Name: _____ Section: _____ Date: _____

Lab Report: **- Exploring the Orbits of Earth and Mars**

Hypothesis # 1:	If the Earth's foci are		than the foci of Mars, then Earth's eccentricity will be	

Hypothesis # 2:	If the Earth's orbit is closer to the sun then Mar's orbit, then the Earth's orbital velocity will be		than Mars's orbital velocity

Data Collection: Follow the lab procedure to complete each data table below.

Data Table 1: Eccentricity of orbit for Earth and Mars

Planet	Aphelion (*cm*)	Perihelion (*cm*)	Distance between foci (*cm*)	Length of Major Axis (*cm*)	Measured Eccentricity	Accepted Eccentricity (ESRT)	% Error
Earth							
Mars							

Data Table 2: Circumference and Orbital Velocity for Earth and Mars

Planet	Period of Revolution (*days*)	Period of Revolution (*hours*)	Period of Revolution (*seconds*)	Length of Major Axis (km)	Circumference of Orbit		Orbital Velocity	
					(*km*)	(*miles*)	(*km/s*)	(*miles/ hour*)
Earth								
Mars								

Data Table 3: Calculating the Eccentricity of other orbital paths

Asteroid	Distance between foci (*cm*)	Length of Major Axis (*cm*)	Eccentricity of Orbit
Unknown - A			
Unknown - B			

Data Analysis: Complete each of the following questions by referencing the data you collected in the lab procedures above

1) Explain the how the results of this lab either support or reject your Hypothesis # 1:
(Use data table # 1 to support your answer)

2) Explain the how the results of this lab support or reject your Hypothesis # 2:
(Use data table # 2 to support your answer)

3) Based on the data you collected in this lab, predict the range you might expect to find Jupiter's orbital velocity in. Explain how you came to your prediction

4) Based on this lab, what are some of the most challenging problems in accurately navigating a manned mission to mars.

Scale:

1 cm = 28,521,000 km