PHYS-181 ASTRONOMY

Homework #2

DUE: Week 4 Class @ 7:00pm

NO LATE ASSIGNMENTS WILL BE ACCEPTED

Assignments must be turned in at the lecture, or submitted (in a commonly used format) via e-mail to both of the following addresses:

scheidly@newton.physics.drexel.edu
scheidly@drexel.edu

Consider the star map for July at midnight shown in Figure 1. In particular, notice that the directions of north and east have been identified and that the names of different star groups (constellations) have been provided.

Figure 1

1) Which star group will appear highest in the night sky at this particular time?

2) Figure 2 shows a south-facing horizon view star map for July at midnight. What is the name of the star group that appears highest in the sky on this south-facing horizon view star map? (Hint: refer to the names provided in Figure 1.)

Figure 2

3) How would you have to hold, rotate, fold, and/or change the overhead view star map shown in Figure 1 so that it could be used as a south-facing star map like the one provided in Figure 2?

4) How would your answer to the previous question change if you wanted to use the star map from Figure 1 as a north-facing map?

5) Do you still agree with your answer to question 1? Why or why not?

6) When looking at the overhead view star map from Figure 1:

   a) on what part of the map (left, right, top, bottom, or center) is the star group that will appear highest in the night sky? What is the name of this star group?

   b) on what part of the map (left, right, top, bottom, or center) is the star group that will appear near the southern horizon? What is the name of this star group?

   c) on what part of the map (left, right, top, bottom, or center) is the star group that will appear near the eastern horizon? What is the name of this star group?

1) If the Moon is a full moon tonight, will the Moon be waxing or waning one week later? Which side of the Moon (right or left) will appear illuminated at this time?

Circle one: Waxing or Waning

Circle one: Right or Left

2) Where (in the southern sky, on the eastern horizon, on the western horizon, high in the sky, etc.) would you look to see the full moon when it starts to rise? What time of day would this happen?

3) Where (in the southern sky, on the eastern horizon, on the western horizon, high in the sky, etc.) would you look to see the Sun when the full moon starts to rise?

4) Where (in the southern sky, on the eastern horizon, on the western horizon, high in the sky, etc.) would you look to see the new moon, if it were visible, when it starts to rise? What time of day would this happen?

5) If the Moon is a full moon when it rises in the evening, which of the phases shown below (A – H) will it be in when it sets?

Letter of moon phase: _____

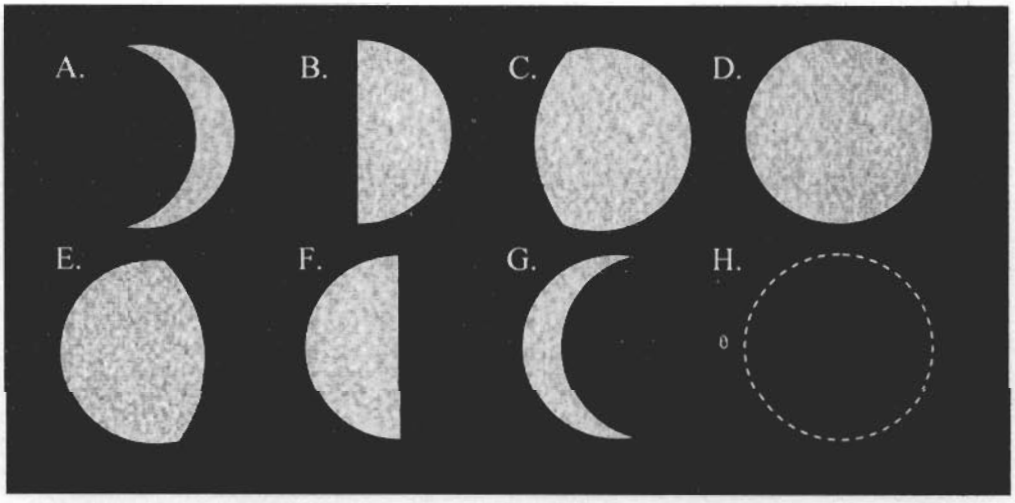

Figure 1 shows the position of the Sun, Earth and Moon for a particular phase of the Moon. The Moon has been shaded on one side to indicate the portion of the Moon that is **NOT** being illuminated by sunlight. A stick-figure person has been placed on Earth to indicate an observer's position at noon. Recall that with this representation Earth will complete one counterclockwise rotation in each day. Note that this drawing is not to scale.

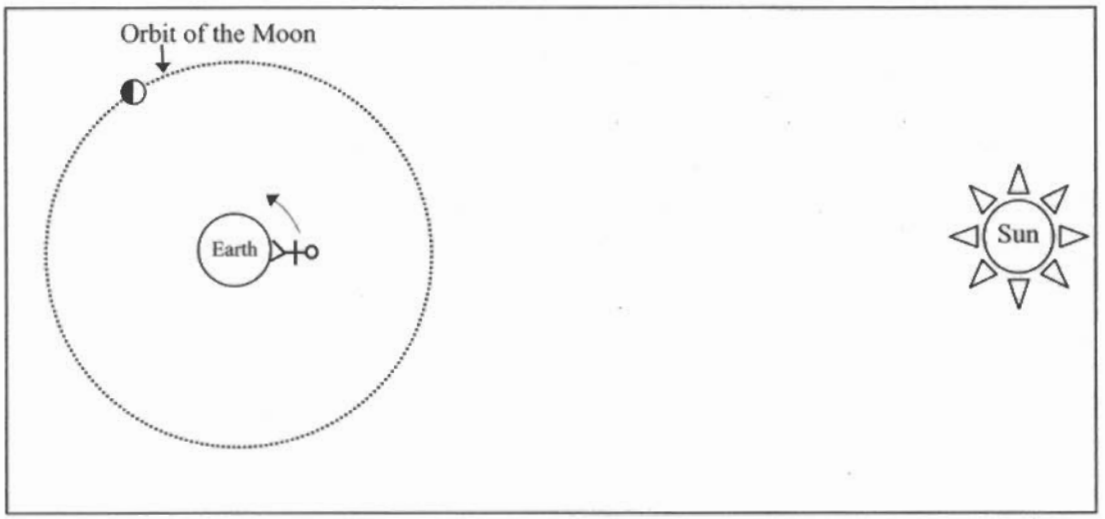

Figure 1

6) What time of day is it for the person shown in Figure 1?

   Circle one: 6am (sunrise) 12pm (noon) 6pm (sunset) 12am (midnight)

7) Draw a stick-figure person on Earth in Figure 1 for each of the three times that you did not choose in question 6. Label each of the stick-figures that you drew with the time that the person would be located there.

8) Answer the following questions for the position of the Moon shown in Figure 1.

   a) Which moon phase would an Earth observer see?

   b) At what time will the Moon shown appear highest in the sky?

   c) At what time will the Moon shown appear to rise?

   d) At what time will the Moon shown appear to set?

9) At what time would you look to see a first quarter Moon at its highest position in the sky?

10) If the Sun set below your western horizon about 2 hours ago, and the Moon is barely visible on the eastern horizon, what phase would the Moon be in at this time and location?

11) A friend comments to you that there was a beautiful, thin sliver of a Moon visible in the early morning just before sunrise. Which phase of the Moon would this be, and in what direction would you look to see the Moon (in the southern sky, on the eastern horizon, on the western horizon, high in the sky, etc.)?