

# How Much Do I Weigh?



In Kids Space Place at Space Center Houston, you will be able to step on scales and find out how much you weigh on three other planets. Get a jump start here and find out how much you weigh on all 9 planets, the Moon, and in outer space.

In space without gravity pulling down on them, Astronauts are essentially weightless. It is important to explore the difference between mass and weight. While Astronauts may not weigh anything in space and can float around freely, their body shape and size does not change. They still take up just as

much space as they do here on Earth. This is the important difference between mass and weight. We will explore this difference a little further and then your students can practice seeing how much they would weigh on other planets!

Weight measures the attraction of two objects to each other. When you step on a scale, it is actually measuring the attraction between you and the Earth and gives you a number in pounds or kilograms. Our mass is the amount of matter that we consist of. This mass does not change when we change planets. However, if we went from Earth to Mars, our weight

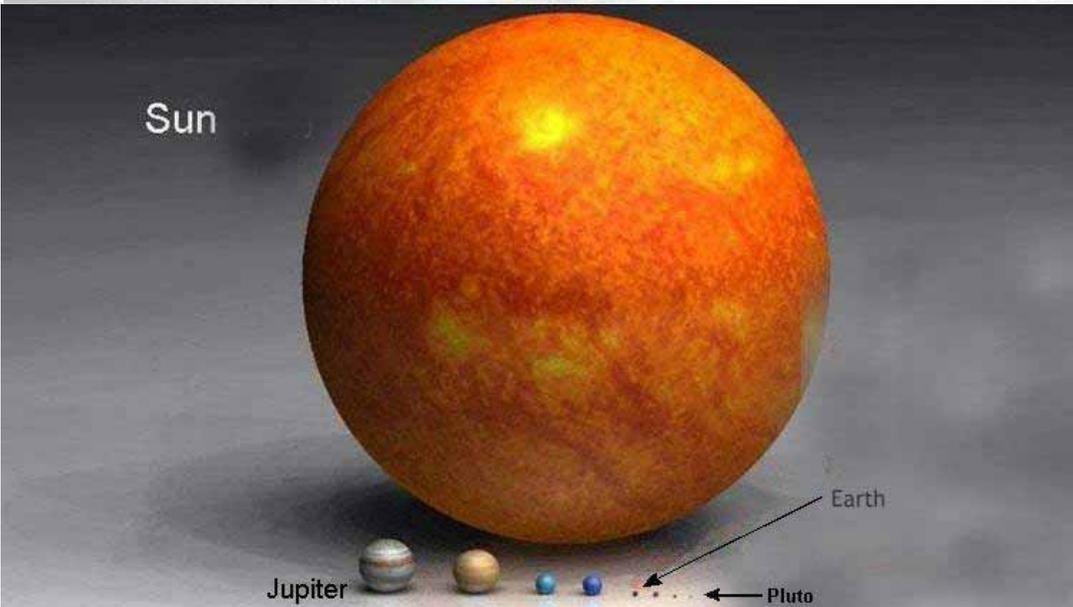
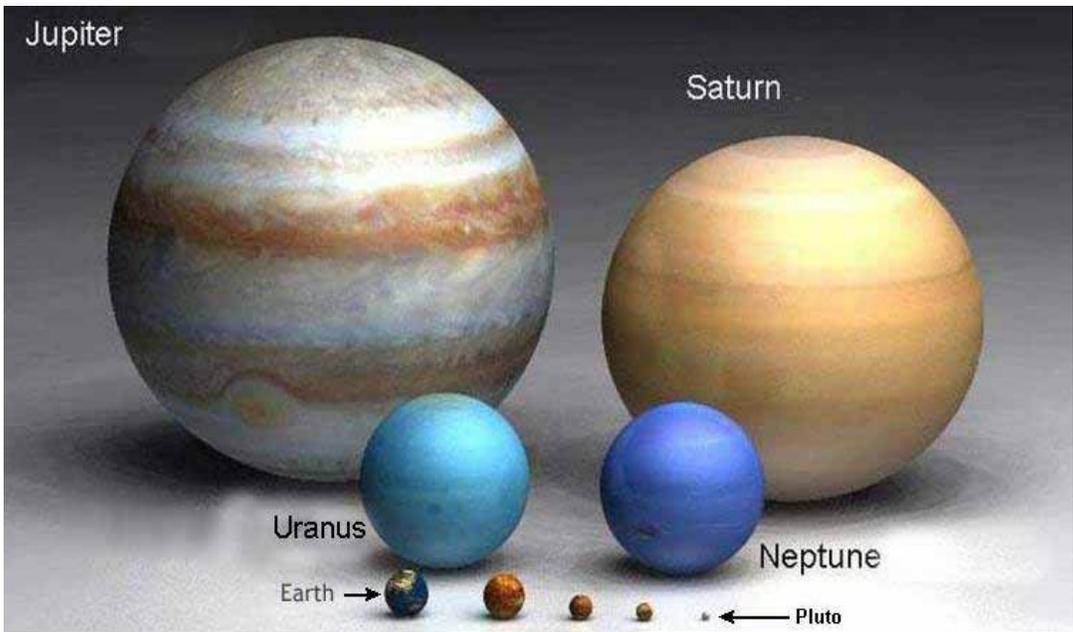
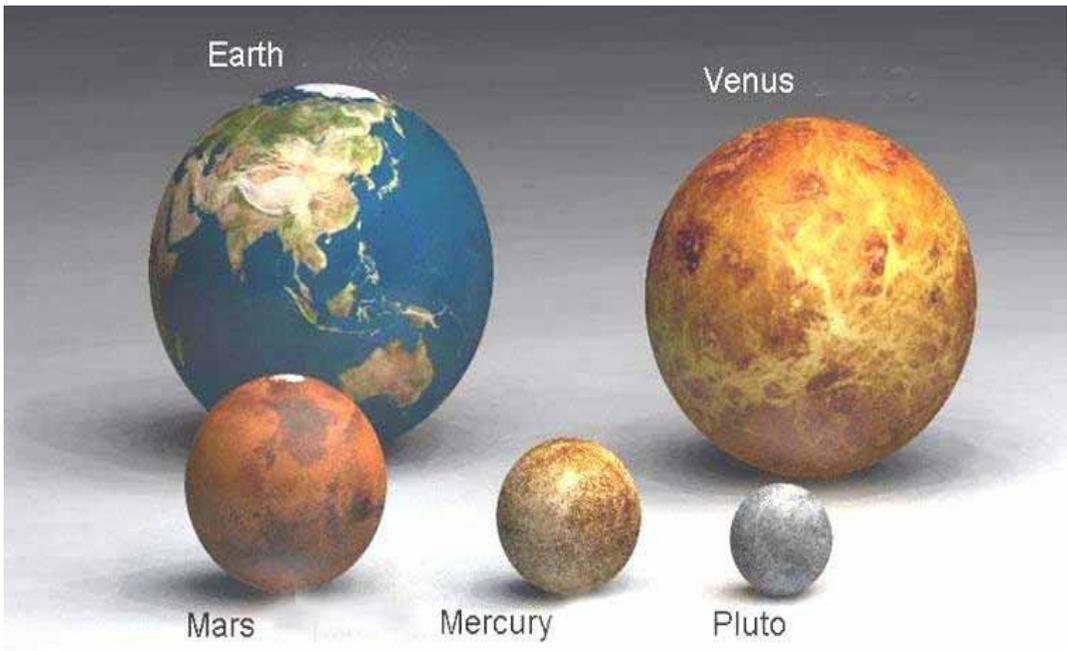


would change because Mars has less gravity than Earth. Gravity is a force pulling matter together. Earth's gravity wants to keep everything pulled toward the center of the planet keeping us from falling off the Earth. Every object in space has gravity. Stars, moons, and planets all have gravity. The amount of gravity they have depends on their size. So, a small planet has less and larger planet has more gravity. Just like the planets, a person with more mass has more gravity and therefore weighs more.



When Astronauts visited the Moon, which has one-sixth of our gravity, they bounced around on the surface as if they were floating with each step.

See the pictures comparing the size of the planets on the following page. Then on page 3 follow the activity procedure for your students to find their weight on other planets and planetary objects.



# How Much Do I Weigh?

1. Weigh yourself or guess your weight here on Earth.
2. Record your mass in the chart below. Your mass will be your weight here on Earth.
3. Use the chart below and the following formula to calculate your weight on other planetary objects.  $\text{Weight} = \text{mass} \times \text{gravity}$



Planetary Object	Mass	x	Gravity	=	Weight
Earth			1		
Moon			.166		
Outer Space			0		
Mercury			.38		
Venus			.91		
Mars			.38		
Jupiter			2.14		
Saturn			.91		
Uranus			.86		
Neptune			1.1		
Pluto			.08		
The Sun			28		