

Solar Analemma



Bit of Administration

- **Discussion Sections**
 - **Come directly to the planetarium this week!!**
- **Homework**
 - **Can be turned in as late as 4:00 pm Friday at 6515 Sterling**
- **Mathieu Office Hours this week**
 - **M 1:30 - 3:30, T 3-5, W 11-12**
- **Reading**
 - **Begin Bless, Chaps. 3-4; BNSV 56-70**
- **Honors Students - turn in schedules after lecture**

Concept Test!

If you see a full moon, than

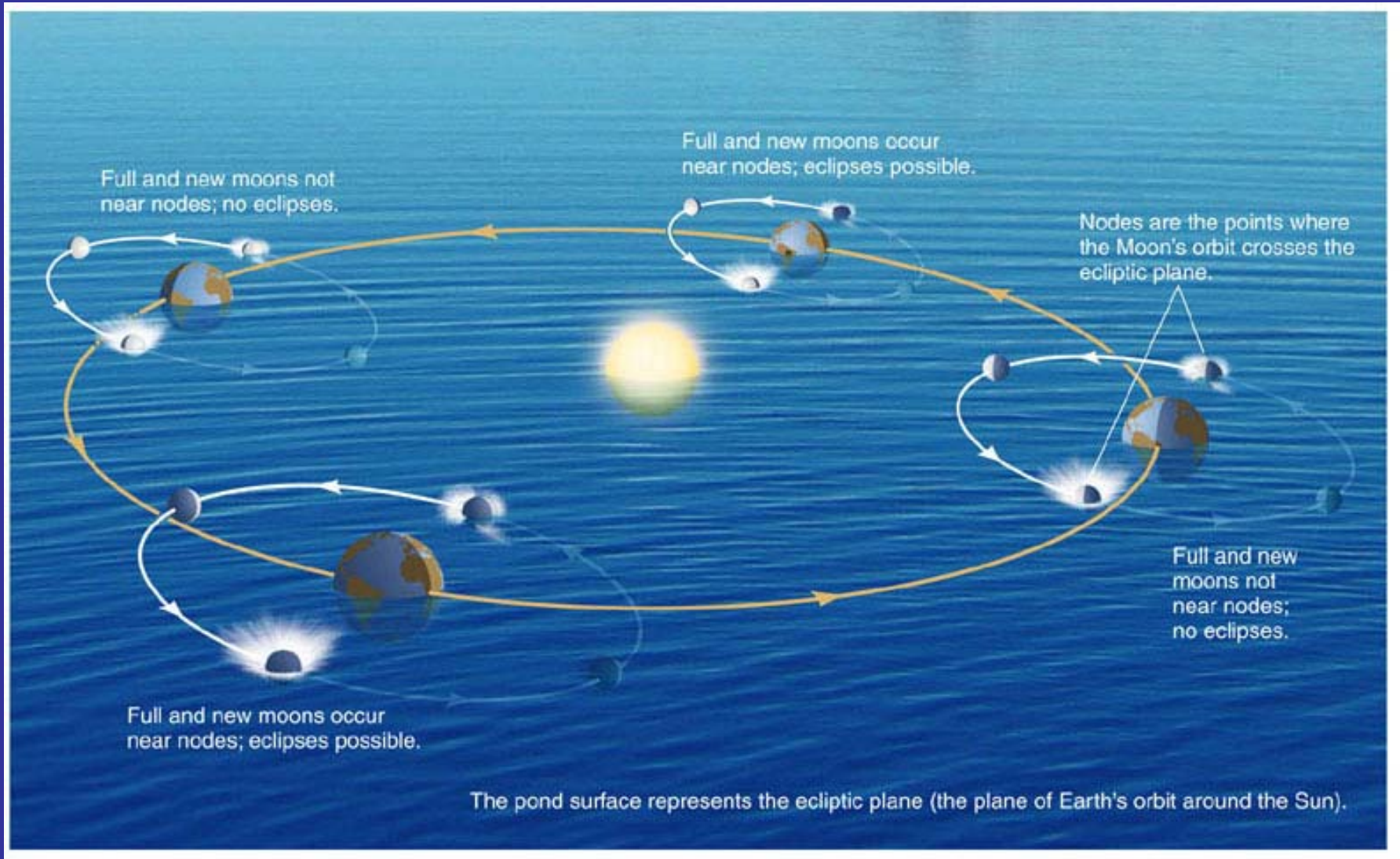
A) the moon is above the Earth's shadow

B) the moon is below the Earth's shadow

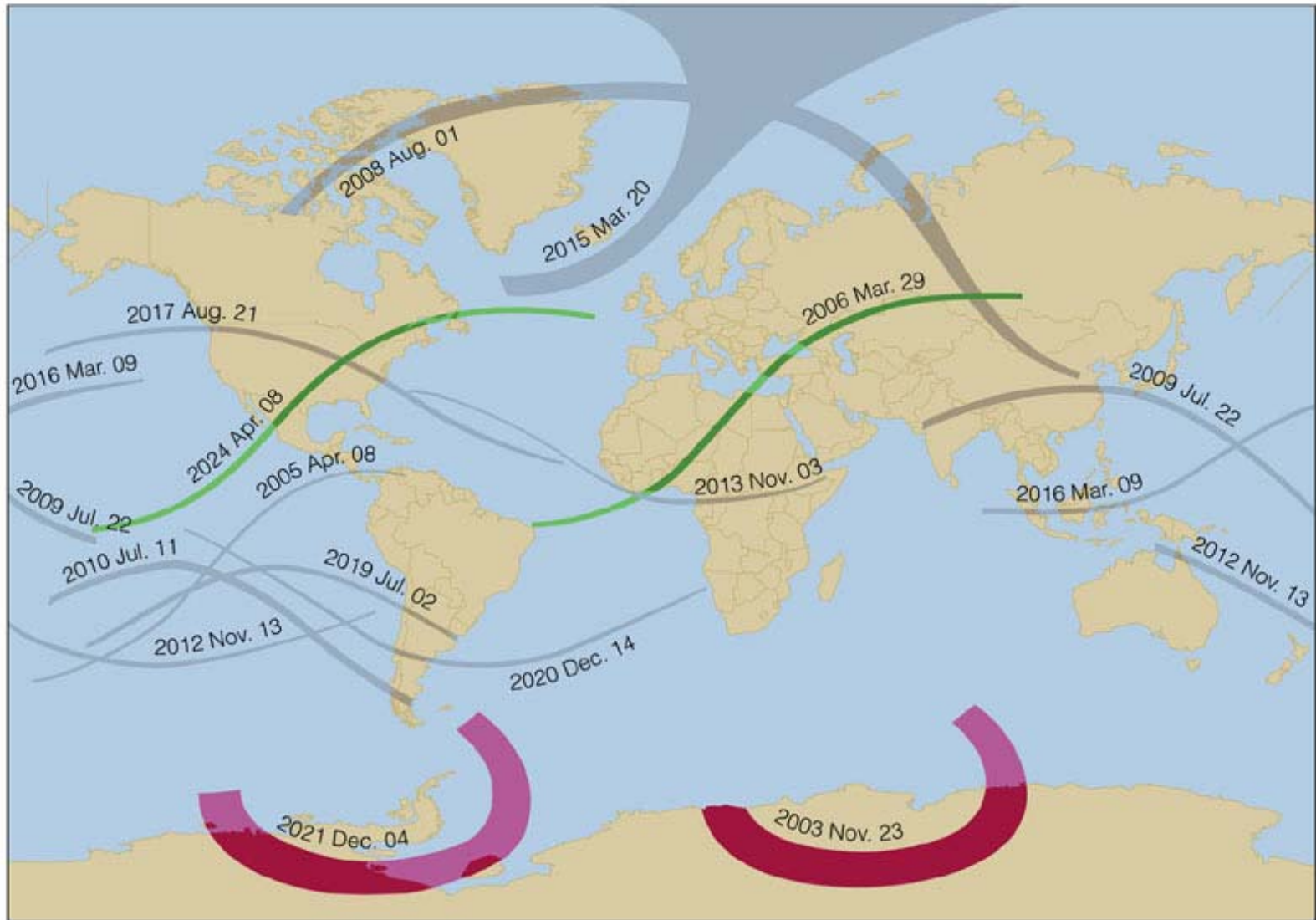
C) the moon is either above or below the Earth's shadow

