

Forces and Principles

Gravity, the force of attraction of an object toward the center of the earth, or toward another object having mass.

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Inertia, an object retains its state of rest or its velocity along a straight line so long as it is not acted upon by an external force.

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Centripetal force, a force acting on a moving object at an angle to the direction of motion, tending to make the object follow a circular or curved path.

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Friction, surface resistance to the relative motion of an object that is sliding or rolling.

Forces and Principles

Forces can be **balanced**—acting equally on an object, or **unbalanced**—acting unequally (one having a stronger influence than the other.)

Describing Motions

Speed, how fast an object is moving measured as distance traveled divided by time of travel. Speed is a number value only.

Describing Motions

Velocity, the rate at which an object changes position. Velocity includes speed and direction. It is measured as change in position divided by time.

Describing Motions

Acceleration, the rate of increase of speed or the rate of change of velocity.

Describing Motions

Deceleration, the rate of decrease of speed or velocity.

Describing Motions

Simple Movements, movement that is of constant velocity and in a straight line.

Describing Motions

Complex Movements, movement that includes changes in direction, and/or circular motion with forces acting at angles.

Describing Motions

Force Vector, a specific amount of force applied to an object in a specific direction.

Newton's Laws

The first law (the law of inertia) states that an object at rest stays at rest or an object in motion moves in a straight line unless it is acted upon by a force.

Newton's Laws

The second law states that the acceleration of an object is proportional to the net force acting on the object, and to the object's mass. (As the force on an object is increased, its acceleration is increased. As the mass of an object is increased, its acceleration decreases.)

Newton's Laws

The third law states that for every action, there is an equal and opposite reaction. (All forces come in pairs, acting in equal strength, and opposite directions)