Force Encyclopedia Article

Force

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Force

Force is the term used for an outside influence exerted by one body on another that produces a change in state of **motion** or state of configuration. This limited meaning in science compared to our everyday usage is most important because of the specific results of this outside influence.

Force producing a change in state of motion gives a body **acceleration**. If forces acting on a body produce no acceleration, the body will experience some change in configuration: a change of size (longer or shorter), a change of shape (twisted or bent), or a positional change (relative to other masses, charges, or magnets). Changes of size or shape involve elastic properties of materials.

Forces are given various names to indicate some specific character. For example, a wagon can be made to go forward by pushing from behind or pulling from the front, so push or pull is more descriptive. Electrical and magnetic forces can result in attraction (the tendency to come together) or repulsion (the tendency to move apart) but **gravitational force** results only in attraction of masses. The gravitational force exerted by Earth on a body is called **weight**. A body moving, or attempting to move, over another body experiences a force opposing the motion called **friction**. When wires, cables, or ropes are stretched, they then in turn exert a force that is called tension. Specific names give information about the nature of the force, what it does, and direction of action.