D) the moon is about to enter the Earth's shadow

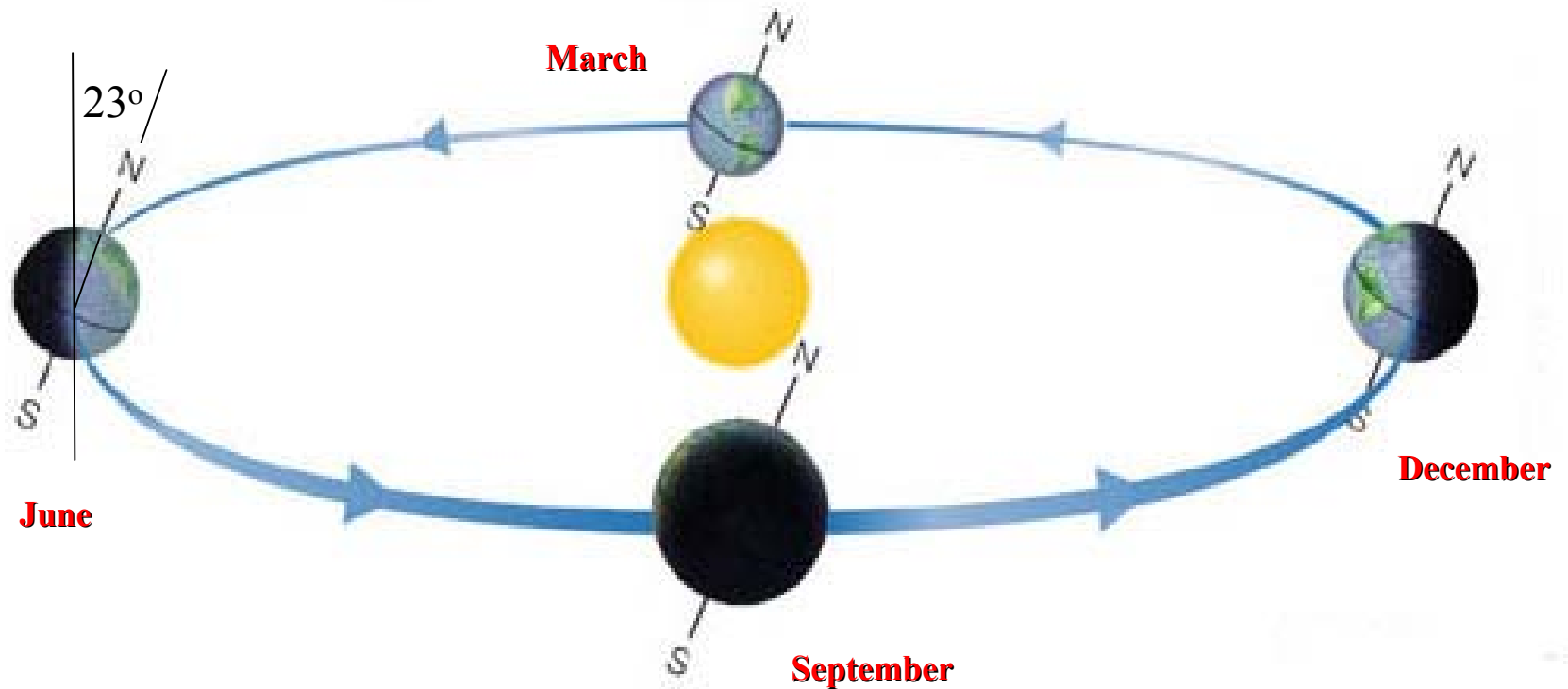
Timing of Eclipses



Eclipse Tracks



Back to Solar Motion, and The Seasons

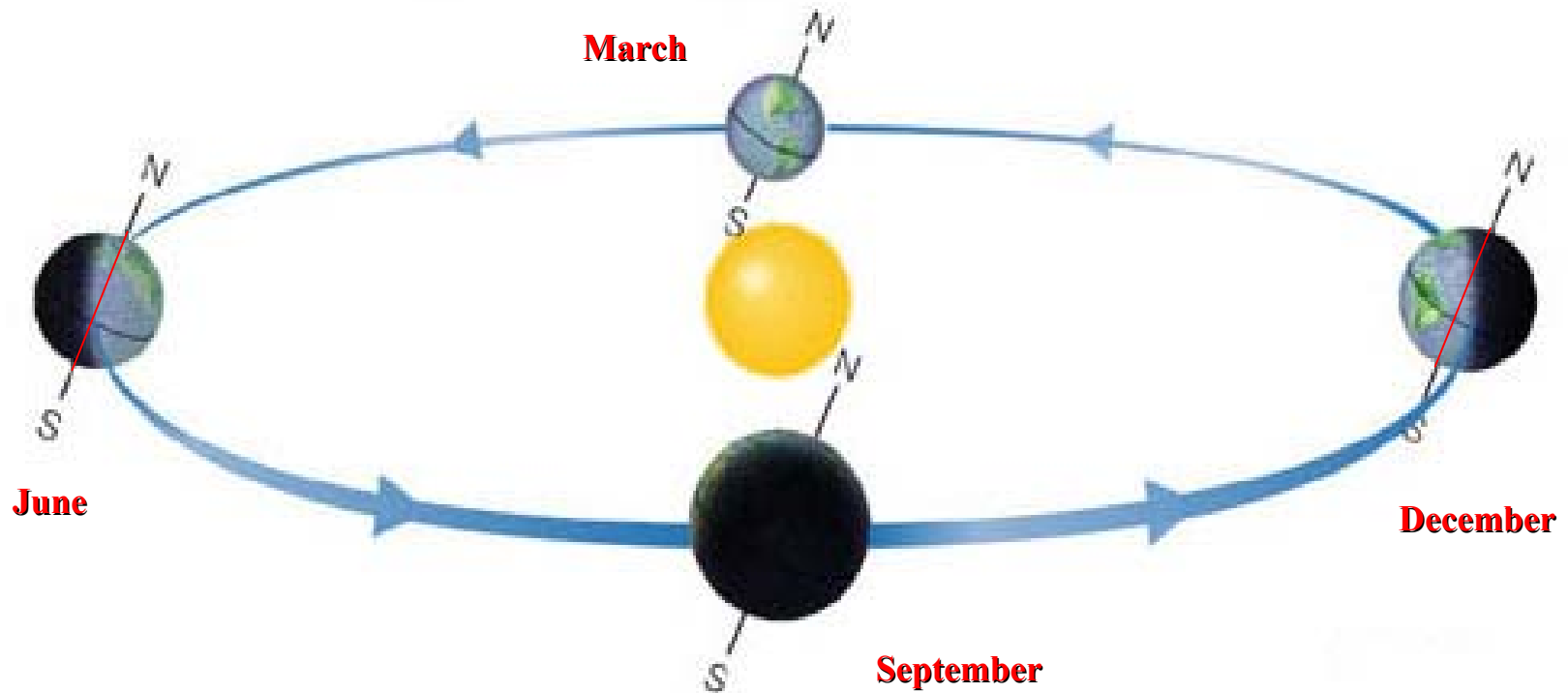


Not to scale! On the scale the orbit is drawn
Earth would be too small to see, and the Sun
would be a tiny dot

Altitude Of Sun

Addison Wesley Astronomy

Seasons - Space-Based View



