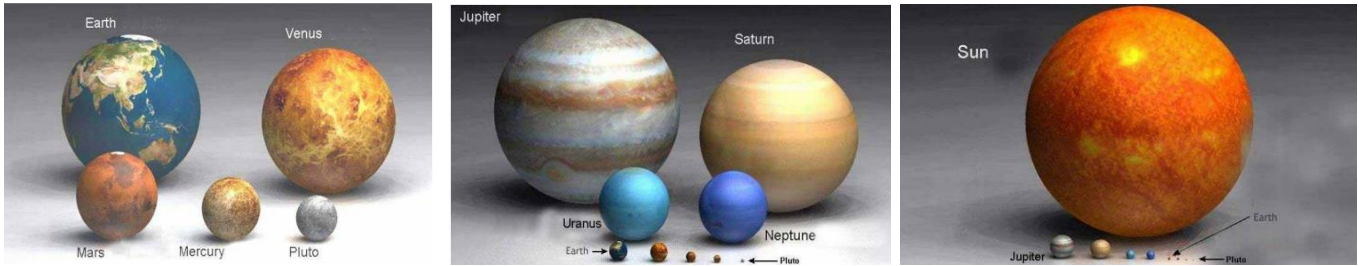


# Planet Size Comparison



**Directions:** Read the information from the data table, answer the questions and construct a graph to compare the influence of gravity on your weight on different planets.

## Part I: Gravity strength on different planets compared to the mass of the planet

<b>Important Information:</b>	1 Earth Mass = 5,980,000,000,000,000,000,000 kg or $5.98 \times 10^{24}$ kg									
<b>Figure 1: Mass and gravity for various planets and satellites</b>										
	Mercury	Venus	Earth	Moon	Mars	Jupiter	Saturn	Uranus	Neptune	Pluto
Mass (Earth Masses)	.055	.82	1	.01	.11	318	95.2	14.5	17.1	.0025
Surface Gravity (g)	.38	.91	1	.16	.38	2.34	1.06	.89	1.12	0.06

### Analysis Questions:

1. What **claim** can you make about the effect of mass on gravity? Use **evidence from the data table** to support your claim. Include **justification** to explain your claim and evidence. (CEJ Science writing)
2. Weight = mass x gravity. How would your location in the solar system affect your **weight**? Give an example.
3. Would your **mass** be affected? Explain.
4. If you were selected to go on the mission to Mars, what would your weight be on Mars?
5. Explain how that would affect your movement on Mars?

**Part II: Weight on different planets**

1. Complete data table below to show what your **weight** would be on each planet or satellite. You will need to perform calculations to determine this. Convert your weight in pounds (lb.) to kilograms (kg)
2. Construct a scatter plot or bar graph using the data you just calculated to demonstrate the effect of gravity on an object's weight.
  - a. Use SULTAN
  - b. Label each data point (i.e. Mercury)

<b>Important Information:</b>	weight = mass (kg) x gravity	1 g = 9.8 m/s <sup>2</sup>	SULTAN
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Planet	Mercury	Venus	Earth	Moon	Mars	Jupiter	Saturn	Uranus	Neptune	Pluto
Surface Gravity (g)	.38	.91	1	.16	.38	2.34	.92	.89	1.12	0.06
Weight (kg)										

**Analysis Questions:**

1. What **claim** can you make about the effect of gravity on an object's weight? Use **evidence** from the graph you constructed to support your claim. Include **justification** to explain your claim and evidence.
  
2. Are there any other factors that determine the gravitational attraction between bodies? Explain what they are (you might want to search the universal gravity law and equation for it).

If you want to see your weight on different planets [click here](#)

Figure 2: Density and Distance from the Sun of various planets and satellites. **Additional Information you might use to help you make conclusions**										
	Mercury	Venus	Earth	Moon	Mars	Jupiter	Saturn	Uranus	Neptune	Pluto
Density (kg/m <sup>3</sup> )	5427	5243	5514	3340	3933	1326	687	1271	1638	1830
Distance from the sun (10 <sup>6</sup> km)	57.9	108.2	149.6	0.384	227.9	778.6	1433.5	2872.5	4495.1	5870.0