

## 16.1: First Law of Motion

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Newton's first law states that bodies have a property called inertia, which means that once given a velocity, they will travel at that same velocity forever, unless acted upon by some outside force. Nobody knows why this is; it's just the way the Universe works.

In retrospect, this was a brilliant deduction by Newton. In real life, if you push an object across the floor, it will slide for a while, then come to a stop. This behavior caused Aristotle to believe a moving body was filled with some sort of substance that was “used up” as the body moved. But in spite of observations like this, Newton was able to deduce that this slowing of an object is due to an external force (friction), and that

if it weren't for friction, the body would travel at the same velocity forever.

Today we have a little easier time of it than Newton did—we can imagine the behavior of bodies in space, where frictional forces are negligible.

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