

**Our Corner of the Universe**  
**AST 101, FALL 2007**  
**THE SUNSET POINT**  
**Week of August 28**

*In this activity you will study the motion of the sunset point by direct observation of the sun over the next month. You will record the change in the daylight time over the same period.*

Due to the tilt of the Earth's axis, the height of the Sun at a given time of the day with respect to the horizon changes with the season. In the winter, when the Sun is in the portion of the ecliptic which is below the equator, the sun is very low in the northern hemisphere and high in the southern one. In summer, on the contrary, it is very high in the northern hemisphere and low in the southern one.

The northward/southward motion of the Sun on the celestial sphere can be easily detected in observations of the sunset or sunrise. In this activity you will record the point of sunset or of sunrise three times in a month and study the motion of the Sun.

Choose an observing location with a clear western (eastern) horizon if you want to observe sunset (sunrise) and draw a sketch of it on a sheet of drawing paper, marking the horizon and all the possible landmarks, such as trees, buildings, telephone poles. *All your observations must be made from exactly the same point.*

Find out the time of sunset (sunrise): you can read it on the newspaper, ask your astronomy instructor or just sit and wait for it. Just as the Sun is setting, mark on your drawing the point where it goes below the horizon. *Label this point with the time and date of the observation.*

Now, using your hand as an angular measuring device, measure the location of the sunset with respect to some convenient object on the horizon chosen as reference point. Mark this point on your drawing and report the angle, together with the time and date, in the first row of the table below. **Remember to make all later observations from exactly the same location.**

Table 1.

	<b>Date</b>	<b>Time</b>	<b>Landmark (R/L)</b>	<b>Angle</b>
Observation # 1				
Observation # 2				
Observation # 3				

After one week, return to the same observing location to measure and draw the location of the sunset point. After one more week has passed, make a third and final observation.

### **Lab Report:**

Your report should include:

- a) Table 1
  - b) Drawing showing the sunset points, landmarks, cardinal points.
  - c) Answers to the following questions
  - d) Activities from length of Daylight
1. Has the sunset point moved along the horizon? In which direction? Why did it move and why in that direction?
  2. What is the average daily rate of motion?
  3. From your readings, would you expect the midday sun at the end of your observation period to be higher or lower in the sky than it was at the beginning? Explain.

