

How Well Do You Know Newton's Laws Of Motion ?



4.1. Please state *Newton's first law of motion*.



. A body remains at rest or in a state of uniform motion in a straight line until the action of other bodies compels it to change that state. ■



4.2. Is this law valid in all frames of reference ?



. I don't understand your question. ■



4.3. If you say that a body is at rest, you mean that it is stationary with respect to some other body which, in the given case, serves as the reference system, or frame of reference. It is quite pointless to speak of a body being in a state of rest or definite motion without indicating the frame of reference. The nature of the motion of a body depends upon the choice of the frame of reference. For instance, a body lying on the floor of a traveling railway car is at rest with respect to a frame of reference attached to the car, but is moving with respect to a frame of reference attached to the track. Now we can return to my question. Is Newton's first law valid for all frames of reference ?



. Well, it probably is. ■