

Circumpolar stars.

Circumpolar stars don't go below the horizon

How to find if a star is circumpolar:

You need to know your latitude – We're at about 52 degrees north at NCHS

Any star up to 52 degrees from the north celestial pole will be circumpolar.

The ecliptic and the zodiac constellations

- **Because of the earth orbiting the sun, to us on earth the sun appears to move around the celestial sphere.**
- **This takes 365 days.**
- **Because of the earth's tilt at 23.5 degrees, the sun's path appears to be like a wave around the celestial sphere.**
- **This is called 'the ecliptic'**
- **The ecliptic passes through the 12 zodiac constellations.**

The ecliptic and the zodiac constellations

- **One complete rotation of earth is called a sidereal day**
- **The sidereal day is 23 hours 56 minutes**
- **The sun moves 1 degree eastwards each day.**
- **This takes an extra 4 minutes of earth's rotation to get us back facing the sun again**
- **So the earth day (24 hours) is actually a rotation of $360 + 1$ degrees.**

Right ascension

- **Angles around the celestial sphere are measured in 24 hours and minutes.**
- **The vernal equinox is the point where the ecliptic passes over the celestial equator from the southern to northern hemisphere.**
- **Right ascension of a star is the time from the vernal equinox until the meridian (high point) or culmination or the star you're looking at.**
- **The vernal equinox is often called the 'first point of Aries'**