### **Length of Daylight Time**

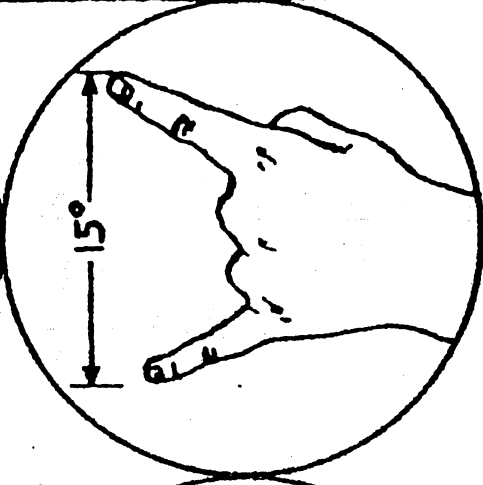
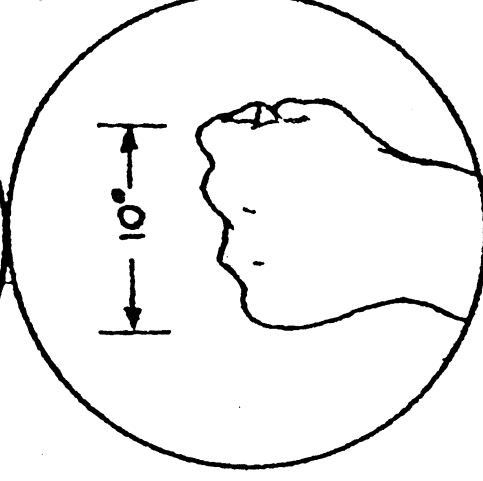
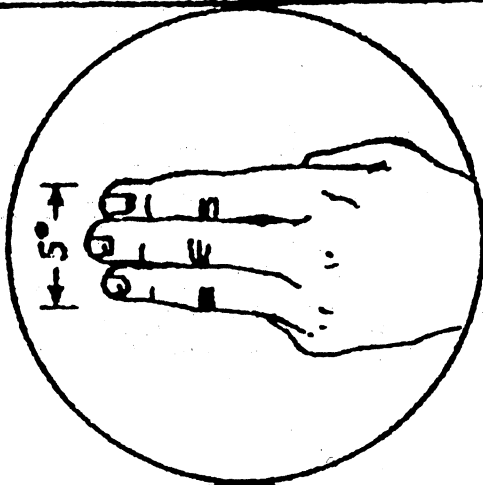
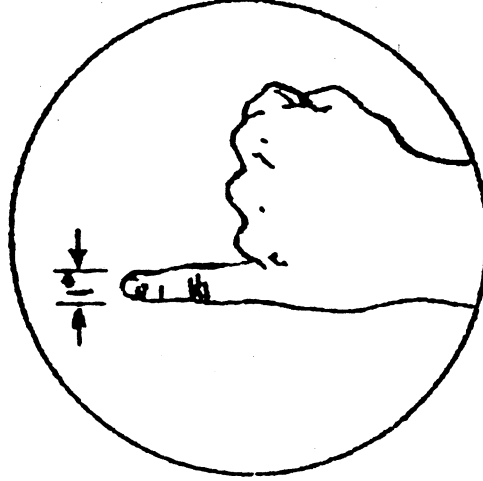
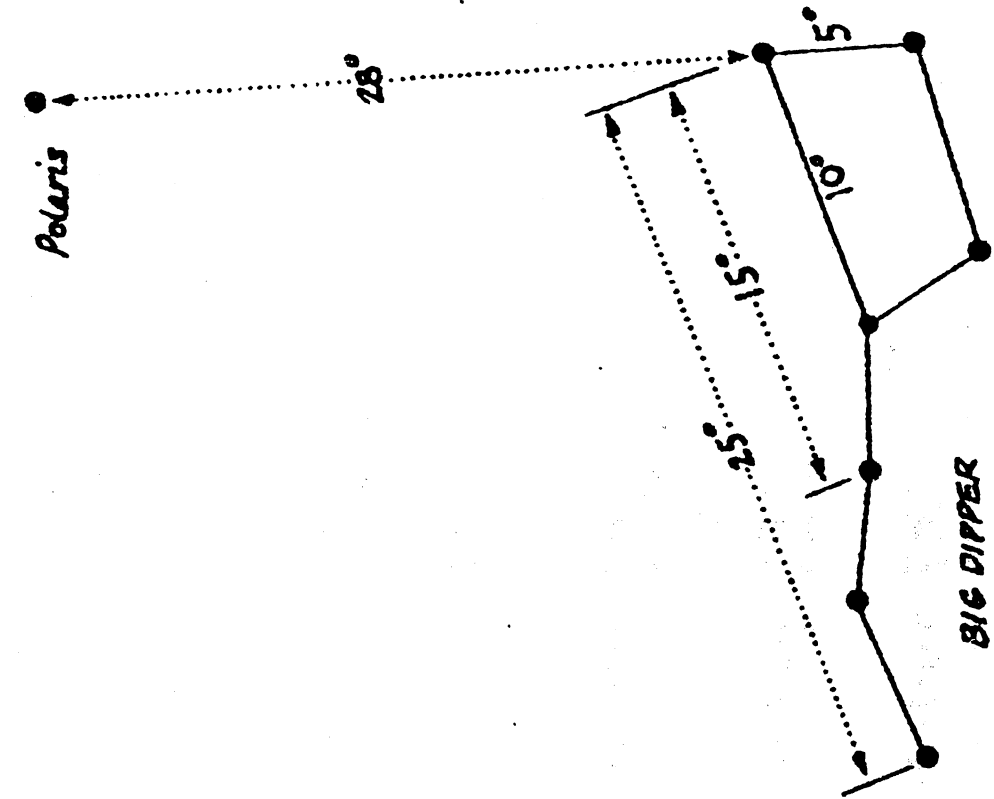
- Record the sunrise and sunset times every other day over a period of 20 days. You can consult your local newspaper or use the web.
- Calculate the length of the daylight time and the time of the astronomical noon (which is the midpoint between the sunrise and sunset times).
- Make graphs for each set of data you have: times of sunrise, sunset, astronomical noon and length of daylight versus day of month.
- Interpret your plots. Explain them from an astronomical point of view.
- Compare your results with those of the first part of this lab. What trends do you notice?

You should attach this activity to the report you prepared for the first part of this lab.

**Due week of September 25**

**Acceptable until October 25 with –1 point penalty.**

# HANDY SKY MEASURES



KEEP ARM FULLY OUTSTRETCHED