Not to scale! On the scale the orbit is drawn Earth would be too small to see, and the Sun would be a tiny dot

Concept Test!

In June the Sun is seen low in the sky at noon from

A) Fairbanks

B) the Equator

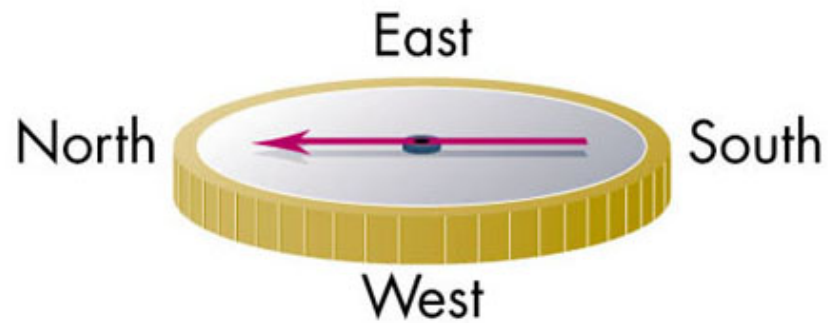
C) Santiago

D) Since the Earth spins once a day, the Sun is seen at the same height in the sky at noon from everywhere on the Earth

June
(Summer solstice)

March, September
(Equinoxes)

December
(Winter solstice)



