

Jupiter's Moons Observing Journal Alternate Assignment

Due Wednesday, February 19, 2014

This assignment involves a number of measurements to be made with a ruler. The more carefully you make these measurements, the better your result will be.

Use the Galilean Moons Data Sheet, attached, to make your measurements

1. Label the Moons

If you examine them carefully, you will see that there are generally five objects in addition to Jupiter (the large, bright, banded object at the center) visible near it in each of the pictures in the data sheet. Your first task is to go through each of the images and label these objects 1-5 in each image. **Note that all five will not always appear in every image and that some of them will trade places over the course of the 50 hours of data shown, so look carefully. If you called one object "object 2" in the first frame, you need to call it "object 2" throughout even when it switches places with other objects.**

As you go through the images, you should also place a dot at the center of Jupiter in each image using a ruler.

2. Measure

Now, go through and measure the distance to each moon in millimeters from the center of Jupiter that you marked in the last step. Record each value in the table at the end of this lab. In cases where one (or more) of the five objects disappears, note that in the table by writing "gone" in the relevant box. There will be a couple of cases in which Jupiter itself is not visible in the image, in which case you should write "Jupiter gone" across the entire row of boxes. **Mark all distances where the object is to the right of Jupiter as positive and all where the object is to the left of Jupiter as negative.**

3. Predict

On the back of your table, explain the pattern of motion that you would expect a moon in orbit around Jupiter to make from our perspective here on earth - a "side view" of Jupiter. What would it look like if you were to graph the distance of each moon from Jupiter over time? It may help here to first consider what the orbits look like from a "top down" view, as though you were looking down on the solar system. Diagrams will also help you to visualize this. Use Kepler's laws to make an argument about how you might tell the difference between a moon that is close to Jupiter and one that is far away. Your prediction should be in the form of a full paragraph of complete sentences for full credit.