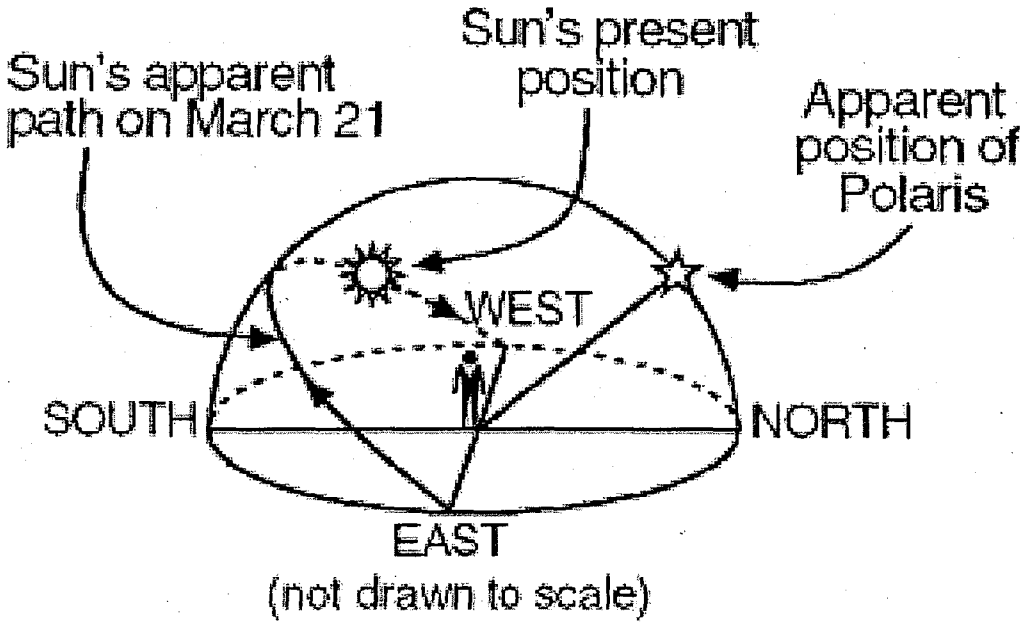
Name _____ Date _____ Period _____

Free Response HW #10: Sun's Path



Base your answers to the questions on the diagram above.

1) The observer is located in the Northern Hemisphere. State two ways that this could be determined by looking at the diagram.

2) State how the latitude of the observer could be determined from the diagram.

3) On the diagram draw a path for June 21st. Draw a circle on the path to represent the sun at solar noon. Label the circle noon sun.

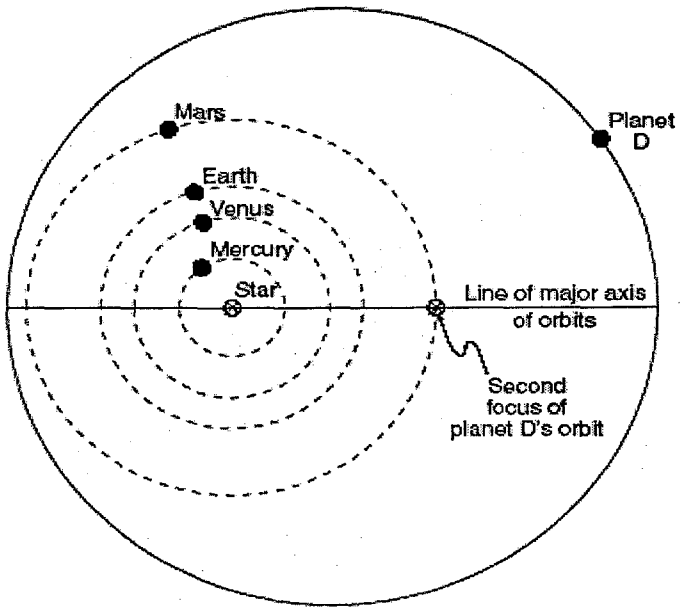
4) Estimate the time of day when the sun is at the position labeled Sun's present position. _____

5) Describe how the paths of the sun would be affected if the observer moved 15° closer to the equator.

6) What direction would the observer's shadow point for the Sun's labeled position? _____

7) What would happen to the length and direction of the shadow between the labeled position and sunset?

Base your answers to questions 66 and 67 on the diagram below, which shows the orbit of planet *D* around the star *Upsilon Andromedae*. The dashed lines show where the paths of the first four planets of our solar system would be located if they were going around *Upsilon Andromedae* instead of the Sun. All distances are drawn to scale.



In the box below, Calculate the eccentricity of Planet D (Write the formula, substitute, Solve)

On the diagram above, Place an X on Planet D's orbit where the apparent diameter of the star is the least

On the diagram above, Place a ● on Planet D's orbit where the gravitational force is the greatest

Mercury would take the least time to orbit the Star. Give 2 reasons why Mercury takes the least time

1) _____

2) _____

If the 2 foci of planet D's orbit were moved closer together, How would the eccentricity change?

_____

Compare the gravitational force on Mars to the gravitational force on Mercury

_____

_____