

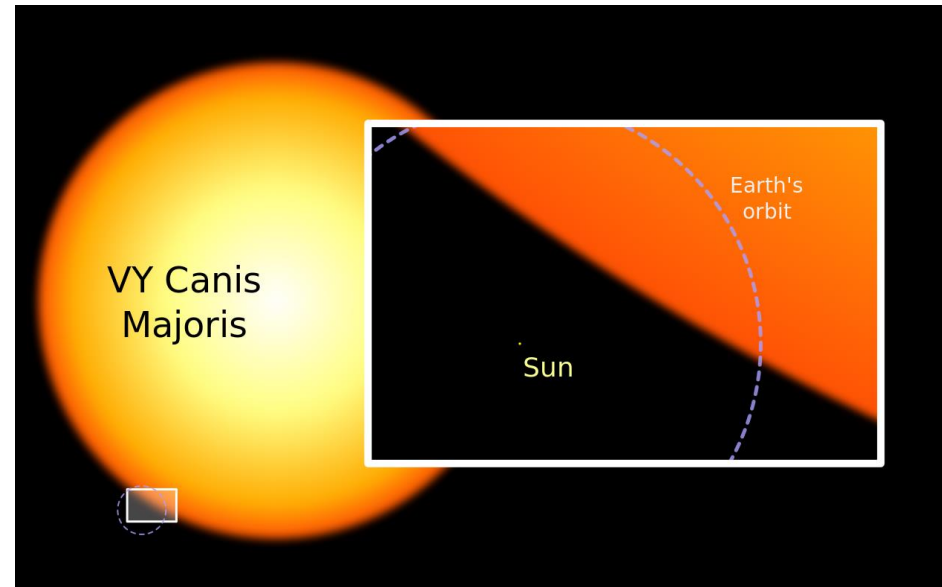
# Famous Stars

**The closest star to us** (after the Sun) - **PROXIMA CENTAURI**:

- in the Alpha Centauri system (star system closest to Earth).
- about 4.2 light-years from the Sun. Traveling as fast as the average spacecraft, it would take between 70,000 and 100,000 years to get there!

One of the **largest known stars** - **VY CANIS MAJORIS**:

- size is ~1420 solar diameters, mass is ~17 solar masses.
- a very young star, just over 8 million years old, quickly evolving and losing its mass.
- about 4000 light years away, not visible with the naked eye!



One of the **oldest known stars in the Milky Way** - **METHUSELAH** star:

- at least 13.82 billion years old - and very different in composition from similar size stars - it was born shortly after the Universe itself!
- about 190 light years away from Earth in the constellation Libra.

# Famous Stars

**POLARIS** - the current **Pole Star** for the Northern Hemisphere:

- only 1 degree from the exact Northern celestial pole!
- Yellow Supergiant
- a triple star
- About 430 light years away



**“Engagement Ring” asterism**

**CAPELLA STAR SYSTEM** (the Goat Star) - a multiple star system:

- contains at least 9 stars
- constellation Auriga
- about 43 light years from Earth
- two brightest stars in Capella are a binary star system, both **Yellow** (like our Sun), one is 9 times as large as the Sun, the other is 12 times as large

