

## **Astronomy Lab Extra Credit Assignment** – Show all work for full credit!

Name: \_\_\_\_\_

**Activity 1: Find the best eyepiece.** You are given a set of eyepieces of various focal lengths with your telescope. The focal lengths of the eyepieces are in millimeters, and the focal length of your telescope is about 2000 mm. Choose the best eyepiece for the object you are viewing and tell why you chose it. (think about magnification and how it affects your field of view, remember  $\text{Magnification} = \text{telescope F.L.} / \text{eyepiece F.L.}$ )

### **Object 1: Mars**

Best eyepiece: \_\_\_\_\_ mm

Why is this the best eyepiece?

What is the magnification for the eyepiece you have chosen? \_\_\_\_\_  
times

### **Object 2: the Pleiades**

Best eyepiece: \_\_\_\_\_ mm

Why is this the best eyepiece?

What is the magnification for the eyepiece you have chosen? \_\_\_\_\_  
times

### **Object 3: Saturn**

Best eyepiece: \_\_\_\_\_ mm

Why is this the best eyepiece?

What is the magnification for the eyepiece you have chosen? \_\_\_\_\_  
times

### **Object 4: the Moon**

Best eyepiece: \_\_\_\_\_ mm

Why is this the best eyepiece?

What is the magnification for the eyepiece you have chosen? \_\_\_\_\_  
times

**Activity 2: How has the sky changed throughout the semester?** We know that the stars don't always rise in the same places each night; otherwise we would be looking at the same constellations all year long. Due to our rotation around the sun, our sky will change by a certain number of *degrees per day* over the course of a year.

**Calculate** how many degrees per day the sky changes. Hint: think about how many degrees are in a circle (or orbit) and how many days are in a year.

**Calculate** how many degrees the sky has changed since the semester began January 19<sup>th</sup> until now.

**Draw** From your previous answer of how many degrees the sky has changed over the months, we will draw a time elapsed picture of the *southern* sky by approximating where the stars were at the beginning of the semester.

- a) Draw the constellations and a few bright stars in the southern sky as they appear *now*, labeling directions. Label the known stars and constellations.
- b) Using a protractor to measure out the angle the stars have moved, find the start position of the objects and draw (on the same picture) where they would have been at the beginning of the semester. Remember they would have been rising earlier than now.
- c) Connect the objects with arcing lines, indicating the direction of their paths over the semester. Label the beginning and end dates of your time elapsed sky.