

# POWER

POWER is the rate at which energy is transferred.

In other words, power is the rate at which the external force changes energy of the system

- Units:  $\text{J/s} = \text{W} = \text{Watt}$
- Alternative unit: horsepower = 1hp is approximately 735.5 Watts
- Scalar quantity

$$P = \frac{W}{t}$$

$$P = \frac{Fd}{t} = Fv$$

Example 1: How much power is developed by a person who takes 105 seconds to push a box 50.0 m with force of 150.0 N at an angle of  $40^\circ$  above the horizontal? Assume that the box is moved along horizontal surface.

Example 2a) How much work was done by an engine that developed power of 822 W over 35 s?

2b) If the engine used force of 575N to lift a load, how much was the load displaced? Assume that the load was lifted straight upwards.