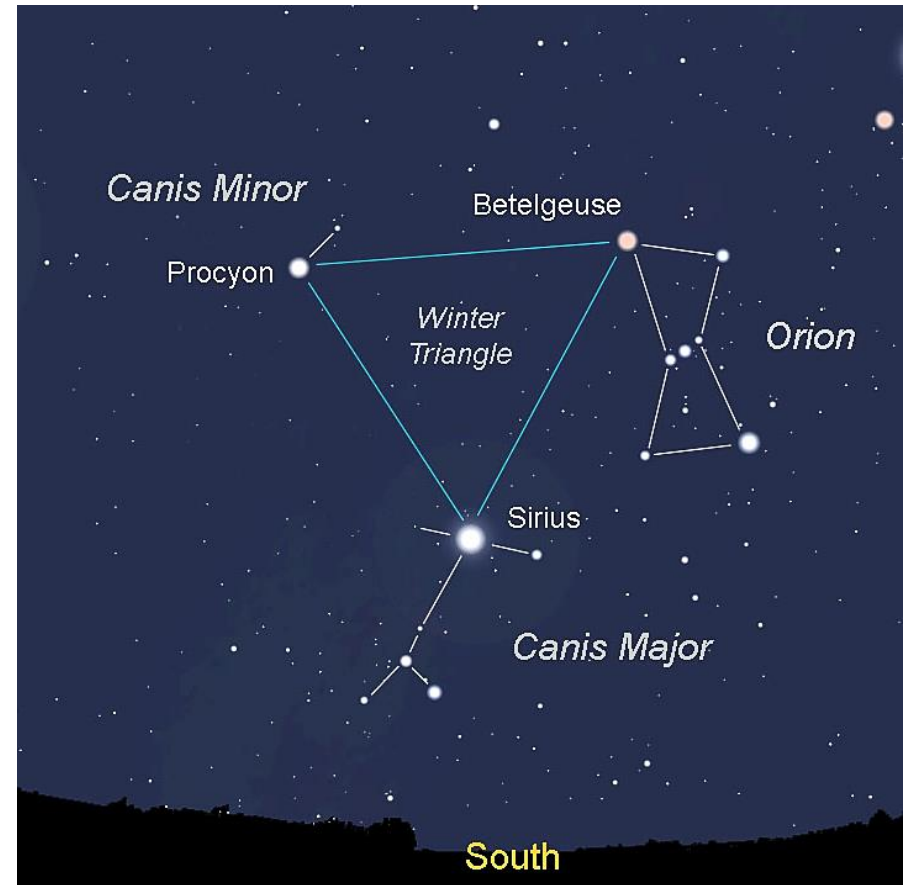
# Winter Triangle asterism

**SIRIUS** (“the dog star”) - the **brightest star in the night sky:**

- in the constellation Canis Major (The Great Dog)
- a White main sequence star
- about 8.6 light-years from Earth
- a binary star with a white dwarf companion star (called the Pup)
- can even be **observed in daylight with the naked eye!**

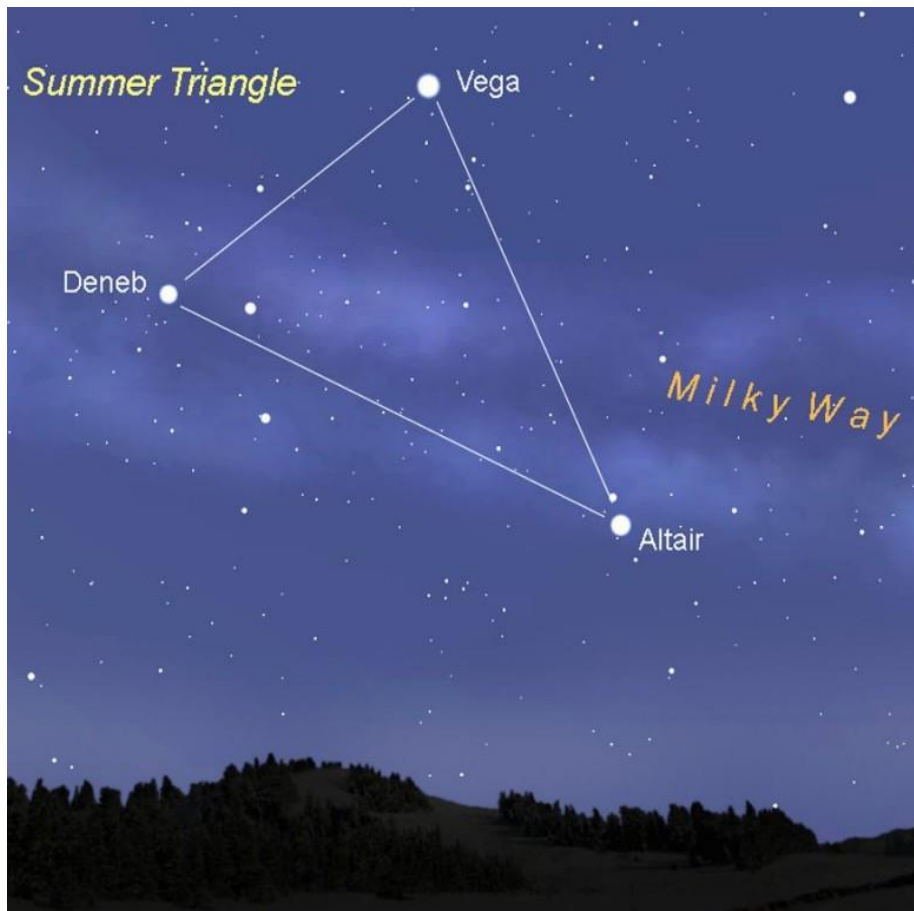
**BETELGEUSE** (“beetle juice”) - the second-brightest star in the constellation Orion:

