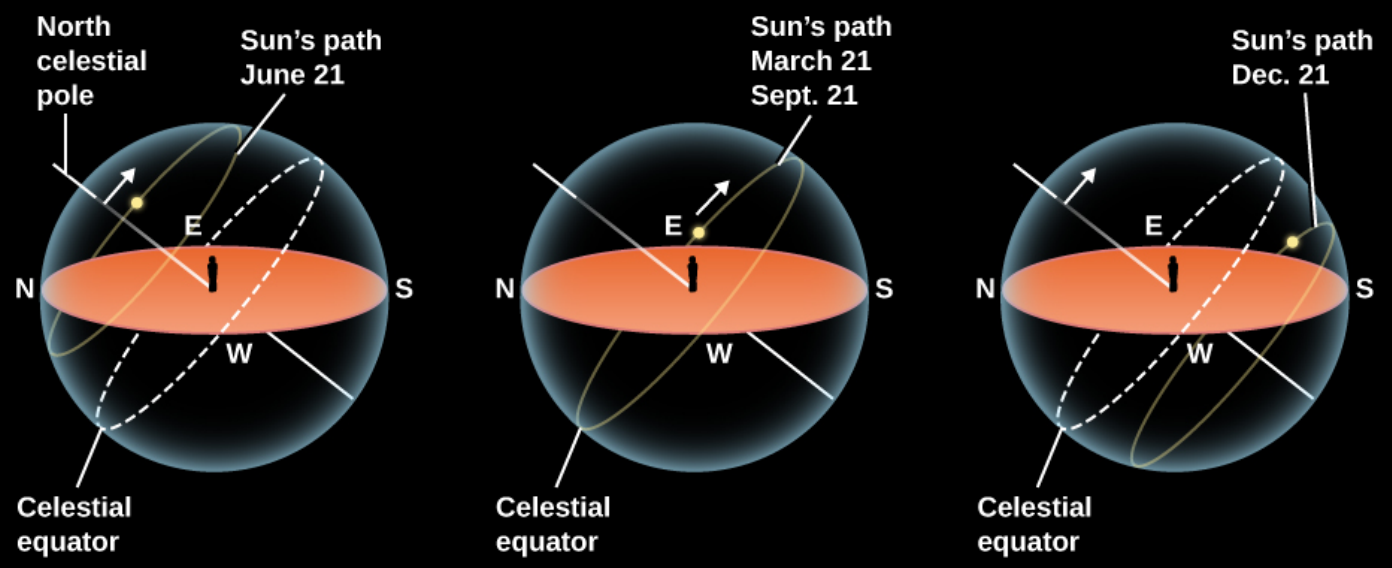


Terrance Dickinson: Night Watch

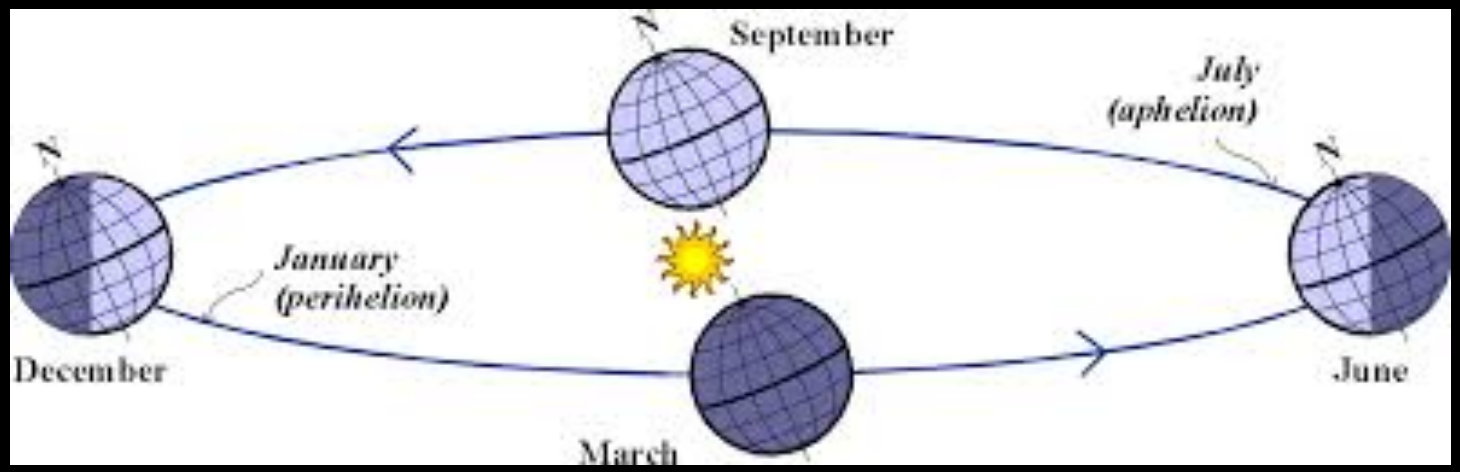


Terrance Dickinson: Night Watch

