Name: _____ **NetID:** _____

Date of Session: _____

Astronomy Night Observing Session Worksheet

Purpose: (1) To observe the broad features of the night sky and identify bright stars and constellations; and (2) to observe in more detail specific night sky objects – such as the moon, planets, star clusters, nebulae and galaxies – with a telescope.

What to do at the observatory:

There will be three stations, each tended by an instructor or TA:

1. One telescope inside the Observatory dome
2. Two small outdoor telescopes (behind the Observatory)
3. A naked-eye tour of the sky (also behind the Observatory)

The sessions will begin at 8pm. When you arrive, please enter the Observatory through the door facing Smith Music Hall, you may need to wait in the lobby while the instructor prepares for the session.

At each station, the instructor will review information about the object that you will be observing, and will assist you in observing the object with a telescope or with your eyes. Read the questions below before you start observing and you may answer them as you go through the session.

Rule: *You may ask the instructor for assistance with answering questions or discuss the questions with your classmates, but you must write your own responses in your own words.*

Answer the first question before you start.

1. (a) What is the date and local time of your observations?

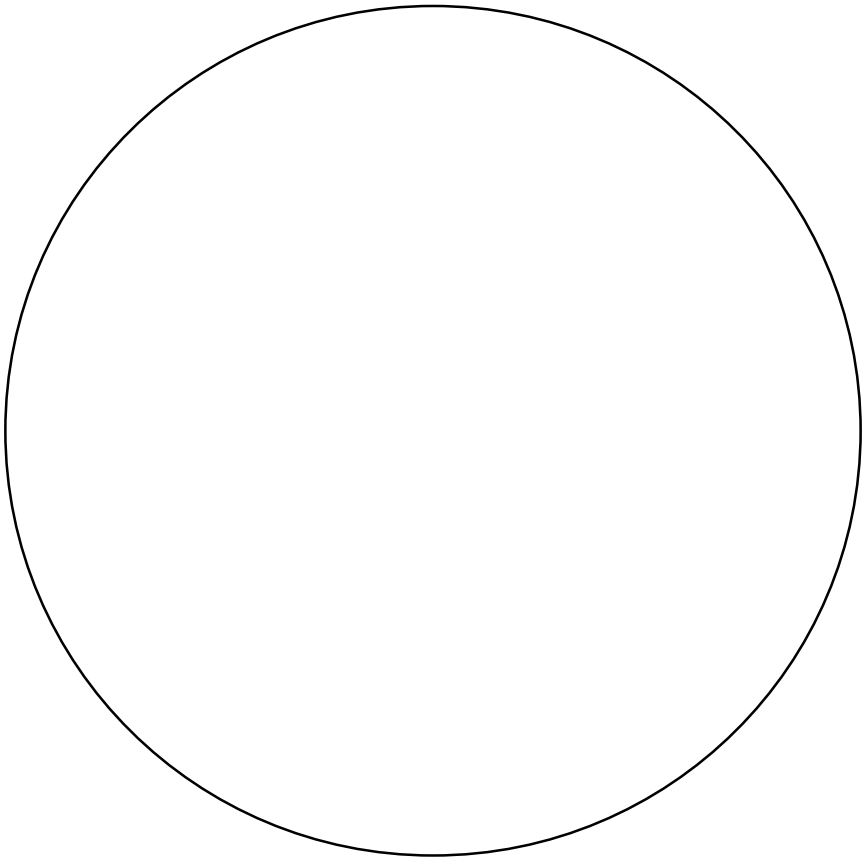
   (b) What are the sky conditions (e.g., clear, partly cloudy)?

Observations with the Telescope inside the Dome

2. Describe the telescope. Does it use a mirror or a lens to collect light? What is the diameter of the biggest mirror or lens in the telescope?

3. What are the focal lengths of the telescope and the eyepiece? The magnification is the ratio of the focal length of the telescope to the focal length of the eyepiece. What is the magnification of the telescope/eyepiece combination that you used?