- a Supergiant star, reddish in color
- almost 1,000 times bigger than the Sun but cooler than the Sun
- 520 light-years from Earth



**PROCYON** – the **eighth brightest star in the night sky:**

- in the constellation of Canis Minor (the Lesser Dog)
- about 11.5 light-years from Earth
- a White main sequence star



# Summer Triangle asterism

**DENEB** ("tail" in Arabic) - the brightest star in the constellation Cygnus (the Swan):

- young, bright, white Supergiant star
- about 1,500 light years away
- about 60,000 times more luminous than the Sun!

**ALTAIR** - the brightest star in the constellation Aquila (the Eagle) and the **twelfth brightest star in the night sky**:

- 16.7 light-years from Earth
- one of the closest stars visible to the naked eye
- extremely rapid rate of rotation makes it flattened at the poles!

**VEGA** - a very bright pale blue star in the constellation Lyra, the **5th brightest star in the sky**:

- about 25 light years from Earth
- a disk of dust surrounds Vega, from which planets might form

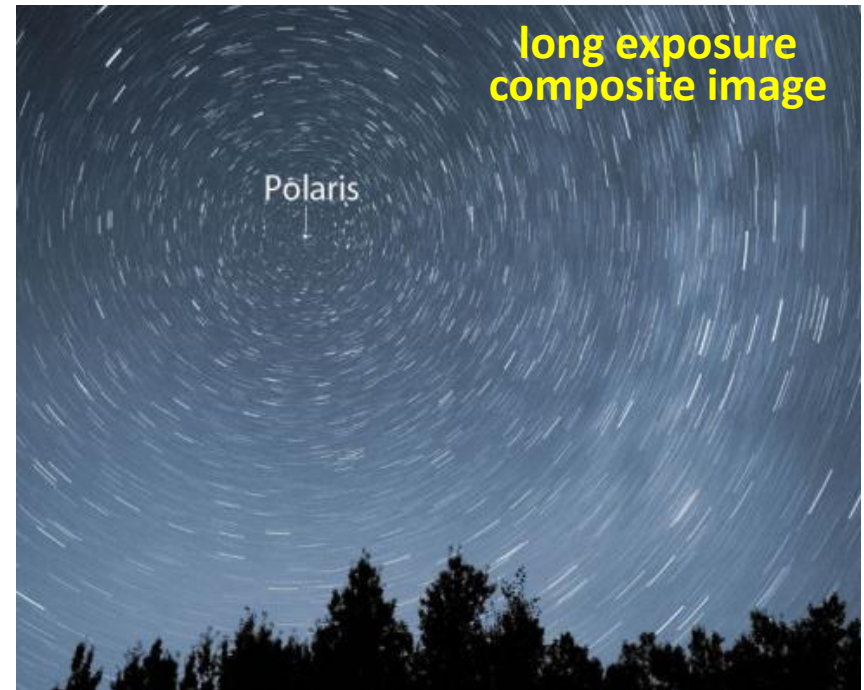
# Other Famous Stars

- **RIGEL** - the brightest star in the constellation Orion and the seventh brightest star in the sky: a **Blue (very hot) Supergiant**, over 60 million miles in diameter (almost 100 times bigger than the Sun), about 700-900 light-years from Earth.
- **ANTARES** ("Rival of Mars") - the brightest star in the constellation Scorpius: an **old Red Supergiant low-temperature star**, about 520 light-years from Earth, about 230 times as big as the Sun.
- **ARCTURUS** - the fourth brightest star in the sky: the brightest star in the constellation Boötes (the Herdsman that looks for the Ursa Major), a **Red Giant**, about 34 light-years from Earth.
- **ALDEBARAN** - the brightest star in the constellation Taurus (it is one of the bull's eyes): the 13th brightest star in the sky; an **old Orange Giant that is cooler than the Sun** (under 4,000 K), about 40 times as big as the Sun.