Seasonal Change

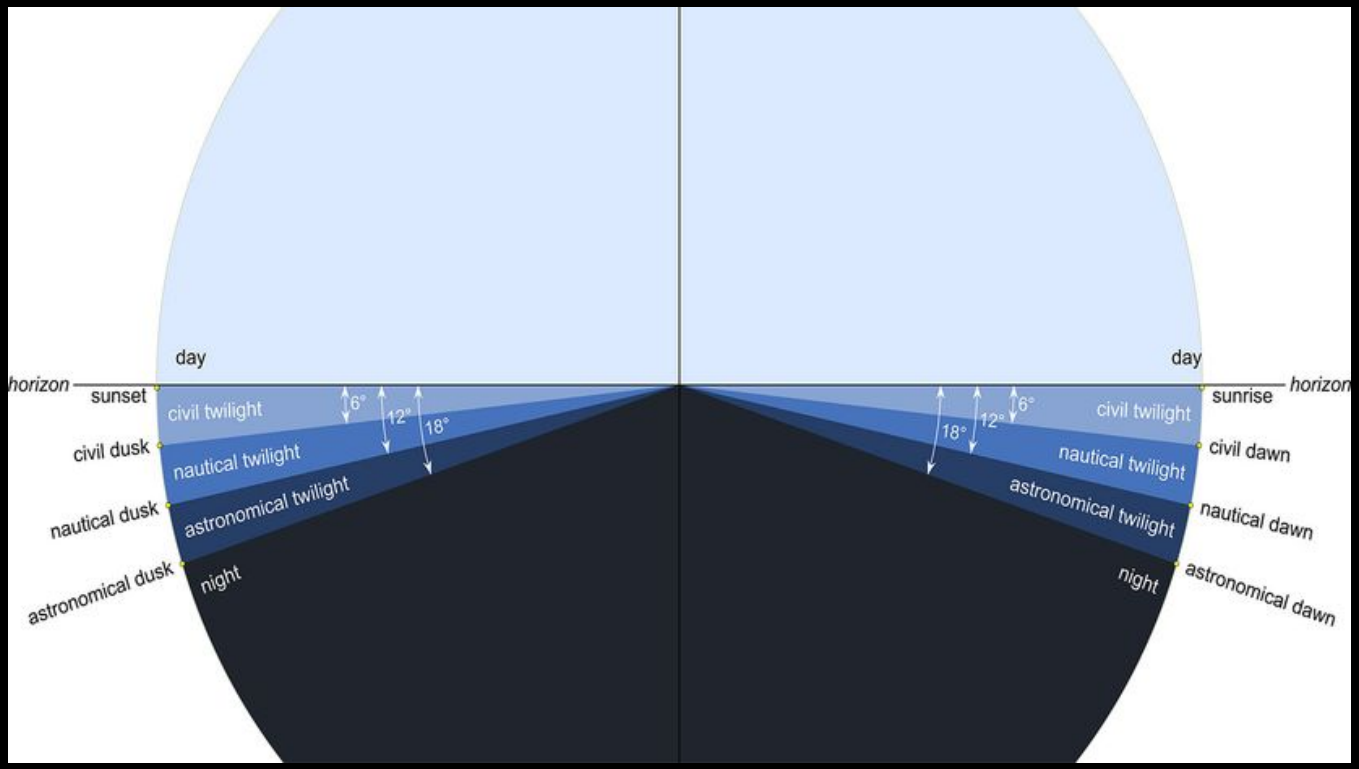


BC Pressbooks



Time

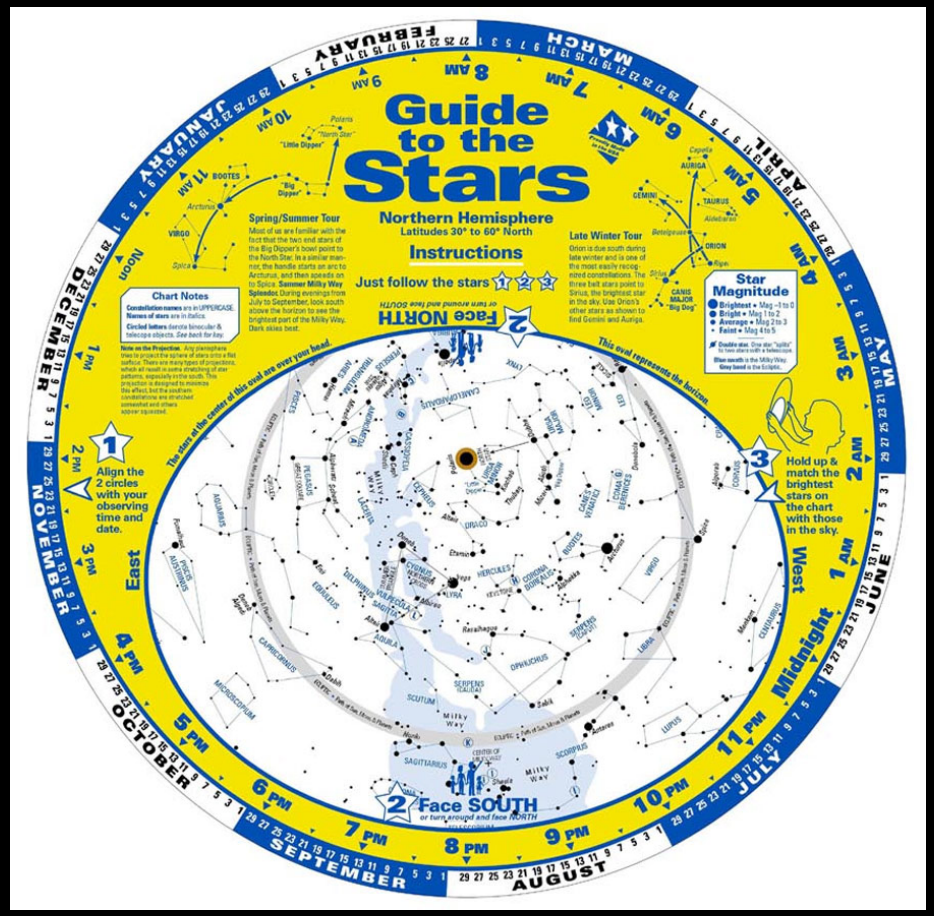
- Coordinated Universal Time (UTC)
  - 24-hour clock
  - local time offset
    - - 5 hours (Standard Time)
    - - 4 hours (DST)
- Sunset ≠ night

