

Newton's Laws of Motion

Newton is perhaps most famous for three laws about the way things move. Newton didn't write the laws. Other scientists studying Newton's work wrote them and called them Newton's Laws of Motion. Newtonian Mechanics are based on the Laws of Motion.

Newton's First Law

Newton's First Law of Motion is the law of inertia (in-UR-shuh). Inertia means resistance to changes in motion. The law says that, so long as an unbalanced force doesn't act on an object, then it will keep doing what it's already doing. This works for things that are still and for things that are moving. Things that are still will stay still. Things that are moving will keep moving in a straight line with the same speed.



Newton's Second Law

Newton's Second Law is the law of acceleration. It describes what happens when you apply a force to an object. It says that the bigger the force, the more the object speeds up or slows down. It also says that the object will always move in the same direction of the force. A bigger force is needed to make a heavier object speed up or slow down by the same amount as a light object. This makes sense. For example, a bowling ball is harder to throw than a tennis ball. It is harder to stop a car than a bicycle.

Newton's Third Law

Newton's Third Law of Motion is the law of action and reaction. It says that for every action, there is an equal and opposite reaction. This means that whenever a force pushes on an object, the object pushes back in the opposite direction. The force of the object pushing back is called the reaction force.

This law explains many things. For example, it explains why we can move a rowboat in water with an oar. The water pushes back on the oar as much as the oar pushes on the water. This moves the boat. It also explains why a chair stays where it is instead of crashing through the floor. The floor pushes back and keeps it there. Also, when you hit a baseball with a bat, the ball pushes on the bat as much as the bat pushes on the ball. Hit it just right, and all that force creates a home run!

Comprehension Question

How do you use Newton's Laws of Motion?

