ConcepTest

- In the northern hemisphere, the stars rise in the East, set in the West and revolve counter-clockwise around the North celestial pole. In the southern hemisphere the stars rise in the
  a) East, set in the West and revolve anti-clockwise around the South celestial pole.
  b) East, set in the West and revolve clockwise around the South celestial pole.
  c) West, set in the East and revolve clockwise around the South celestial pole.
  d) West, set in the East and revolve anti-clockwise around the South celestial pole.

ConcepTest

- To see the greatest number of stars possible throughout the period of one year, a person should be located at latitude
  a) 90 degrees.
  b) 45 degrees.
  c) 0 degrees.
  d) anywhere, since latitude makes no difference.

ConcepTest

- The altitude of Polaris, the "North Star"
  a) is always 90 degrees.
  b) is always 23.5 degrees
  c) is always 0 degrees.
  d) varies with your latitude.

Pair Quiz: Seasons

- When is the start of winter, spring, summer and fall?
- Each date has its own special name. What are the names given each date?
The Annual Motion of the sun

Due to Earth’s revolution around the sun, the sun appears to move through the zodiacal constellations. The sun’s apparent path on the sky is called the **ecliptic**.

ConcepTest

- If the star Aldebaran rises tonight at 2:00 a.m., when do you expect it to rise next month?
  a) 11:00 pm.
  b) midnight.
  c) 1:00 am.
  d) 2:00 am.
  e) 3:00 am.

Important Dates

- **March 21st**: Vernal Equinox – beginning of spring
- **June 21st**: Summer Solstice – beginning of summer
- **Sept 22nd**: Autumnal Equinox – beginning of autumn
- **Dec 21st**: Winter Solstice – beginning of winter
Significance of these dates

The Cause of the Seasons

The Seasons

Earth’s distance from Sun NOT important!

Northern summer = southern winter
Northern winter = southern summer
Earth’s orbit (eccentricity greatly exaggerated)
Earth in January
Earth in July

Earth’s distance from the sun has only a very minor influence on seasonal temperature variations.
ConcepTest

- What causes winter to be cooler than summer?
  a) The Earth is closer to the Sun in summer than in winter.
  b) The daylight period is longer in summer.
  c) The Sun gets higher in the sky in summer.
  d) both B and C.
  e) all of the above.

Bonus ConcepTest

- In the northern hemisphere, the full moon transits highest in the sky during
  a) summer.
  b) autumn.
  c) winter.
  d) spring.

(2 pts on next test for partners who get right answer!)

Important Latitudes

- **Arctic Circle** (66.5° N latitude)
  - regions here and North have
    - 24 hours of sunlight on June 21st
    - 24 hours of darkness on Dec 21st
- **Tropic of Cancer** (23.5° N latitude)
  - sun directly overhead on June 21st
  - northern-most latitude where sun is directly overhead
- **Equator** (0° latitude)
  - sun directly overhead on Equinoxes
- **Tropic of Capricorn** (23.5° S latitude)
  - sun directly overhead on Dec 21st
  - southern-most latitude where sun is directly overhead
- **Antarctic Circle** (66.5° S latitude)
  - regions here and South have
    - 24 hours of darkness on June 21st
    - 24 hours of sunlight on Dec 21st

Summer Solstice at the Arctic Circle

The land of the midnight sun!