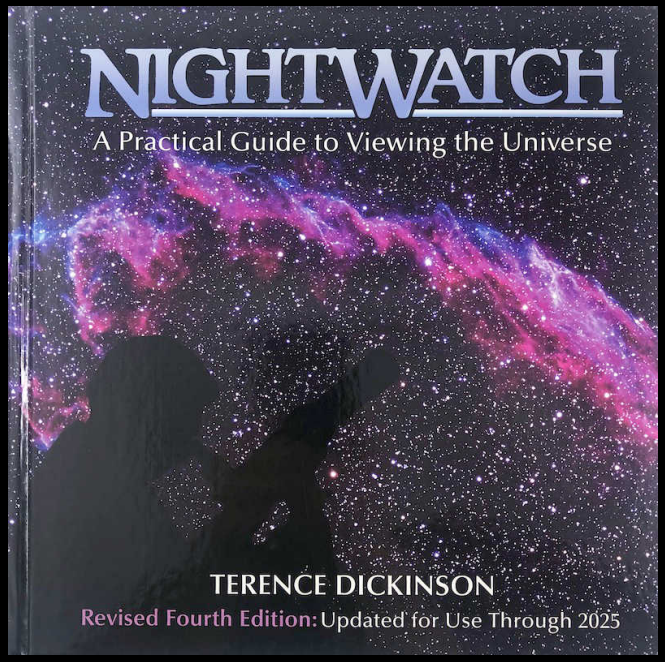


TWCARLSON/WIKIPEDIA/CC BY-SA 3.0

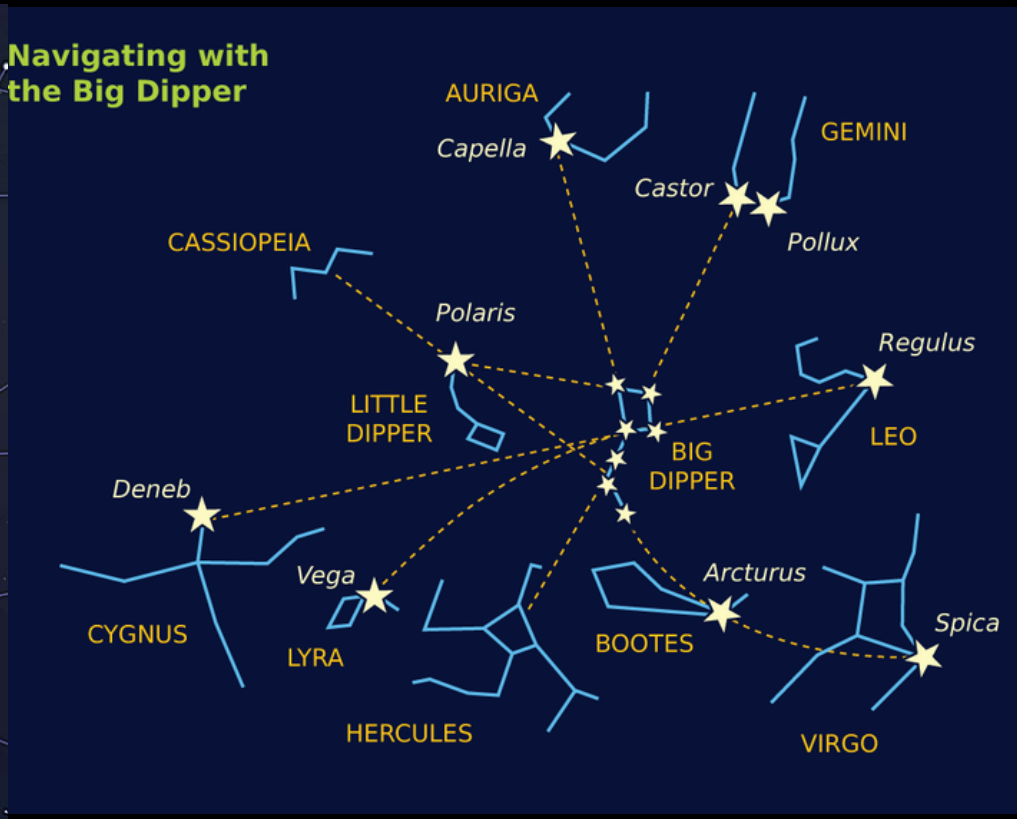
Helpful Resources

- Planisphere
  - https://in-the-sky.org/planisphere/
- Night Watch
- Planetarium program: Stellarium
  - stellarium.org
- Red light headlamp





