HPS – Astronomy Stations Lab 2021 Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Objective: Become familiar with tools and technology used to study celestial objects in the sky. (Combination of Obj 1 & 2)

Directions: Answer the following questions using the technology/tools at the station, prior knowledge, and/or the web.

1. Telescopes

1. Why are some telescopes used on Earth while others are launched into orbit above Earth’s atmosphere?
2. Different types of telescopes collect different wavelengths of light. Describe three different telescopes.
3. Describe the difference between how a refractor & reflector telescope work.
4. Which is more important: telescope length or width? Why?
5. How do you increase the magnification power of a telescope?

2. Microscopes

1. What is the major difference in the image seen in a compound microscope vs. the image seen in a dissecting microscope?
2. Why are we looking through microscopes during an astronomy unit? What is the parallel in astronomy?

3. Magnifying Glasses

Take some time to familiarize yourself with the magnifying glass.

1. List 3 observations when playing with the magnifying glass.
2. Describe how to make the image upside down.
3. Describe how to make the image actual orientation (rightside up).

4. Spectroscopes & Spectral tubes

Take some time to look through the spectroscopes and the diffraction grating at the lights in the classroom and the spectral tube.

1. What is spectroscopy?
2. How is it utilized in astronomy?
3. List 2 characteristics of stars astronomers can observe through their spectrum.
4. What do you see when viewing a spectral tube?

5. Binoculars

Take some time to look through the binoculars and become familiar with their operation.

1. What astronomical instrument are binoculars similar to?
2. Who first utilized this instrument to study stars?
3. What is the drawback to this type of instrument?
4. What are the pros and cons of a pair of binoculars versus a telescope?

6. Parallax

Stand near the file cabinet with the basketball on it. Look at the red star. Move to the other filing cabinet with the globe on it. Look at the red star. Examine how your view changed with respect to the background. Repeat this process with the green star.

1. Which color star seemed to move the most compared to the background? Why is this?
2. Draw a picture and explain how scientists use parallax to measure the distance to stars.
3. What are the limitations of parallax?
4. Describe one other method scientists use to measure the distance to a star.

7. Mirrors

Take some time to look into the mirrors and the images they make.

1. How do you observe the focal point of a mirror?
2. What advantage do mirrors have over lenses?
3. What is the largest mirror used in a modern day telescope?