

Newton's 1st Law Inertia



An object at rest
stays at rest.

An object in motion
stays in motion.

It keeps its same speed
and direction

unless acted upon by
an outside force.

If I yank a paper suddenly from underneath a stack of Christmas ornaments, or a table setting, it won't fall over. [video](#)

Newton's 2nd Law $F = ma$



A golf club can apply 4000 lbs of force to a golf ball. It can go from 0 to 150 mph in 0.0005 seconds, an acceleration of 50,000 G. A golf ball weighs 1.620 oz (45.9 g).

Newton's 3rd Law



For every action, there is an **equal and opposite** reaction.

Equal and Opposite: My mom and friend's weight was a downward force. The rope swing tension was equal force upward. Balloons were a buoyant force up. My hand holding the balloons was equal and opposite force down.



Newton's 3rd Law



Equal and Opposite: The upward tension of the fishing rod is equal to the fish pulling downward.

Newton's 3rd Law

For every action, there is an **equal and opposite** reaction.



Equal and Opposite: The downward force of the rocket fuel is opposite to the upward force on the rocket.