# All stars of the night sky seem to spin around the **COMMON CENTER:**

- **Northern Hemisphere:**

- **Polaris** (The North Star) is found in the center and does not move with time
- at the North Pole, Polaris is right above the observer
- Polaris can be used to determine direction and location (latitude only!)



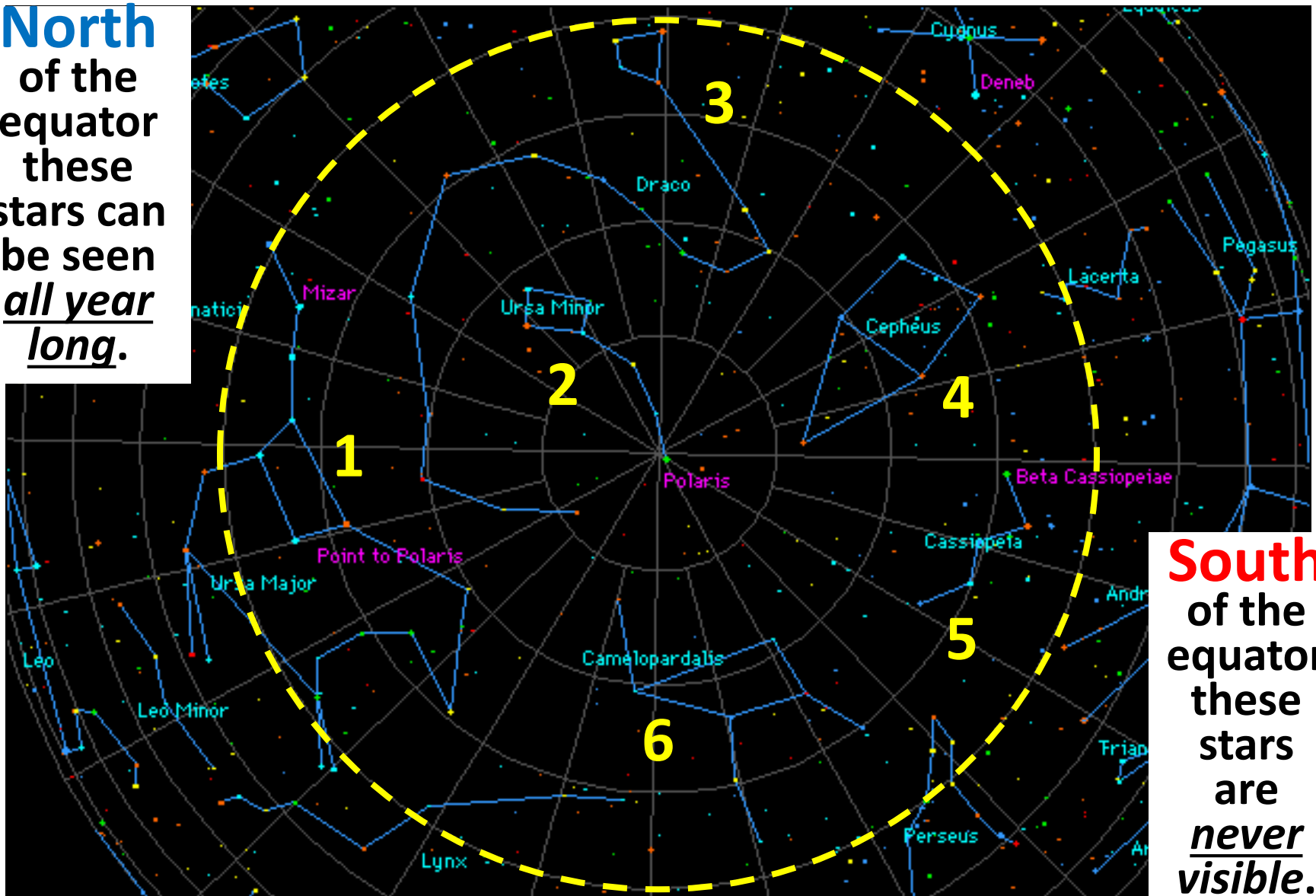
- **Southern Hemisphere:**

- lacks such a prominent sky mark
- **Crux** (*Southern Cross*) can serve as an approximate locator that points at the South Pole



