Astronomy Ranking Task:
The Solar System

Exercise #7

Description: The table below shows some physical data for certain objects in our solar system. The objects are assigned letters A through H.

Object	Equatorial Diameter (km)	Equatorial Diameter (Earths)	Mass (kg)	Mass (Earths)	Mean Density (kg/m³)*	Rotational Period (hours)	Rotational Period (sidereal Earth days)
A. Sun	1.392×10^6	109.048	1.989×10^{30}	3.3×10^5	1408	609.12	25.451
B. Moon	3,474	0.272	7.348×10^{22}	0.012	3346	655.718	27.398
C. Pluto	2,390	0.19	$1.3 \quad \times 10^{22}$	2.2×10^{-3}	2030	152.7	6.39
D. Jupiter	142,984	11.209	1.899×10^{27}	317.83	1326	9.925	0.41
E. Titan†	5,152	0.404	1.345×10^{23}	0.023	1880	382.68	15.989
F. Europa‡	3,138	0.246	$4.80 \quad \times 10^{22}$	8.0×10^{-3}	3010	85.228	3.561
G. Ganymede‡	5,268	0.413	1.482×10^{23}	0.025	1936	171.709	7.174
H. Mercury	4,879	0.383	3.302×10^{23}	0.055	5427	1407.5	58.9

*The density of water at standard temperature and pressure (68° F, 1 atm) is 998.23 kg/m³.
†Moon of Saturn   ‡Moon of Jupiter

A. Ranking instructions: Rank the masses of the objects.

Ranking Order: Largest   1 _____   2 _____   3 _____   4 _____   5 _____   6 _____   7 _____   8 _____   Smallest

Or, the objects each contain the same amount of material. _____ (indicate with a check mark)

Carefully explain your reasoning for ranking this way:

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B. Ranking instructions: Rank the densities of the objects.

Ranking Order: Lowest   1 _____   2 _____   3 _____   4 _____   5 _____   6 _____   7 _____   8 _____   Highest

Or, the objects all have the same average density. _____ (indicate with a check mark)

Carefully explain your reasoning for ranking this way:

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C. Ranking instructions: Rank the sizes of the objects.

Ranking Order: Smallest   1 _____   2 _____   3 _____   4 _____   5 _____   6 _____   7 _____   8 _____   Largest

Or, the objects are all the same size. _____ (indicate with a check mark)

Carefully explain your reasoning for ranking this way:

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D. Ranking instructions: Rank the lengths of a day for each object.

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

Or, the length of a day is the same for each object. _____ (indicate with a check mark)

Carefully explain your reasoning for ranking this way:

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