## Work \& Power

Objectives
Define \& calculate work and power.

Identify appropriate units for work and power.


## Work

force and direction must be in the same plane for work to be done


## Power

rate at which work is done
$P=\frac{W}{t} \quad$ Unit: J/s or Watts (W)
$750 \mathrm{~W}=1 \mathrm{hp}$
$1 \mathrm{hp}=550 \mathrm{ft} . \mathrm{lb} / \mathrm{s}$


## Work

force acting through a distance

$$
W=f \cdot d
$$

Unit: N-m or Joules (J)


| Weight | \# | Time | Dist | Work | Power |
| :--- | :--- | :--- | :--- | :--- | :--- |
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## Assignments . . .



- Begin Chapter 7 Homework \# 1-5


| 1. Atlas | 2. Hercules |
| :---: | :---: |
| $\begin{aligned} W & =f \cdot d \\ 400 \mathrm{~J} & =2000 \mathrm{~N} \cdot 2 \mathrm{~m} \end{aligned}$ | $\omega=F \cdot d$ $4000 \mathrm{~J}=4000 \mathrm{~N} \cdot 1 \mathrm{~m}$ |
| $\begin{aligned} & \text { 2. } P=\frac{w}{t} \\ & 4000-4000 J \end{aligned}$ | $\begin{aligned} & P=\omega / t \\ & \frac{40005}{58 a}=1333 \mathrm{~W} \end{aligned}$ |

