Define 1 joule of work done.

Answer:

Joule is the International System unit of electrical, mechanical, and thermal energy.

$$J = \frac{kg \cdot m^2}{s^2} = N \cdot m = Pa \cdot m^3 = W \cdot s$$

where

$$N - newton$$

$$m - meter$$

$$kg - kilogram$$

$$s - second$$

$$Pa - pascal$$

$$W - watt$$

One joule can also be defined as:

- The work required to move an electric charge of one coulomb through an electrical potential difference of one volt, or one '"coulomb volt" (C·V). This relationship can be used to define the volt.
- The work required to produce one watt of power for one second, or one "watt second" (W·s) (compare kilowatt hour). This relationship can be used to define the watt.

The "energy required to lift a 1 kilo object 10 cm of the ground" is a good approximation to a Joule but not exactly true. Two equivalent definitions of the "Joule" are "the work done by a 1 Newton force in moving an object 1 meter" and "the kinetic energy of a 1 kg object moving at 1 meter per second". Since a Newton is defined as "the force necessary to accelerate a 1 kg object at 1 meter per second per second", it has basic units of $kg\ m/s^2$ and so, multiplying by that "1 meter", a Joule has basic units of $kg\frac{m^2}{s^2}$. Kinetic energy, on the other hand is (1/2)mv^2 and so has basic units of "kg times (meter per second squared)" or $kg(\frac{m}{s})^2$ just as before.