DEFINITION OF POWER

Power is the quotient of work and time interval.

$$P = \frac{W}{\Delta t} \quad \text{or} \quad P = \frac{E}{\Delta t}$$

Quantity	Symbol	SI unit
power	P	W (watt)
energy transferred	E	J (joule)
work done	W	J (joule)
time interval	Δt	s (seconds)

Note: A watt is equivalent to a joule per second: $W = \frac{J}{s}$

1 hp=amount of work done by horses to raise 550lbs 1 foot in 1 second approx. 746Watts

Jan 8-6:16 PM

DEFINITION OF EFFICIENCY

Efficiency is the ratio of useful energy or work output to the total energy or work input.

$$\text{Efficiency} = \frac{E_o}{E_i} \times 100\%$$

or

$$\text{Efficiency} = \frac{W_o}{W_i} \times 100\%$$

Quantity	Symbol	SI unit
useful output energy	E_o	J (joule)
input energy	E_i	J (joule)
useful output work	W_o	J (joule)
input work	W_i	J (joule)
efficiency	(none)	none; efficiency is a ratio; units cancel in ratios

Jan 10-7:36 PM