Constellations as Pointers

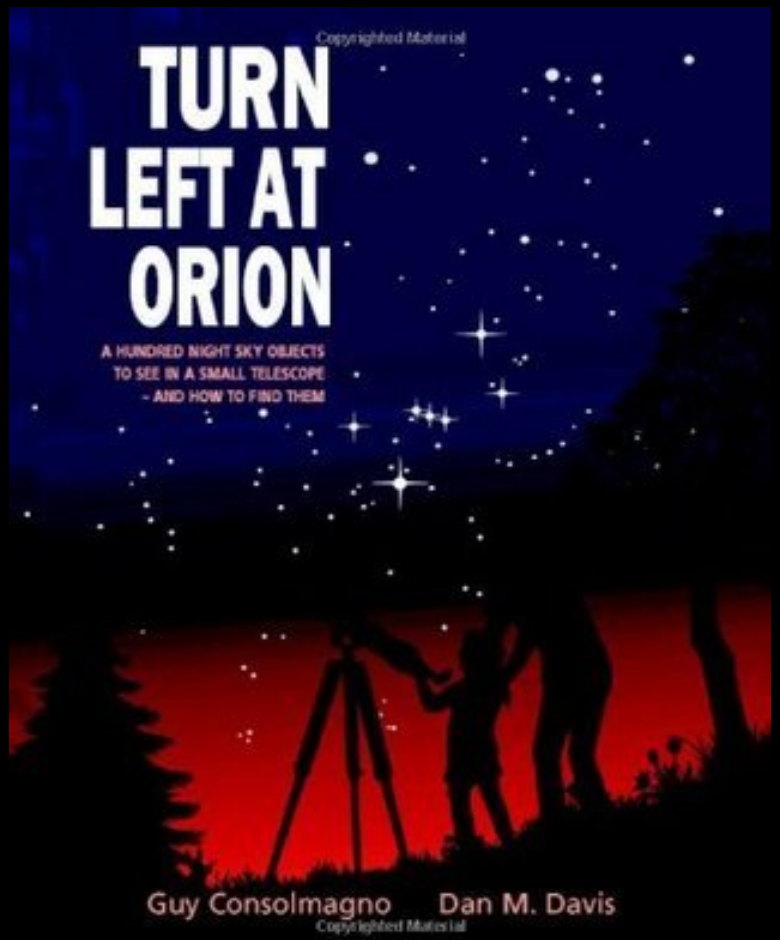


Simulation Curriculum Corp

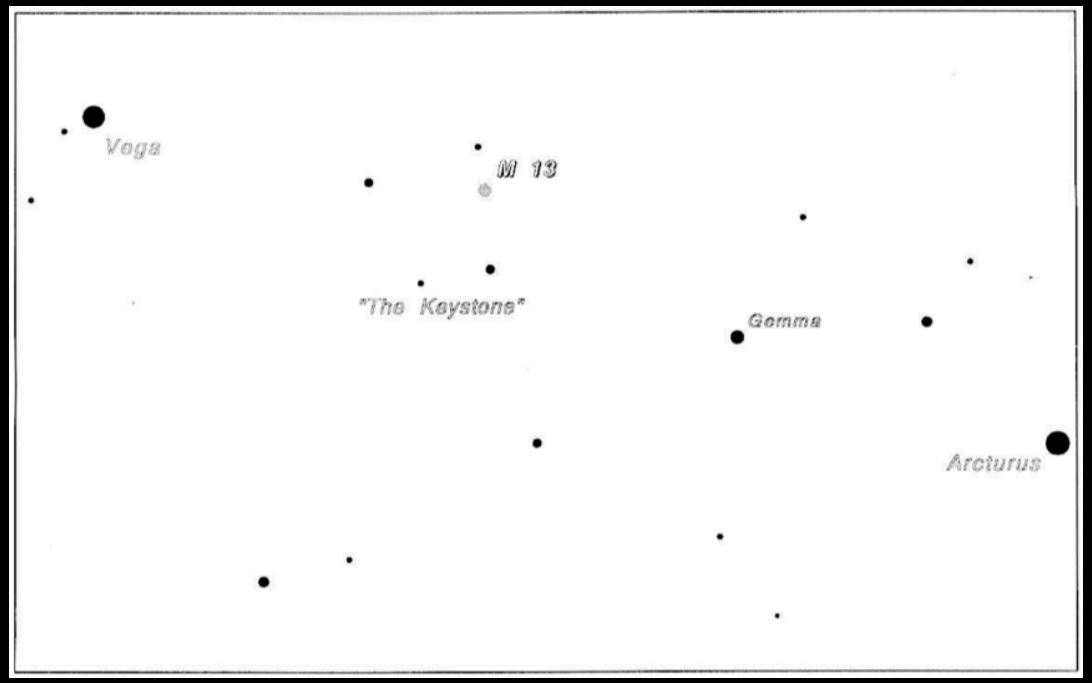
Astro Bob

Helpful Resources

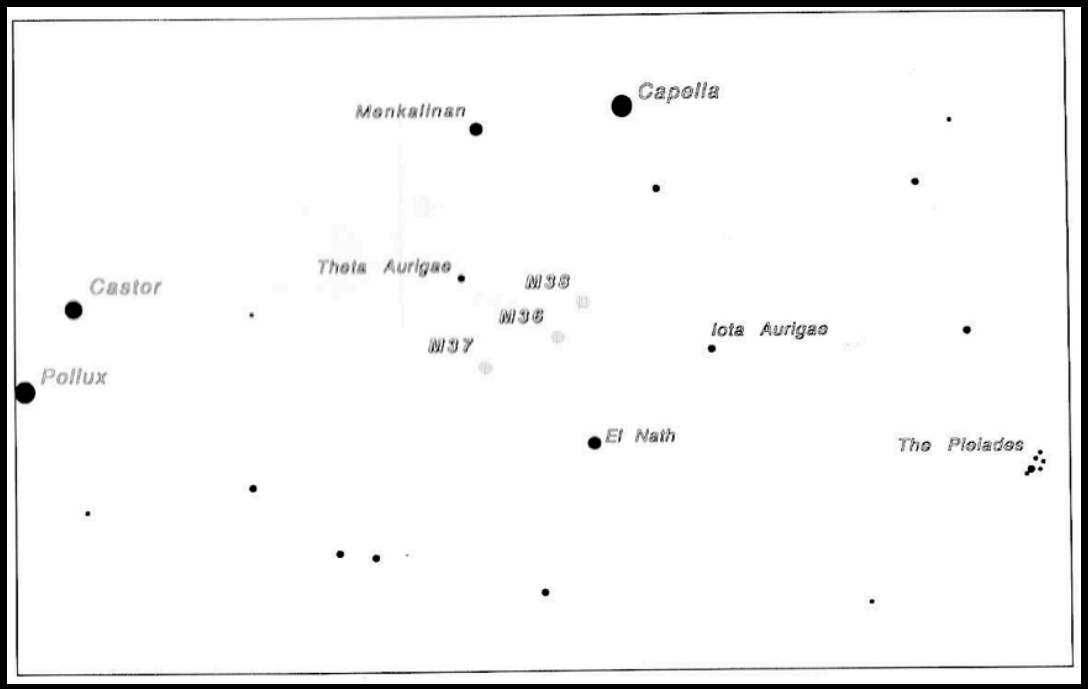
- ISBN: 9781 1084 4575 69
- $42.95



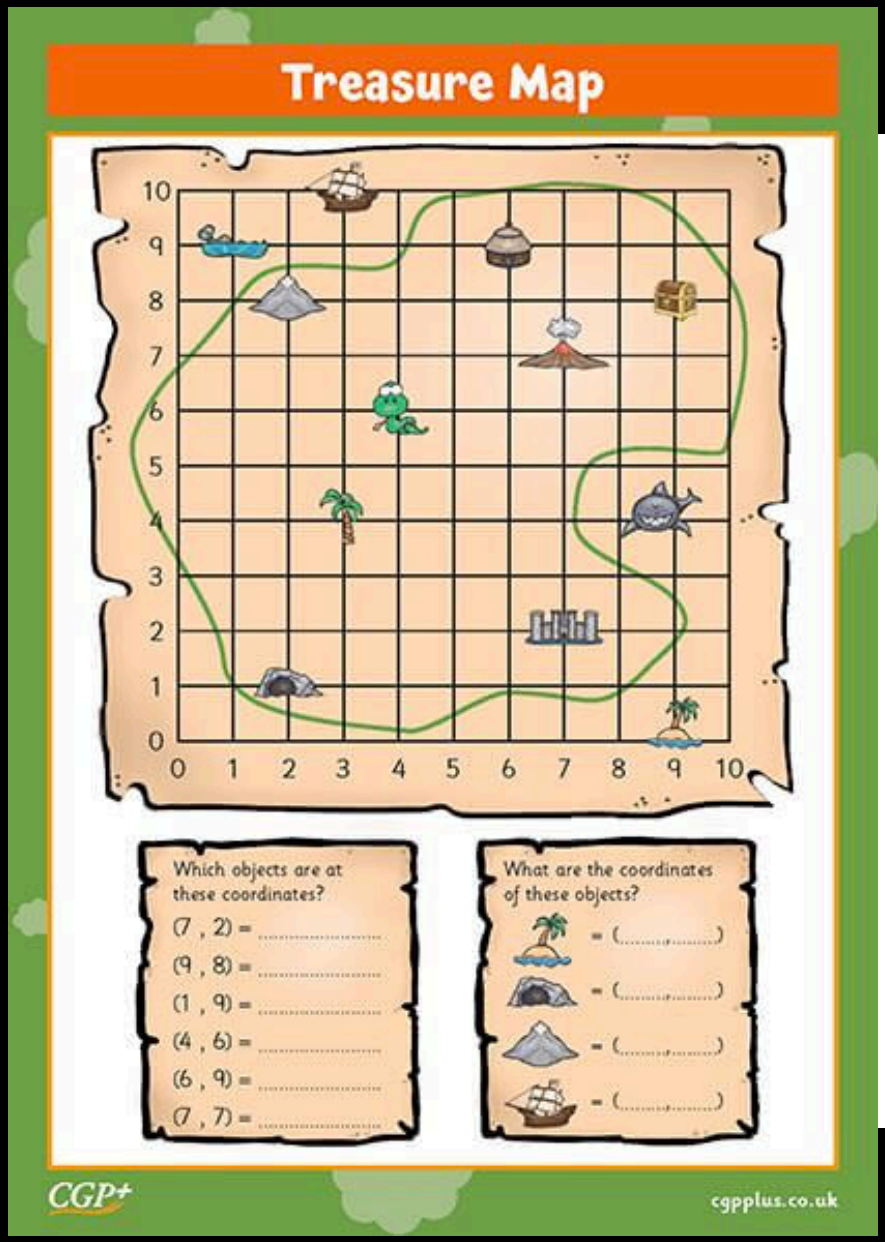
Star Hopping



