GRAVITY COMPARATIVE ANALYSIS

View the data in the table below, and then answer the questions based on what you observe. Try to determine what relationships exist or don't exist that influence gravity.

Planet	Mass of Planet (kg; scale by 10^{23})	Gravity on Planet (N)	Gravitational Pull Sun Has on Planet (N; scale by 10^{21})	Distance to Sun (km; scale by 10^9)	Orbital Period around Sun (Days)	Orbital Speed around Sun (km/s)
Mercury	3.285	3.70	13.06	57.9	88	47.87
Venus	48.67	8.87	55.38	108.2	225	35.02
Earth	59.72	9.81	35.41	149.6	365	29.78
Mars	6.39	3.71	1.64	227.9	687	24.08
Jupiter	18,980	24.79	416.15	778.3	4,380	13.07
Saturn	5,683	10.44	36.86	1,427	10,585	9.69
Uranus	868.1	8.87	1.40	2,871	30,660	6.81
Neptune	1,024	11.15	0.67	4,497.1	60,225	5.43

Questions

1. Reading data tables starts with just scanning the data and seeing what pops out.
    a. For you personally, what pops out when you scan the table?

    b. What do you think matters about these values?

    c. Are there opposite examples of the values that popped out to you? What do you think matters about those values?

2. Based on what you know so far, why do you think this table is about the planets and not objects on Earth?

3. What is the difference between "Gravity on Planet" and "Gravitational Pull Sun Has on Planet"?

4. The planets are already listed in order from closest to the sun to farthest away.
   a. How do you know this?

   b. Are any of the other columns (up/down categories) in order? Why do you think this is?

   c. Why does the pattern of the orbital speed of planets around the Sun happen the way it does?

   d. Combining this table with your results during the gravity bucket lab, which of the factors below do you think influence gravity? Explain your thoughts.
      i. Mass

      ii. Volume

      iii. Distance

   e. If the data for the Sun was replaced with data for a black hole, how would the values in the table change?