Name _____

Escape Velocity Interactive: go to Walsh's website and click on link for this activity.

1. If you decrease the mass of the Earth, but leave the initial velocity alone, does the maximum altitude of the ship increase or decrease? Can you explain why?

2. If you decrease the radius of the Earth, but leave the initial velocity alone, does the the maximum altitude of the ship increase or decrease? Can you explain why?

3. Use the "Earth" button to reset the slider values. Watch the motion of the ship that is fired horizontally. What happens to the shape of its orbit as you gradually increase its initial speed from 7.9 km/sec? What happens to it orbit if you decrease its initial speed from 7.9 km/sec?

4. Press the "Earth" button to reset the slider values. Fire the ships at a speed of 10.4 km/sec. What is the name for the shape of the horizontally fired ship's orbit?

5. Now increase the "Velocity" slider to a value of 13 km/sec and again fire the ships. How is the shape of the horizontally fired ship's orbit different? Is there a name for this shape?

6. Which of the four planets has the smallest escape velocity? Which has the largest escape velocity?

7. Is the escape velocity for a ship shot vertically upwards the same as the velocity for a ship shot horizontally? Do the experiment to find out.

8. In order to double the escape velocity of a planet, by what factor must you change its mass? Or, if you leave the mass alone, by what factor must you change its radius?

9. What is the escape velocity from the Earth's Moon?