# Northern circumpolar constellations

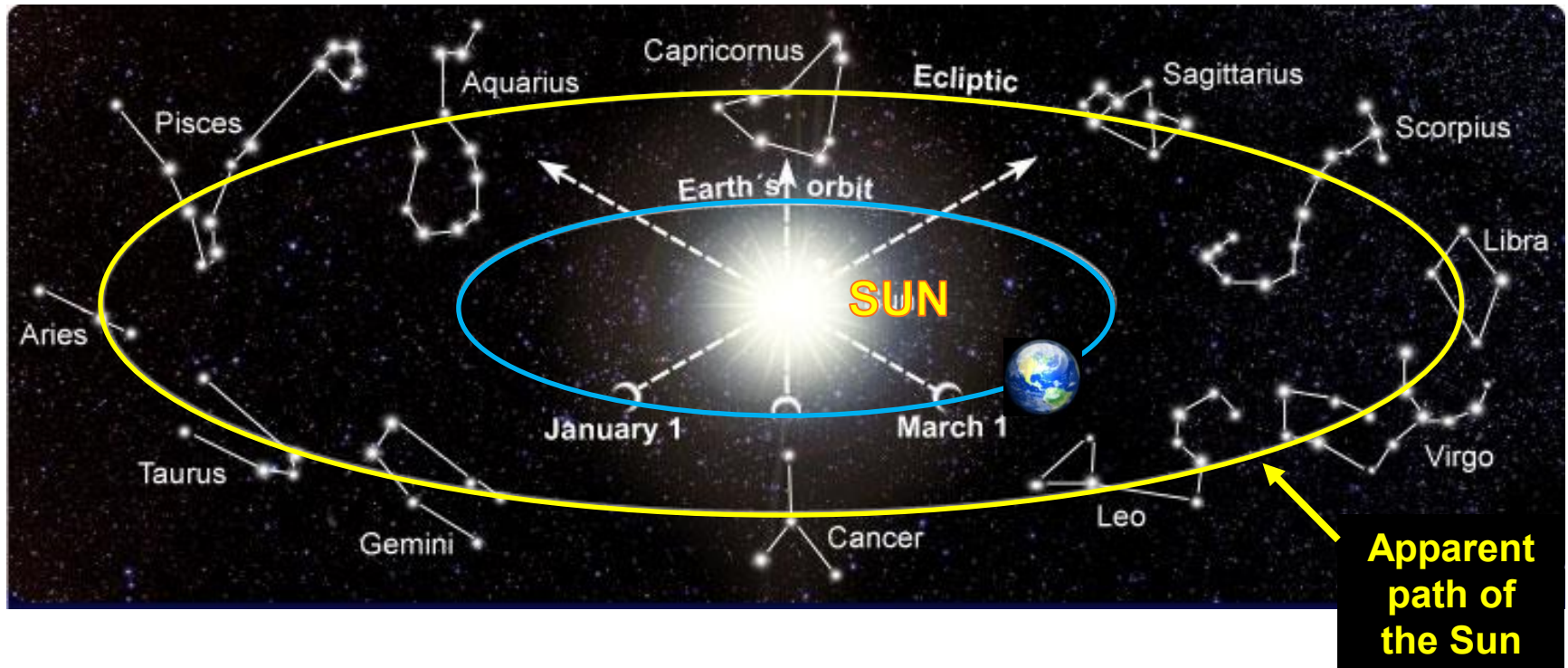
North  
of the  
equator  
these  
stars can  
be seen  
all year  
long.



South  
of the  
equator  
these  
stars  
are  
never  
visible.

