Gravity beyond Earth

If you throw or drop a ball, it falls to Earth. The reason the ball always falls is gravity. Gravity is a force—a push or a pull. Every time you let a ball go from your hand, it is pulled back to Earth. It's the same thing that keeps people, rocks, and other objects from floating off into space. But gravity does not only apply to Earth—it occurs in space as well.

Mass and Distance

The strength of gravitation depends on two things. First, it depends on the mass, or amount of matter, that a body contains. A body with a large amount of mass has a stronger gravitational force than a body with a small amount of mass. A massive object, such as a planet, has a stronger pull than a smaller object, like a boulder.

Second, the strength of gravitation depends on the distance between two bodies. The force of gravitation is strong between bodies that are close together, but it gets weaker as the bodies become farther apart.

Away from Earth

Earth's gravity affects us because Earth is very large and we are very close to it. Your weight is the measurement of the force of Earth's gravity on your mass. But if you were to travel into space, you would eventually escape Earth's pull. When you came close to other large objects—such as planets and moons—you would be affected by their gravity.

If you stood on the surface of the Moon, its gravity would hold you down, just as Earth's does. But because the Moon is smaller than Earth, its pull would be weaker. So your weight would be a fraction of what it is on Earth. You would be able to leap 10 feet (3 meters) off the ground. Lifting heavy weights would be easy. Also because of the Moon's weaker gravity, a ball dropped on the Moon would fall much more slowly than one dropped on Earth.

If you were to tour the planets of the solar system, you would find that your weight would be different at each stop. It would depend on the mass of that planet. You would be the heaviest on Jupiter, where your weight would be more than twice what it is on Earth. But on Mercury and Mars, you'd weigh less than half what you weigh on Earth.

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Fact Finder

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1. _____
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1. _____
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