

1 The Sky

Organizing the sky

1.1 Constellations

Constellations - organizes the stars into patterns

Mythology is created to aid in remembering these patterns of stars

88 total constellations - <http://www.dibonsmith.com/constel.htm??>

We can see a majority of them from Virginia Beach

Names of most of the constellations came from ancient times; Mesopotamia, Babylon, Egypt and Greece, starting over 5000 years ago

The constellations are viewed at various times of the year

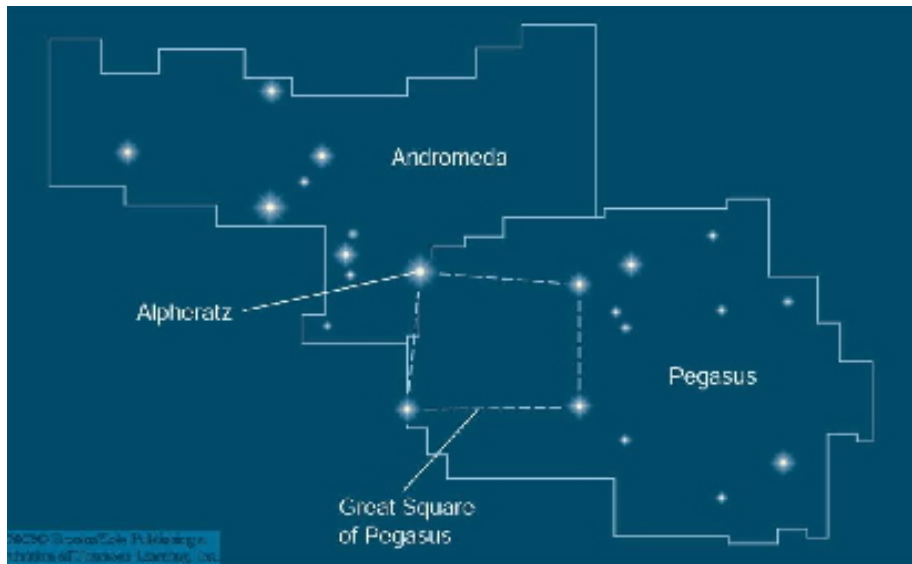
Earth's orbit around Sun means that each constellation will be seen to move from west to east

Try to learn to locate a few constellations in the night sky

Examples: Orion and Taurus



Constellation Boundaries



1.2 Stars

Names of stars are mostly Arabic

Some stars are bright

Some stars are dim

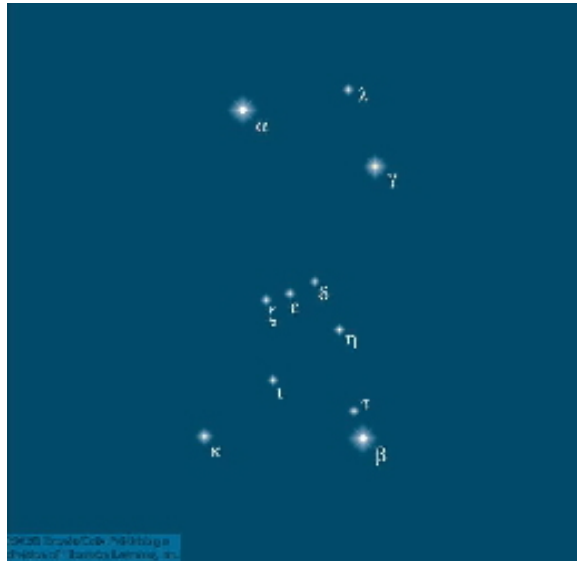
A telescope will allow you to see dimmer stars

Brightness Scale Apparent Visual Magnitude

Developed by Hipparchus (160 - 127 BC)

A difference in 5 magnitudes represents a brightness factor of 100

Greek letter naming system - $\alpha, \beta, \gamma, \delta, \epsilon, \zeta, \eta, \theta, \iota, \kappa, \lambda, \mu, \nu, \xi$, etc.

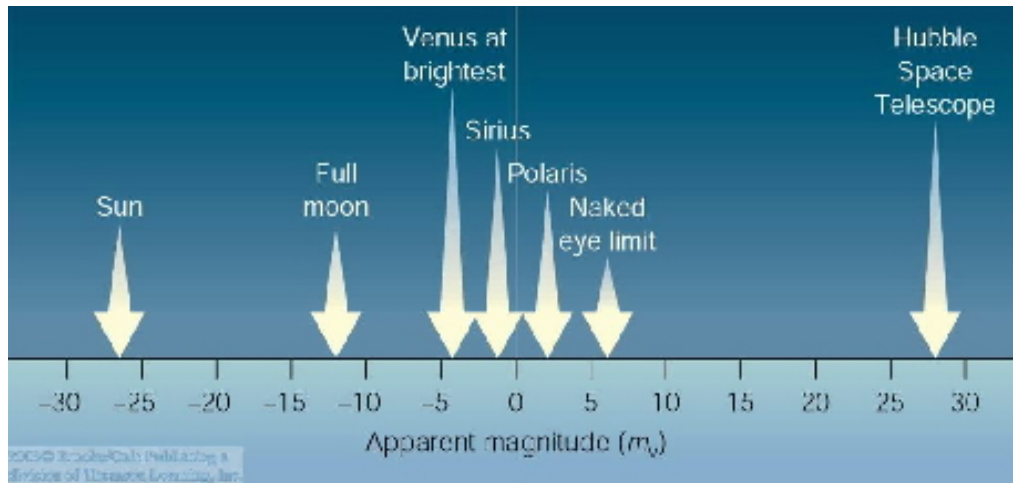


Example Star *A* is magnitude -1, Star *B* is magnitude 4, therefore star *A* is 100 times brighter than star *B*

Star *C* is magnitude 5, then Star *B* is 2.512 times brighter than star *C*

The smaller the number the brighter the star

Naked-eye limit is magnitude 6



What contributes to a stars brightness?

