Solar System PhET

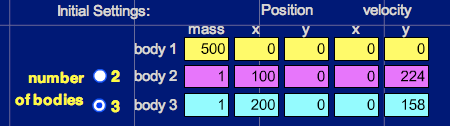
**Procedure:**

**1. Solar System PhET** LINK

**2. Once you are on the site, click the “Show Grid” box on the right of the screen.**

**3. Drag the slider from “Fast” all the way over to “Accurate”.**

**4. At the bottom, select “3” for the number of bodies. Then fill out the data table to look like this:**



**5. Click on “Start” and observe the motion, then answer the questions in complete sentences in your Notebook.**

Q1: Which planet (inner or outer) travels the least distance to go around once?

Q2: Which planet is going the fastest?

Q3: Which planet has the shortest “year”?

Q4: About how many times does the inner planet go around while the outer planet goes around once?

Q5: In our solar system, what is the name of the planet that goes the fastest? The slowest?

**6. Click “Stop”, then click on the arrow next to “Select Preset” in the upper right of the screen.**

**7. Scroll down and select “Ellipses”.**

**8. Click “Start” and answer the following questions about the outer GREEN orbit relative to the yellow “Sun”.**

Q6: Where in its orbit is the planet going the fastest? Slowest?

Q7: Where do you think gravity is the strongest? Weakest?

Q8: Comets have orbits similar to this one. Where would you expect a comet to spend most of its time, near the Sun or far from the Sun? Why?

**10. Run the simulation until the purple planet (body 2) has made one complete orbit (one year).**

**11. After the first orbit (year), turn off the traces (show traces box) and watch another orbit (year) of the purple planet (body 2). Answer the following question.**

Q9: Is the blue moon (body 3) circling the yellow sun (body 1) or the purple planet (body 2)? Explain your answer.

**12. Increase the mass of the sun (body 1) to 400 and allow the simulation to run for one complete orbit of the purple planet (body 2).**

**13. Decrease the mass of the sun (body 1) to 175 and allow the simulation to run for one complete orbit of the purple planet (body 2). (~90 seconds). Answer the following question.**

Q10: How do the orbits of the planets change when the mass of the sun is increased or decreased? Why? Explain your answer.