

Work, Energy & Power

Physics

The definitions, and the relationships between them.

The core relationships.

Quantity	Formula	Unit
Work	$W = Fs \cos \theta$	J
Kinetic energy	$E_k = \frac{1}{2}mv^2$	J
Gravitational PE	$E_p = mgh$	J
Elastic PE	$E = \frac{1}{2}kx^2$	J
Power	$P = W/t = Fv$	W
Efficiency	useful $\div$ total $\times$ 100	%

A force perpendicular to motion does no work. Circular motion at constant speed involves a force and zero work.