Star Hopping

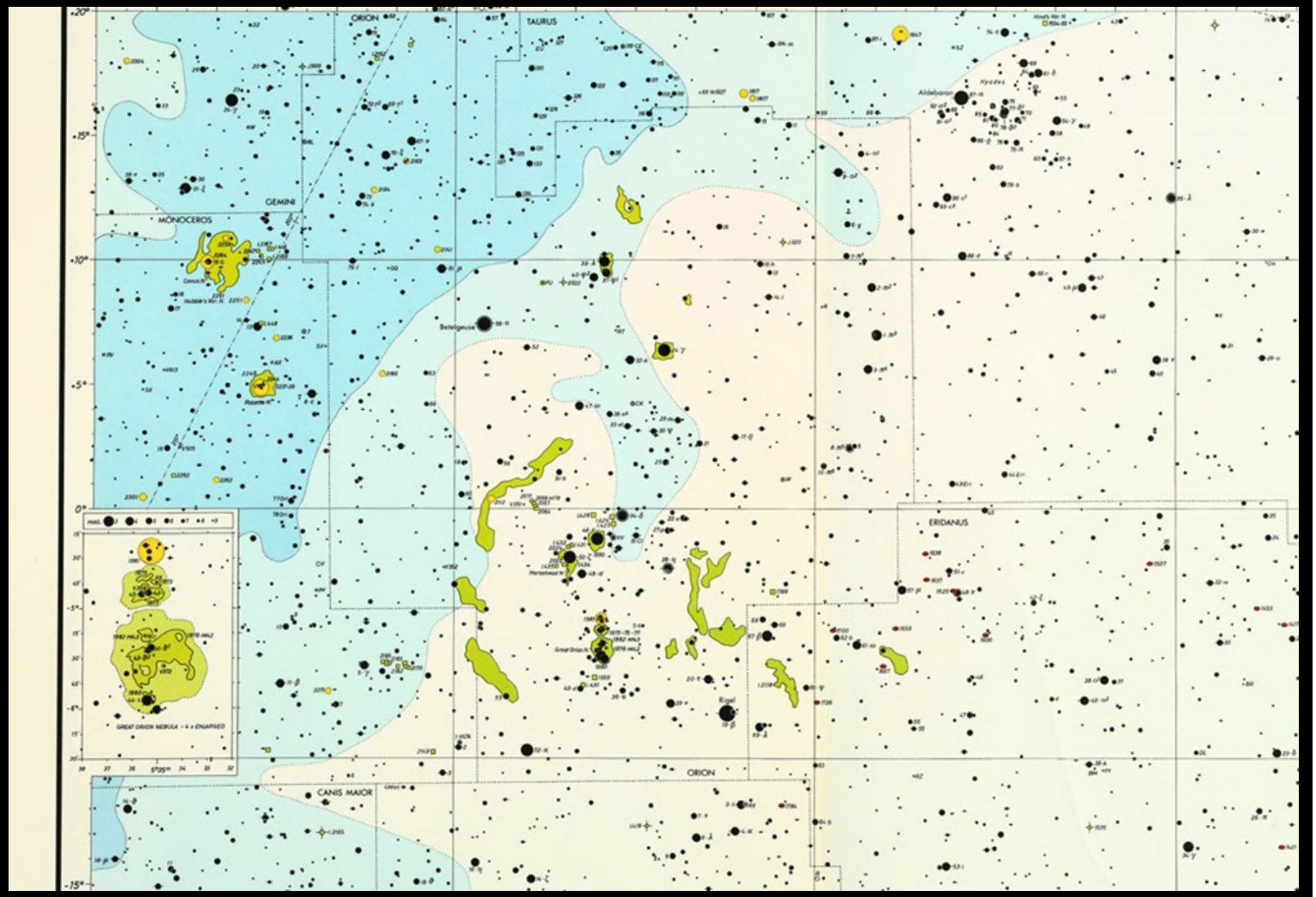


Map Coordinates



Sky Charts

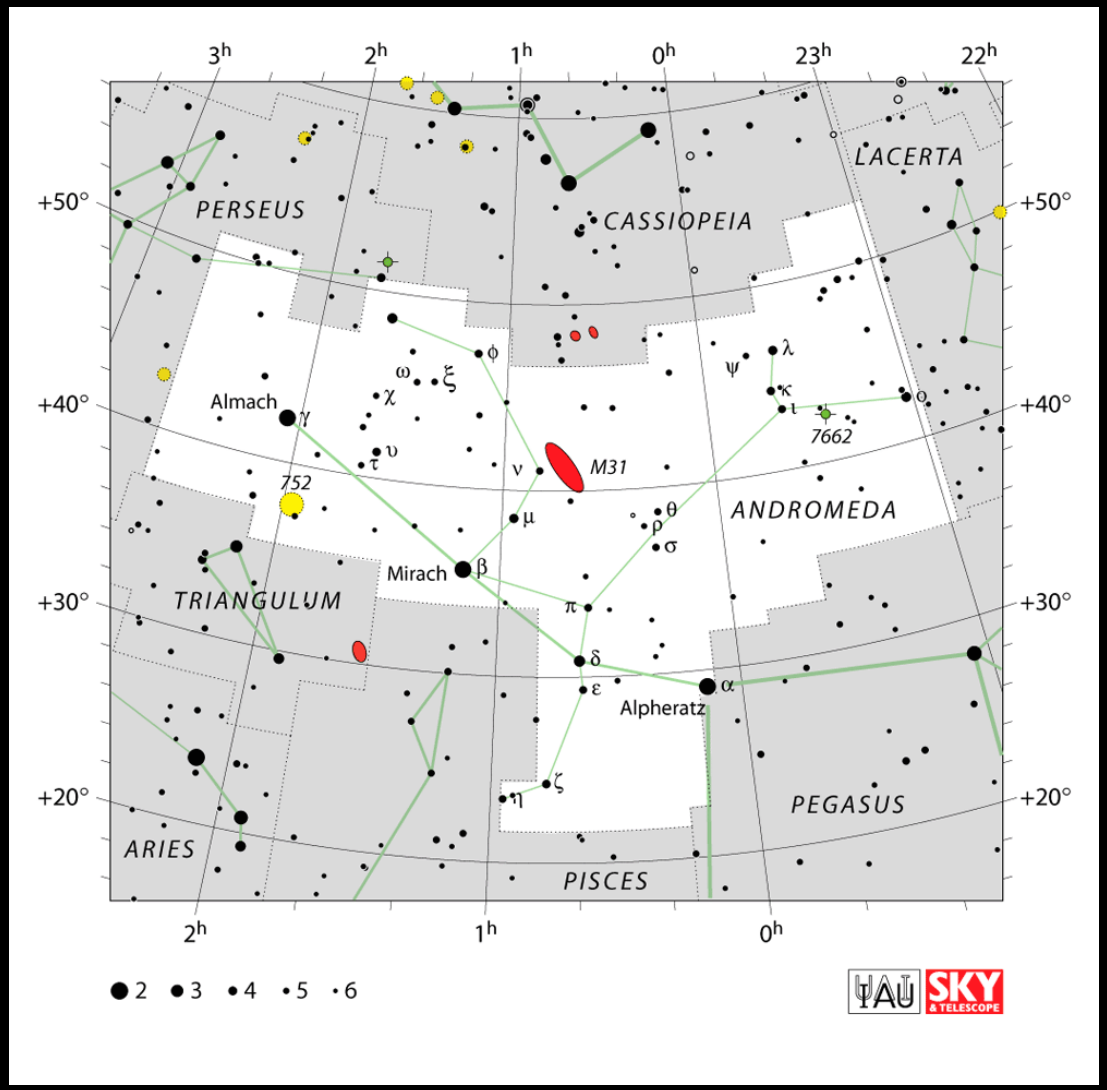
- Sky Atlas 2000.0
  - Cambridge University Press
  - ISBN: 0-933346-33-6



Coordinate Systems

- Altitude and azimuth (alt-azimuth)
- Altitude north or south of celestial equator measured in degrees, arcminutes, arcseconds
- Azimuth: north = 0°, east = 90°, south = 180°, west = 270°
- Measured in degrees, arcminutes, arcseconds
- Example: Azimuth: 097° 15’ 16.4”
- Altitude: -28° 47’ 20.8”

- Right Ascension (RA)
- Longitude equivalent
- RA 0h – 23h on Celestial Equator
- Measured in hours, minutes, seconds
- Example: 00h 48m 36.79s
- Declination (Dec)
- Latitude equivalent
- Dec 0° to +/- 90° from Celestial Equator
- Measured in degrees, arcminutes, arcseconds
- Example: -25° 10’ 13.9”



Novice Astronomy Class
Solar System Series: Mars
January 2, 2026