A

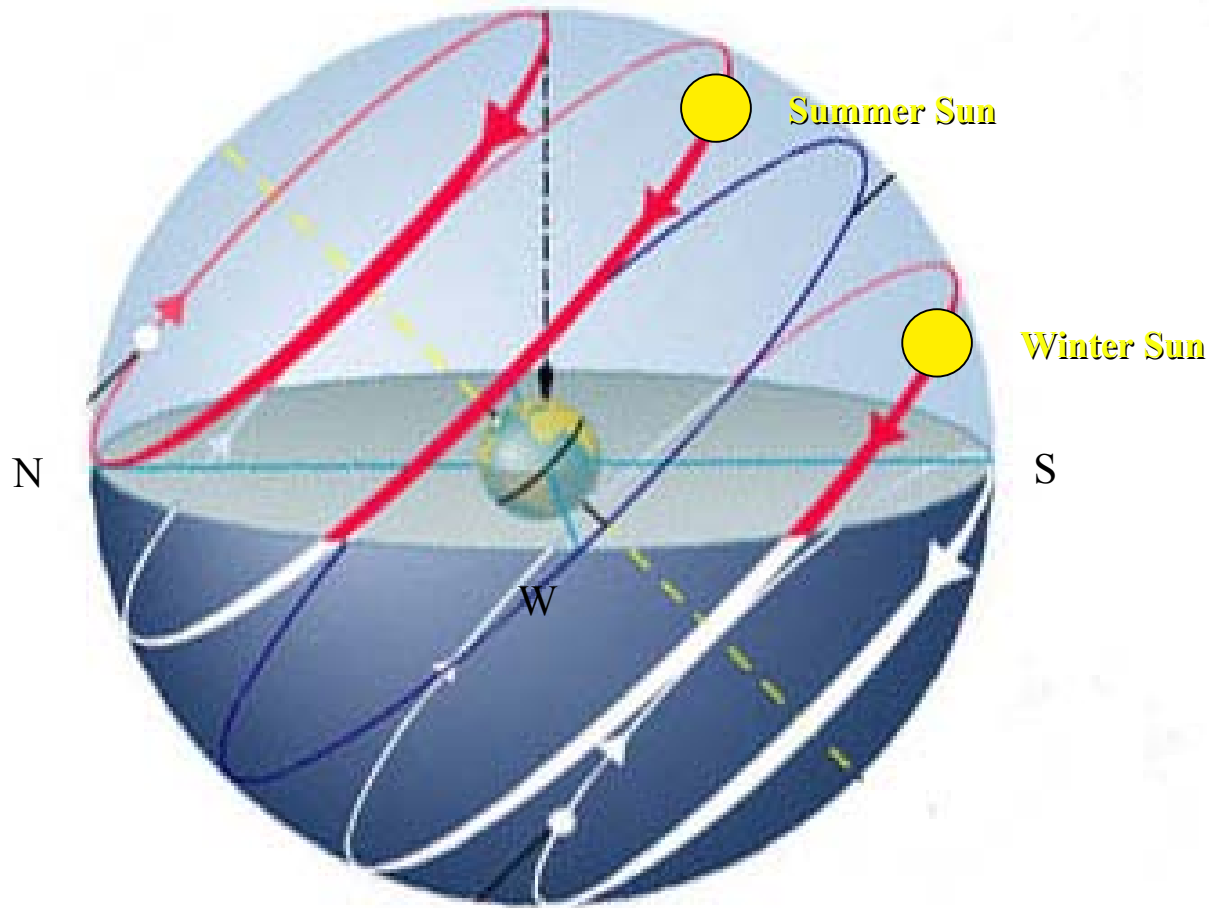
Concept Test!

In mid-June the Sun sets over Lake Mendota (as seen from the Terrace) because

- A) the Earth is tilted toward the Sun in June**
- B) Madison is at latitude 42° North**
- C) Madison is about to enter the Earth's shadow**
- D) All of the above**

Addison Wesley Astronomy

Seasons - Earth-Based View



Concept Test!

If you wanted to get a suntan (from the Sun!) from Madison in December, you could do it more quickly by

- A) laying flat on the ground
- B) standing straight up**
- C) forgetting it - its hopeless!

The Seasons

- **The Earth's axis is tilted by 23° to the plane of its orbit.**
- **The direction of the Earth's tilt **with respect to the Sun** changes over the course of a year because the Earth orbits the Sun**
 - **Season have nothing to do with the changing distance of Earth from Sun**
- **The Sun is highest in the sky in summer and lowest in winter**
- **Light that shines on the ground directly (i.e., from a direction perpendicular to the ground) provides more energy per square cm than light that shines on the ground at a slant (I.e., from a direction close to parallel with the ground)**

The Sun's Path in the Sky - Yearly

The Ecliptic

