

Q1 What does Kepler's first law state?

According to Kepler's first law, all the planets revolve around the Sun in elliptical orbits, with the Sun as one of the foci.

Q2 What does Kepler's second law state?

According to Kepler's second law, the speed at which the planets move in space continuously changes. The second law helps to explain that when the planets are closer to the Sun, they will travel faster.

Q3 What is Kepler's third law?

Kepler's third law, also called the law of periods, states that the square of the orbital period is proportional to the cube of its mean distance, R.

Q4 Why are the orbits of the planets not circular?

For the orbits to be circular, it requires the planets to travel with a certain velocity, which is extremely unlikely. If there is any change in the velocity of the planet, the orbit will be elliptical

Q1 Will your weight be constant when you are travelling to Greenland from Brazil?

No, it will increase. As the acceleration due to gravity is greater at the poles and lesser at the equator, because of the bulged oblate shape of the earth, we will feel heavier at Greenland. (Greenland is closer to the North Pole, and Brazil is closer to the equator).

Q2 Can you screen the effect of gravitation by any material medium?

No, the gravitational effect cannot be screened, unlike electrostatic force, because the gravitational force does not depend on any medium.

Q3 Why are space rockets launched eastward?

The Earth spins (rotates) from west to east in 24 hours. If the space rockets are launched in the same direction, the relative velocity of the rocket increases, which helps it to rise without much fuel.

Q4 Why does a bouncing ball bounce higher on hills than on planes?

As the altitude increases, the acceleration due to gravity decreases. Therefore, the ball bounces higher in hills than on planes.

Q5 The gravitational potential energy is negative. Why?

The reference point of zero potential energy is at infinity, and the gravitational force is always attractive. Therefore, the gravitational potential energy, which is the negative of work done, is always negative.

Q6 Why is Newton's law of gravitation called universal law?

Newton's law of gravitation holds good irrespective of the nature of the interacting bodies at all places and at all times.

Q7 What is the weight of the body at the centre of the Earth?

The weight of the body at the centre of the earth is zero.

$$W = mg = 0$$

(g at the centre of the earth is zero).

Q8 Does friction arise due to gravitation?

Friction does not arise due to gravitation. Its origin is electrical in nature.