

# Astronomy Ranking Task: Kepler's Laws - Orbital Motion

## Exercise #4

**Description:** The table below provides a partial list of the orbital periods (in years), and orbital distances (in AU) for six planets orbiting a one solar-mass star. The mass of each planet is also provided (in Earth masses).

PLANET	ORBIT DISTANCE (Semi-major axis in AU)	PERIOD (Years)	MASS (Earth Masses)
A		20.0	500
B	0.8		375
C	3.0		100
D		2.0	50
E	5.0		3
F		3.5	0.5

**Ranking Instructions:** Use the provided information to rank the distance (from farthest to closest) of the planets (A – F) from the star. Note that it is not necessary, but may be helpful, to complete the table before making your rankings.

**Ranking Order:** Farthest 1 \_\_\_\_ 2 \_\_\_\_ 3 \_\_\_\_ 4 \_\_\_\_ 5 \_\_\_\_ 6 \_\_\_\_ Closest

Or, the orbital distance for each of the planets would all be the same. \_\_\_\_\_ (indicate with check mark).

**Carefully explain** your reasoning for ranking this way:

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