# Zodiac

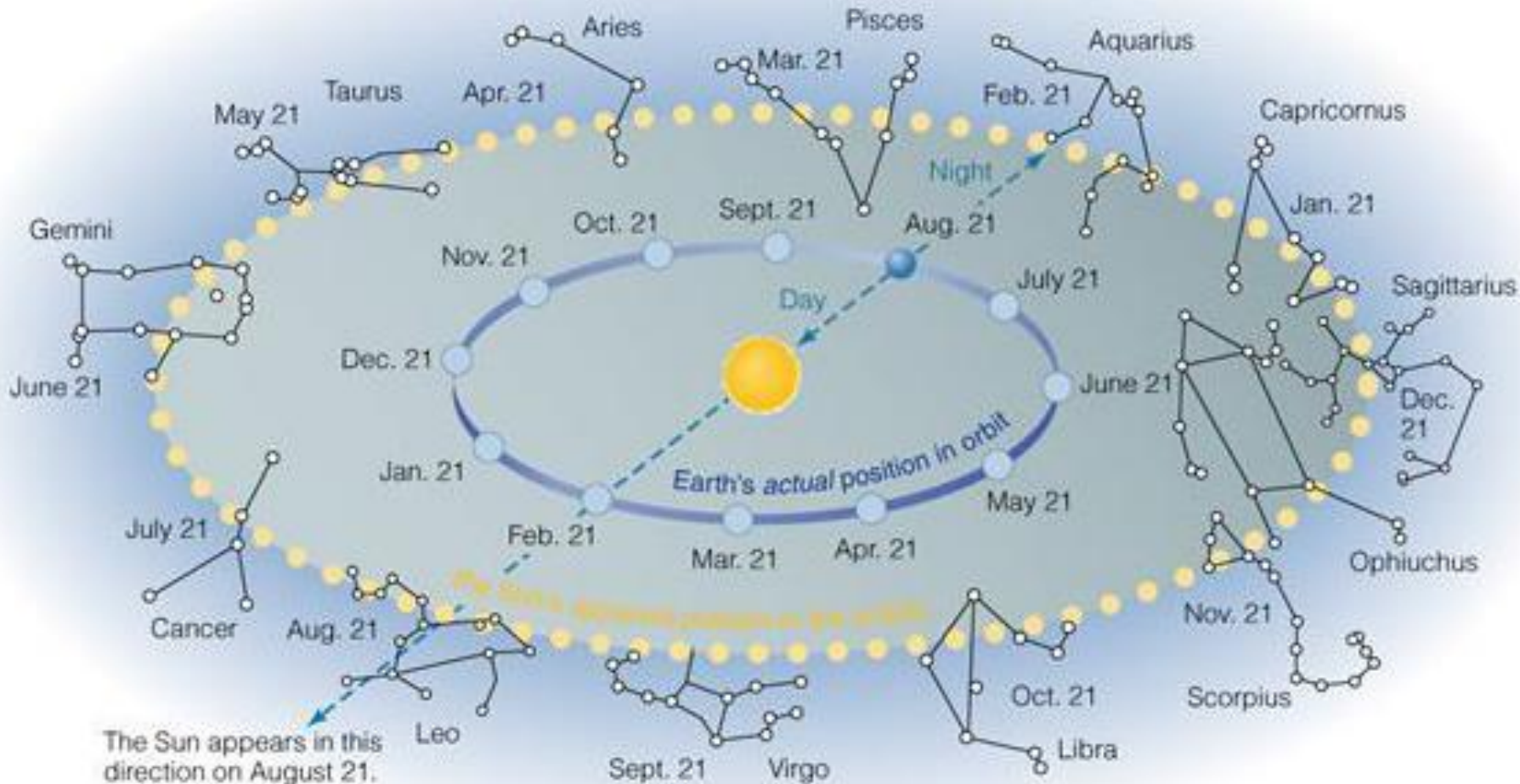
(from a Greek phrase that means “circle of animals”)



- An **ecliptic coordinate system**: an 8-9°-wide band of **twelve** 30° divisions historically called **signs**.
- Those divisions do not correspond exactly to the **twelve constellations** after which they are named!

# Modern Astronomy Zodiac

Due to the Earth's *axis precession (it wobbles!)*, we now have **thirteen, not twelve**, zodiac constellations!



(...and your Zodiac Sign might be wrong...can you check? ☺)