4. What object(s) did you see through the telescope? Sketch the object(s) and label its features in the circle below.

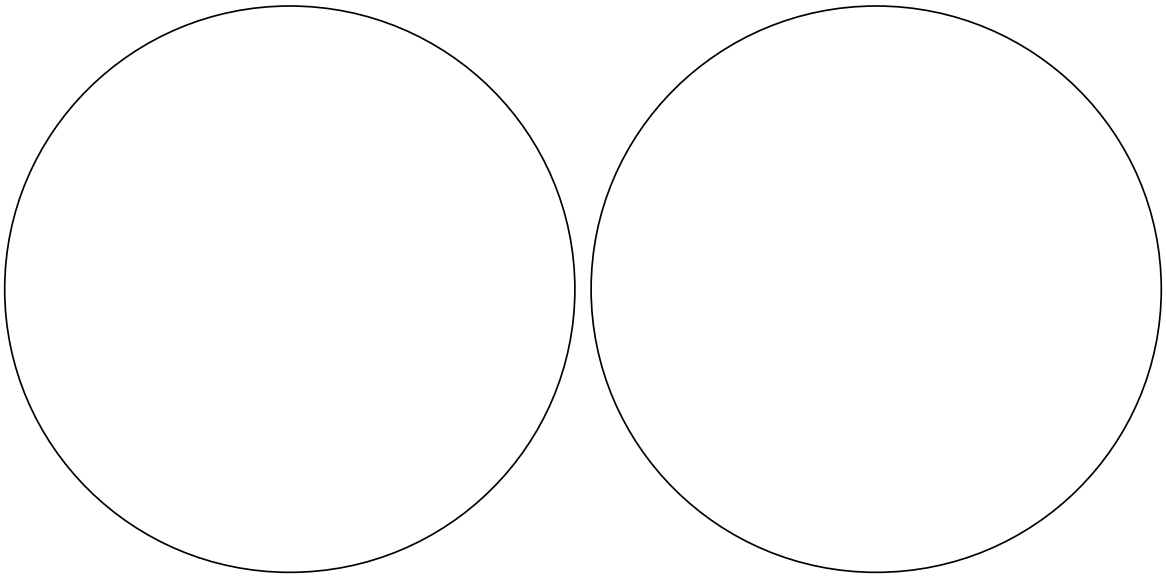


Observations with the Small Outdoor Telescopes

5. Describe the telescopes. Do they use mirrors or lenses to collect light? What is the diameter of the biggest mirrors or lenses in the telescopes?

6. What are the focal lengths of the telescopes and the eyepieces? The magnification is the ratio of the focal length of the telescope to the focal length of the eyepiece. What is the magnification of the telescope/eyepiece combinations that you used?

7. What objects did you see through the telescopes? Sketch the objects and label their features in the circles below. Give the names and brief descriptions of the objects.



8. What effect does the difference in the design between the 4" and 12" telescopes have on the images that you see?

Naked Eye Tour of the Sky

9. Give the name of one constellation that you heard and sketch it. What kind of animal/object/person is this constellation supposed to represent?

10. Identify Polaris in the sky. Why is Polaris a noteworthy star? Is it the brightest star in the sky?

11. What planet(s) did you see in the sky? What constellation(s) did they appear in?

Astronomical Sources

12. List an object observed at each of the 4 stations (4 different objects from the 12" telescope, the 4" telescopes, and the naked eye). Give the names and brief descriptions of the objects below. In addition, the declination is one of the two angles that makes up an object's coordinates on the sky. Specially, it is the equivalent of latitude: the angle between the object and the celestial equator. You can estimate declination as follows. (1) Find (with help) the North Star, Polaris– this lies approximately at the North Celestial Pole. (2) Now estimate the angle (call it theta) between Polaris and your object. Write down the estimate of the angle between Polaris and each object. 3) Finally, Polaris is at the North Celestial equator, which means that it has a declination of 90 degrees. Knowing that, you can calculate the declination of the objects. Note that a negative number just means that the object is south of the celestial equator.