**4th marking period New Stuff for 8th grade EOYPP**

**Severe Weather**

1. \_\_\_\_\_ Describe the conditions needed for these to form: thunderstorms, tornadoes, hurricanes, floods, waves, and drought (forms of severe weather).
2. \_\_\_\_\_ Describe the damage resulting from, and the social impact of severe weather.
3. \_\_\_\_\_ Describe severe weather and flood safety.
4. \_\_\_\_\_ Describe the seasonal variations in severe weather.
5. \_\_\_\_\_ Describe conditions associated with frontal boundaries that result in severe weather (thunderstorms, tornadoes, and hurricanes).
6. \_\_\_\_\_ Describe how mountains, frontal wedging, convection, and convergence form clouds and precipitation.
7. \_\_\_\_\_ Explain the process of adiabatic cooling and adiabatic temperature changes to the formation of clouds.

**Sky Observations**

1. \_\_\_\_\_ Describe the motions of various celestial bodies (the Sun, moon) and some effects of those motions (tides).
2. \_\_\_\_\_ Explain the primary cause of seasons.
3. \_\_\_\_\_ Explain how a light year can be used as a distance unit.
4. \_\_\_\_\_ Describe the position and motion of our solar system in our galaxy.

**The Earth in Space**

1. \_\_\_\_\_ Describe the position and motion of our solar system in our galaxy.
2. \_\_\_\_\_ Describe the overall scale, structure, and age of the universe.
3. \_\_\_\_\_ Describe how the Big Bang theory accounts for the formation of the universe.
4. \_\_\_\_\_ Explain the “cosmic microwave background” and how it helpsus determine the age of the universe.
5. \_\_\_\_\_ Differentiate between the cosmological and Doppler red shift.

**The Sun**

1. \_\_\_\_\_ Identify patterns in solar activities (sunspot cycle, solar flares, solar wind).
2. \_\_\_\_\_ Relate events on the Sun to phenomena such as auroras, disruption of radio and satellite communications, and power grid disturbances.
3. \_\_\_\_\_ Describe how nuclear fusion produces energy in the Sun.
4. \_\_\_\_\_ Describe how nuclear fusion and supernovas in stars have led to the formation of all the other chemical elements.

**Stellar Evolution**

1. \_\_\_\_\_ Explain the Hertzsprung-Russell (H-R) diagram.
2. \_\_\_\_\_ Explain how you can infer the temperature, life span, and mass of a star from its color.
3. \_\_\_\_\_ Use the H-R diagram to explain the life cycles of stars.
4. \_\_\_\_\_ Explain the balance between fusion and gravity in a star (equilibrium).
5. \_\_\_\_\_ Compare the evolution paths of low-, moderate-, and high-mass (1, 10 & 40 mass) stars using the H-R diagram.

**Earth History and Geologic Time**

1. \_\_\_\_\_ Explain how the solar system formed from a nebula of dust and gas in a spiral arm of the Milky Way Galaxy about 4.6 Ga (billion years ago).

**Energy in Earth Systems**

1. \_\_\_\_\_ Describe the Earth’s sources of internal and external energy (e.g., radioactive, decay, gravity, solar energy).
2. \_\_\_\_\_ Identify differences in the origin and use of renewable (e.g., solar, wind, water, biomass) and nonrenewable (e.g., fossil fuels, nuclear [U-235]) sources of energy.
3. \_\_\_\_\_ Describe where heat transfer in the Earth occurs by conduction, convection and radiation.
4. \_\_\_\_\_ Identify the main sources of energy to the climate system.
5. \_\_\_\_\_ Explain how energy changes form through Earth systems.
6. \_\_\_\_\_ Explain how elements exist in different compounds and states as they move from one reservoir to another.