Study guide for Astronomy

1. Review and know the process of the scientific method.
   * Observation, hypothesis, experimentation, results/data, conclusion
2. What is the difference between a scientific theory and a scientific law?
   * Theory: Well supported hypothesis that explains in detail a certain phenomenon.
   * Law: Well supported theory, defines how nature works under certain condition.
3. International system of units
   * Prefixes: which one is smaller, which is larger?
     1. Mega- kilo- milli- micro-
4. Scientific notation: 7.5 X10¯⁵ = 0.000075 6.9X10⁸ = 690000000.
5. Know your Astronomer’s
   * Eratosthenes
   * Ptolemy
   * Aristotle
   * Copernicus
   * Galileo
   * Brahe
6. What does heliocentric and geocentric mean?
   * Heliocentric revolves around the sun
   * Geocentric revolves around the Earth
7. Kepler’s Law (found in your notes)
   * Kepler’s Three Laws of Planetary Motion
     1. The path of each planet around the sun is an ellipse, with the sun at one focus.
        1. Planets’ orbits are ellipses.
     2. \*\*\*\*\***Each planet revolves so that an imaginary line connecting it to the sun sweeps over equal areas in equal time intervals. \*\*\*\*\*\***
        1. **Ellipse area covered is proportional to a set amount of time.**
     3. Length of time it takes a planet to orbit the sun is proportional to the distance to the sun. (T² = d³)
        1. Distance to the sun determines the length of orbit.
        2. Farther away from the sun, the longer the planet takes to orbit.
8. Earth’s movements
   * **Rotation: Spinning of a body on its axis,**
     1. Solar Day: Standard 24 hour day°.
        1. Relationship is based upon the sun.
        2. Return to the starting “fixed” star pattern.
     2. Sidereal Day: Time it takes Earth to rotate 360
        1. 23 hours, 56 minutes, 4 seconds.
   * **Revolution: Orbiting around a single point in space.**
     1. Perihelion: Earth is closest to the Sun.
     2. Aphelion: Earth is farthest from the Sun.
   * **Precession: Rotation of rotational movement (wobble).**
     1. Earth has 26,000 year cycle.
9. What were some of the earliest recordings of Astronomy?
   1. Mesopotamians
   2. Egyptians
   3. Mayans
   4. Incas
   5. Muslims
   6. Chinese
   7. Stonehenge
10. Which astronomer ushered in modern astronomy; what was his revolutionary idea?
    1. **Nicolaus Copernicus** (1473-1543 A.D.)
       1. Renaissance mathematician and astronomer.
       2. Ushered in modern astronomy.
       3. **Proposed a complete mathematical model of the solar system with the sun at the center. (Heliocentric model)**
          1. **He stated planets run on perfect circular paths.**