Temperature, Size and Distance

1.2.1 The Celestial Sphere

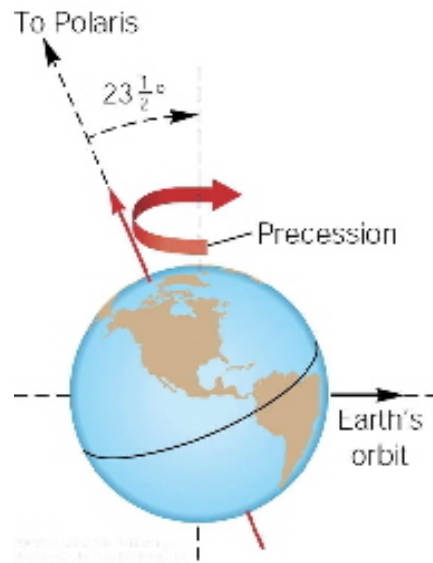
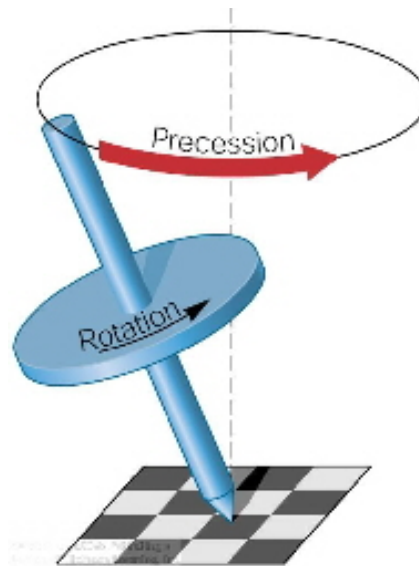
Earth is tilted on its axis about 23.5°

North Celestial Pole (NCP)

South Celestial Pole (SCP)

Celestial Equator

Precession - 26,000 years for one cycle



1.2.2 The Motion of the Sun

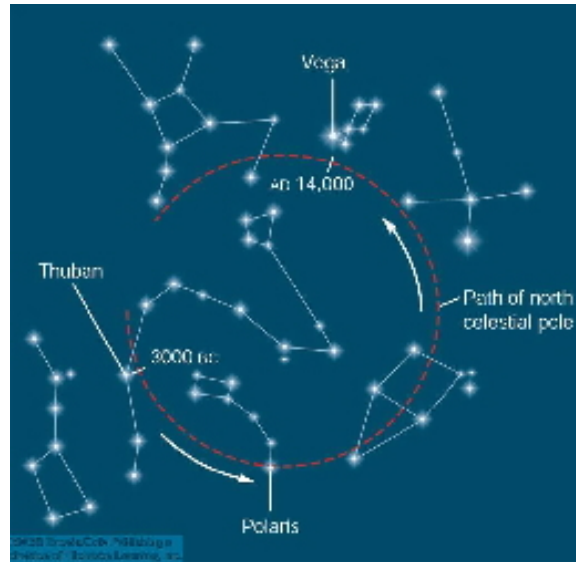
The Ecliptic - crosses the celestial equator at two points, Vernal Equinox & Autumnal Equinox

Is the path of the sun through the sky during a full year

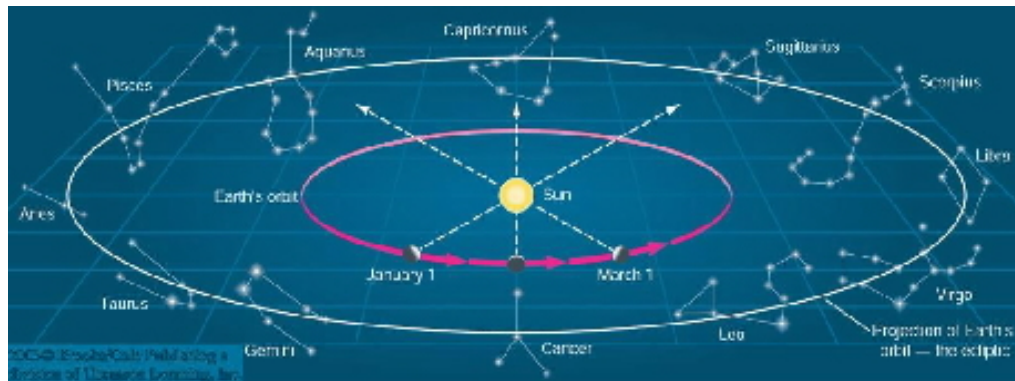
Is the center line of the zodiac

Summer Solstice - most northerly point of Sun's motion

Winter Solstice - most southerly point of Sun's motion



Seasons
 Earth' elliptical orbit - perihelion in January



1.2.3 Motion of the Planets

Most all the planets in the solar system lie in about the same plane
 The Sky Program can illustrate this - orray
 Astrology - entertainment