**Movements of the Earth:**

**Unit 4: Astronomy**

**Mini-Unit:** Astronomy Basics

**Goal 3: The student will demonstrate the ability to explain the role and interaction of revolution, rotation, and gravity on the components of the Sun-Moon-Earth system.**

Objectives – The student will be able to:

* + Explain how revolution, rotation and precession of the Sun-Moon-Earth System produce changes in the solar angle of incidence (altitude, azimuth) that result in seasons (solstices and equinoxes) and changes in the length of a day, month (sidereal and synodic lunar month), and year

**Textbook:** Unit 8, Chapter 27, pg. 667

The Rotating Earth:

Rotation:

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_: The motion of a body that travels around another body in space; one complete trip along an orbit

* Takes 365 ¼ days for one full revolution around the sun
* The Earth’s orbit is a slight ellipse, rather than a perfect circle

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_: The point in the orbit of a planet at which the planet is closest to the sun

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_: The point in the orbit of a planet at which the planet is farthest from the sun

Measuring Time:

The Earth’s motion provides the basis for measuring time:

1. The day is determined by:
2. The year is determined by:
3. Months were originally determined by:
4. Since the revolution around the sun is 365 ¼ days, we account for the extra time every four years during a:
5. Time zones determined such that:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Determined by 360 degrees in a sphere, divided by 24 hours, equals 15 degrees of rotation every hour, thus a new time zone every 15 degrees of rotation.

1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ marks the change of one day to another.

The Seasons:

The Earth is titled on the axis at \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and it takes \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ to revolve around the Earth

When a hemisphere faces the sun, you get more direct insolation, thus summer. Angle of insolation is far more important than distance to the sun when determining the season.

Equinox:

Autumnal Equinox (September 22nd or 23rd) marks the beginning of fall, vernal equinox (March 21st or 22nd) marks the beginning of spring

Solstice:

Summer solstice (June 21st or 22nd) is when the Sun is directly about the Tropic of Cancer and the winter solstice (December 21st or 22nd) is directly above the Tropic of Capricorn