# Revolution of Jupiter's Moons

Turn in one copy of this lab 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** |
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1. Can you see a correlation between how far the moons are from Jupiter to their speeds? If so, what is it?

2. Describe Io's motion, including when it appears close to Jupiter vs. when it is far from Jupiter.

3. Why does Io appear to move this way? *(Hint: what would their orbits look like if you viewed them from above?)*

4. Aside from speed, do the other moons (Europa, Ganymede and Callisto) also move similarly?

5. What kind of curve is this?  Does that make sense, given the motion you observed in the first part?

6. Did it become easier or harder to draw the curves?  Why?   Can you draw a curve for Io?

7. What could you do observationally to make it easier to find Io's curve?

**Table 1**

| **Moon** | **a (Jupiter diameter)** | **P (days)** | **a (A.U.)** | **P (years)** |
|---|---|---|---|---|
| **Io** | | | | |
| **Europa** | | | | |
| **Ganymede** | | | | |
| **Callisto** | | | | |

**Table 2**

| **Moon** | **Mass of Jupiter (solar masses)** |
|---|---|
| **Io** | |
| **Europa** | |
| **Ganymede** | |
| **Callisto** | |
| **Average** | |

8. Compare the answers you got for the mass of Jupiter from the different moons. Did you get similar or different answers?

9. The mass you finally found is in units of *solar masses*. In other words, Jupiter is about 1/1000$^{th}$ the mass of the sun. Pretty small, despite being a very large planet! Do you think Jupiter is big enough for its mass to matter when using Kepler's 3$^{rd}$ Law to find the mass of the Sun? Why or why not?