Name _____

The Mysteries of Gravity

Short Answer Key

1. Gravitational acceleration is the rate at which an object near Earth's surface accelerates toward the Earth due to gravity. It is approximately 9.8 m/s^2, meaning that an object's speed increases by 9.8 meters per second every second it falls.
2. Gravity is responsible for the Moon's orbit around the Earth. The gravitational attraction between the Earth and the Moon keeps the Moon in a continuous orbit, preventing it from flying off into space or falling to Earth.
3. Escape velocity is the minimum speed required for an object to break free from a celestial body's gravitational pull. It is crucial for space exploration because exceeding escape velocity is necessary to leave a planet or moon's orbit. Escape velocity varies on different celestial bodies, with smaller bodies having lower escape velocities.
4. Black holes are regions in space where the gravitational pull is so strong that nothing, not even light, can escape from them. This extreme gravitational pull is a result of the immense mass concentrated in a small space when massive stars collapse under their own gravity.
5. The gravity on Mars is weaker than that on Earth, about 38% of Earth's gravity. This lower gravity would affect various aspects of space exploration on Mars, such as the weight of objects, the force required for takeoff and landing, and the physical effects on astronauts.