**Astronomy Assessment and TPS Questions:**

**Big Bang**

1. In Einstein’s famous equation E=mc2, c stands for the speed of light. What do E and m stand for?
   1. E is gravitational force and m is mass
   2. E is distance and m is velocity
   3. E is energy and m is gravitational force
   4. E is energy and m is mass
2. Which of the following was not a property of the very young universe?
   1. It was very hot.
   2. It was very dense.
   3. It contained as much empty space as it does now.
   4. It contained energy and no matter.
3. What existed when the universe first started out?
   1. Energy
   2. Matter
   3. All of the above
4. Compared to now, how would you best describe the early form of the universe?
   1. Hotter and less dense
   2. Colder and less dense
   3. Hotter and more dense
   4. Colder and more dense
5. The early universe, compared to the universe later on, was what?
   1. Larger
   2. More dense
   3. Cooler
   4. All of the above
6. Rank the following in order from having the most concentrated energy to the least.

* Universe A is 5 billion years old
* Universe B is 17 Billion years old
* Universe C is the same age as our Universe

1. A>B>C
2. A>C>B
3. B>A>C
4. C>B>A
5. C>A>B
6. The surface of a balloon is somewhat like the space in the universe because
   1. the material of the surface stretches and expands as the balloon does.
   2. the material of the surface starts at a certain size and just waits to be filled up as air enters the balloon.
   3. the balloon creates more matter out of energy and adds that matter to its surface in order for it to expand.
   4. None of the above
7. Before the energy in the universe was converted into matter, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
   1. the space in the universe expanded
   2. the universe became less dense
   3. the temperature of the universe fell
   4. all of the above
   5. all of the above happened only after the energy became matter.
8. What occurred after the Big Bang?
   1. Objects that were close together in space expanded apart into already existing space
   2. Objects that were close together in space moved apart as space expanded
   3. Space expanded and the objects in space did not get any further apart
9. If you observed the expansion of the universe backward, what would you detect?
   1. Objects getting further apart
   2. Regions of space becoming more dense
   3. Space and time expanding
   4. Temperature decreasing