

TECHNICAL DEFINITIONS.

The unit of work is the work done in lifting one pound through a height of one foot, or work done when a resistance of one pound is overcome through a space of one foot, and is called the foot-pound.

The number of units of work performed = $P \times S$ where P equals the force applied, or the resistance overcome in pounds, and S equals the space moved over in feet.

Force is any action which can be expressed simply by weight, and which can be realized only by an equal amount of reaction, and is the first element in dynamics. All bodies in nature possess the incessant virtue of attracting one another by gravitation, which action is recognized as force.

Velocity is speed or rate of motion, and is the second element in dynamics.

Time implies a continuous perception recognized as duration, or that measured by a clock, and is the third element in dynamics.

Power is the product of force and velocity, that is to say, a force multiplied by the velocity with which it is acting is the power in operation. Power is the differential of work, or any action that produces work, whether mental or physical. Power multiplied by the time of action is work, work divided by time is power.

Work is the product obtained by multiplying together the three simple elements, force, velocity, and time.

The energy of a body is its capacity for performing work.

The potential energy, or the energy stored in a body, is the product of the effort and the distance through which it is capable of acting.

Kinetic energy, or accumulated work of a moving body, is the product of the mass and half the square of its velocity, or the weight of the body multiplied by the height from which it must fall to gain its velocity.

Gravity is the mutual tendency which all bodies of nature have to approach each other, or the tendency of any falling body to approach the centre of the earth.

The mass of a body is its weight divided by 32.2.

The acceleration of motion is the rate of change in the velocity of a moving body, which is increased at different intervals of time.

The unit of acceleration is that which imparts unit change of velocity to a moving body in unit time, or an acceleration of one foot per second in one second.

The acceleration due to gravity varies at different places on the earth's surface. It is reckoned at 32.2 feet per second in this country, and is generally indicated by the letter *g*.

Retarded motion. The motion of a body, instead of being accelerated, may be retarded, that is, its velocity may decrease at different intervals of time.

Varied motion is usually understood to refer to a moving body, when the change varies in either accelerated or retarded motion, at different intervals of time.

Inertia is that quality inherent in matter whereby it is absolutely passive or indifferent to a state of motion.

A couple consists of two parallel forces which are equal, and act in opposite directions.

The weight of a body is the pressure which the mutual attraction of the earth and the body causes that body to exert on another with which it is in contact— mass multiplied by 32.2.

Linear Velocity is the rate of motion in a straight line, and is measured in feet per second, or per minute, or in miles per hour.