

## 12A: Gravitational Force Near the Surface of the Earth, First Brush with Newton's 2nd Law

Some folks think that every object near the surface of the earth has an acceleration of  $9.8m/s^2$  downward relative to the surface of the earth. That just isn't so. In fact, as I look around the room in which I write this sentence, all the objects I see have zero acceleration relative to the surface of the earth. Only when it is in freefall, that is, only when nothing is touching or pushing or pulling on the object except for the gravitational field of the earth, will an object experience an acceleration of  $9.8m/s^2$  downward relative to the surface of the earth.

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