Astronomy Ranking Task:
The Solar System

Exercise #3

Description: The table below shows some orbital data for the eight planets in our solar system. The planets are assigned letters A through H.

Letter	Planet	Semimajor Axis (AU)	Sidereal Period (Earth days)	Sidereal Period (Earth years)	Eccentricity	Inclination to Ecliptic (°)
A	**Mercury**	0.3871	87.97	0.2408	0.206	7.00
B	**Venus**	0.7233	224.70	0.6152	0.007	3.39
C	**Earth**	1.0000	365.26	1.0000	0.017	0.00
D	**Mars**	1.5237	686.98	1.8808	0.093	1.85
E	**Jupiter**	5.2034	4,332.60	11.862	0.048	1.31
F	**Saturn**	9.5371	10,759	29.457	0.054	2.48
G	**Uranus**	19.1913	30,685	84.01	0.047	0.77
H	**Neptune**	30.0690	60,189	164.79	0.009	1.77

A. Ranking instructions: Rank the average distances of the planets from the Sun.

Ranking Order: Farthest 1 ____ 2 ____ 3 ____ 4 ____ 5 ____ 6 ____ 7 ____ 8 ____ Closest

Or, the planets are all the same average distance from the Sun. ☐ (indicate with a check mark)

Carefully explain your reasoning for ranking this way:

B. Ranking instructions: Rank the time it takes for a "year" on each planet.

Ranking Order: Longest 1 ____ 2 ____ 3 ____ 4 ____ 5 ____ 6 ____ 7 ____ 8 ____ Shortest

Or, the length of a "year" is the same for every planet. ☐ (indicate with a check mark)

© 2009-12 Rica Sirbaugh French; idea credit = Center for Astronomy Education (CAE), University of Arizona

Carefully explain your reasoning for ranking this way:

C. Ranking instructions: Rank the shapes of the planets' orbits.

	Most							Least
Ranking Order: Elliptical	1 ____	2 ____	3 ____	4 ____	5 ____	6 ____	7 ____	8 ____ Elliptical

Or, the planets' orbits are all the same shape. ____ (indicate with a check mark)

Carefully explain your reasoning for ranking this way:

D. Ranking instructions: Rank the tilts of the planets' orbital planes.

	Most							Least
Ranking Order: Inclined	1 ____	2 ____	3 ____	4 ____	5 ____	6 ____	7 ____	8 ____ Inclined

Or, the orbital inclinations of the planets are all the same. ____ (indicate with a check mark)

Carefully explain your reasoning for ranking this way:

© 2009-12 Rica Sirbaugh French; idea credit = Center for Astronomy Education (CAE), University of Arizona