

Name:

Section:

Date:

1. Kepler's Laws:

a. List Kepler's laws in your own words:

b. Ida was discovered to have a moon which appears as a small dot to the right of Ida in this image from 1993 (see display). The tiny moon, named Dactyl, is about one mile across, while the potato shaped Ida measures about 36 miles long and 14 miles wide. Dactyl is the first moon of an asteroid ever discovered. Many other asteroids are now known to have moons.

1. If Ida has a semi-major axis of 2.77 AU what is its orbital period?

2. Draw an ellipse and label the semi-major axis. Where is the sun located in this drawing?

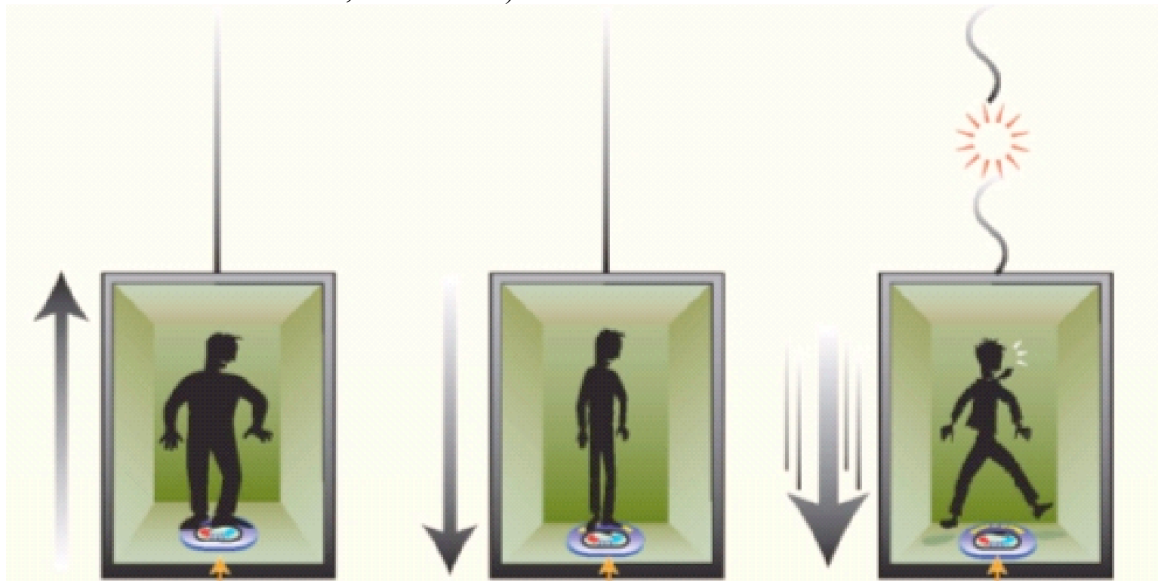
3. Do you think Ida would be classified as a planet, minor planet? Why?

4. Why do you think Ida (our Moon) has so many craters compared to other objects in the solar system (like Earth)?

3. Mass:

- a. What is the difference between mass and weight?

- b. Consider a person in a stationary elevator. How does this person's weight and mass change in the 3 situations pictured (i. accel upwards, ii. downwards, iii. free fall)?



- c. How would things change if the elevator were located on the moon?

- d. The acceleration of gravity on the surface of the Earth is $\sim 9.8\text{m/s}^2$. Consider a stationary elevator on Earth and an elevator in deep space accelerating at a constant 9.8m/s^2 . Could a person in an enclosed elevator determine which situation they were in?

