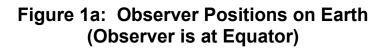# The View From Earth

Turn in one copy of this answer packet with each group member's printed name and signature. By signing, you certify that you have actively participated in the exercise and have put forth effort in equal share to your fellow group members.

Printed Name   **Signature**

_____   _____

_____   _____

_____   _____

_____   _____

Part 1: Rising and Setting Times

Figure 1a: Observer Positions on Earth
(Observer is at Equator)

to Sun

Noon

Table 1: Celestial Times

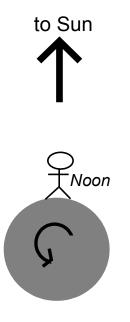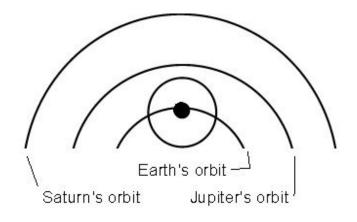| Sky Object	Rise Time	Time Overhead	Set Time
Sun			
Venus			
Moon			
Mars			

1. Using complete sentences, explain why our Sun is not visible at midnight. Add a sketch of Earth, Sun, and observer in the space provided to support your explanation.

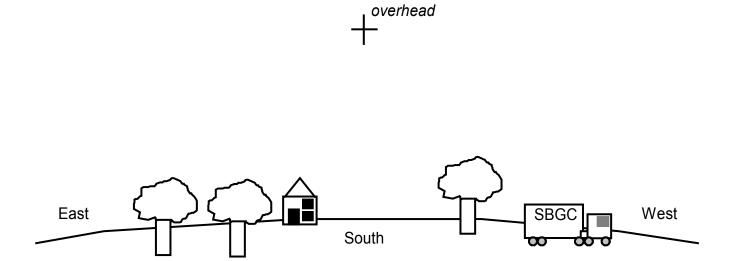## Part 2: Converting Geocentric to Heliocentric

Earth's orbit

Saturn's orbit   Jupiter's orbit

Orrery Not Drawn to Scale !!
Figure 2b

Table 2: Rise and Set Times for Figure 2a

Sky Object	Rise Time	Set Time
Sun		
Jupiter		
Moon		
Saturn		

2. If Neptune is visible overhead in the southern sky at sunrise (6 am) sketch the relative positions of Sun, Earth, Neptune, and observer in an orrery in the space below.

Part 3: Converting Heliocentric to Geocentric

<u>Figure III-b: Geocentric Horizon View at Midnight</u>

overhead

East

South

SBGC

West

3. Venus is often called the *morning star* or the *evening star*. Why is it never seen at midnight?

Part 4: The Orbit of Mars

4. From your map, estimate the radius of Mars' orbit in Astronomical Units.
    (*Hint: Measure the approximate radius of Mars' orbit and divide that by the approximate radius of Earth's orbit*).

5. What is the minimum distance between Mars and the Earth in AU?

6. In the orbit you have drawn, there is no epicycle evident. Why not?

7. Why does the closest opposition of Mars always occur in August?

8. What is the heliocentric longitude of Mars at perihelion? At aphelion?