

**Question:** What is apparent and what is real?

**Some Common Vocabulary**

- constellation—a region of the sky with well-defined borders.
- celestial sphere—stars and constellations appear to lie on a celestial sphere surrounding Earth; an illusion from our lack of depth perception in space; useful for mapping the sky.
- north celestial pole—the point directly over Earth’s North Pole.
- south celestial pole –the point directly over Earth’s South Pole.
- celestial equator—a projection of Earth’s equator into space.
- ecliptic—the path of the Sun as it circles the celestial sphere once each year; crosses the celestial equator at a 23½° angle, the tilt of Earth’s axis.
- vernal equinox—the point on the celestial equator where the Sun crosses the equator while moving northward.
- local sky—the sky as seen from wherever you happen to be standing.
- horizon—boundary between Earth and your local sky.
- zenith—point directly overhead.
- nadir—point directly opposite the zenith.
- meridian—an imaginary circle stretching from the horizon due south, through the zenith, to the horizon due north, and under the observer back to south.
- latitude—measures north-south position on Earth; defined to be 0° at the equator; increases to +90°N at the North Pole and decreases to –90° S at the South Pole.
- longitude—defined to be 0° along the prime meridian, which passes through Greenwich, England.
- declination—the equivalent of latitude on the celestial sphere, measured in degrees north (+) and south (–) of the celestial equator.
- right ascension—the equivalent of longitude on the celestial sphere, measured in units of time (hours, minutes and seconds) eastward from the vernal equinox.

**Angular Sizes and Distances**

angular size of an object is the angle it appears to span in your field of view

Sun	0.5°
Moon	0.5°

small angle formula—relates angular size to physical size; an approximation but very good when

$$a < 5^\circ \quad \alpha = \frac{s}{r} = \frac{\text{size}}{\text{distance}}$$

**Some Useful Facts:**

- The altitude of the celestial pole is equal to your latitude.
- Earth’s position in its orbit around the Sun determines the sky we see at night.
- The Sun moves against the background of zodiac constellations during year.
- Sun’s location along the ecliptic determines which constellations we see at night.
- Time of the year determines Sun's position on the celestial sphere.