

Types of Forces – Lab Guide

Applied Force F-app	<p>An applied force is a force that is applied to an object by a person or another object. If a person is pushing a desk across the room, then there is applied force acting upon the object. The applied force is the force exerted on the desk by the person.</p>
Gravity Force (also known as Weight) F-grav	<p>The force of gravity is the force with which the earth, moon, or other massively large object attracts another object towards itself. By definition, this is the weight of the object. All objects upon earth experience a force of gravity that is directed "downward" towards the center of the earth. The force of gravity on earth is always equal to the weight of the object as found by the equation:</p> $F_{\text{grav}} = m * g$ <p>where $g = 9.8 \text{ N/kg}$ (on Earth) and $m = \text{mass (in kg)}$</p>
Normal Force F-norm	<p>The normal force is the support force exerted upon an object that is in contact with another stable object. For example, if a book is resting upon a surface, then the surface is exerting an upward force upon the book in order to support the weight of the book. On occasions, a normal force is exerted horizontally between two objects that are in contact with each other. For instance, if a person leans against a wall, the wall pushes horizontally on the person.</p>
Friction Force F-fric	<p>The friction force is the force exerted by a surface as an object moves across it or makes an effort to move across it. Usually the friction force opposes the motion of an object. For example, if a book slides across the surface of a desk, then the desk exerts a friction force in the opposite direction of its motion. Friction results from the two surfaces being pressed together closely, causing attractive forces between molecules of different surfaces.</p>
Air Resistance Force F-air	<p>The air resistance is a special type of frictional force that acts upon objects as they travel through the air. The force of air resistance is often observed to oppose the motion of an object. This force will frequently be neglected due to its negligible magnitude (and due to the fact that it is mathematically difficult to predict its value). It is most noticeable for objects that travel at high speeds (e.g., a skydiver or a downhill skier) or for objects with large surface areas</p>
Drag Force F-drag	<p>Force that resists motion through a fluid. Also called Fluid Friction. <i>See Air Resistance</i></p>
Elastic Force F-elastic	<p>There are two types of elastic forces: tension and compression.</p>
Tension Force F-tens	<p>The tension force is the force that is transmitted through an elastic object when it is pulled tight by forces acting from opposite ends. Tension forces are two forces acting on one object, moving in opposite directions (away from one another) to stretch the object. For example, the large cables that hold up a bridge exert an upward force of tension on the bridge.</p>
Compression F-comp	<p>Compression is an elastic force that squeezes or pushes matter together. These are actually two forces acting on one object, moving in opposite directions (towards one another) to compress or deform the object. When a person sits on a sofa cushion, the cushion exerts an upward force of compression that holds the person up.</p>
Buoyancy F-buoy	<p>An upward force exerted on an object in a fluid. When a boat is floating on the surface of the lake, the water is exerting a buoyant force upward on the boat.</p> <p>Fluid = a substance with no fixed shape (gas or liquid)</p>
Magnetic Force F-mag	<p>attraction or repulsion that arises between charged particles because of their motion</p>
Electric Force F-elec	<p>positive charge exerts an invisible, attractive force on the electron (negative part of an atom) called static electricity</p>