

## General Physics

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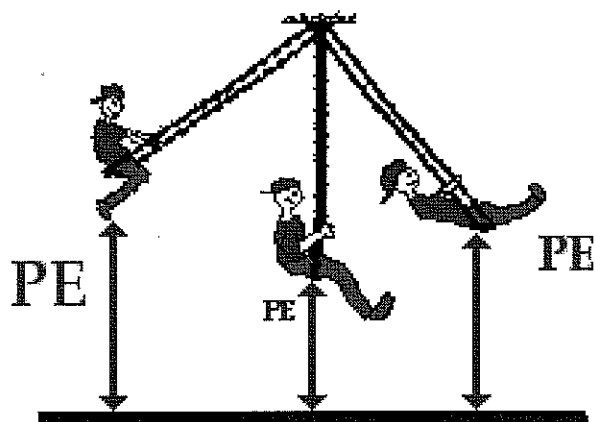
### Concept Resource

#### Potential Energy

Mechanical potential energy is energy possessed by an object by virtue of its position relative to some zero energy origin. This origin can be chosen arbitrarily.

#### Gravitational Potential Energy

This is the energy stored in an object that comes from the work gravity does on an object as it changes its vertical position relative to some zero energy origin.



$$E_p = mgh$$

$E_p$  = Potential Energy

$m$  = Mass

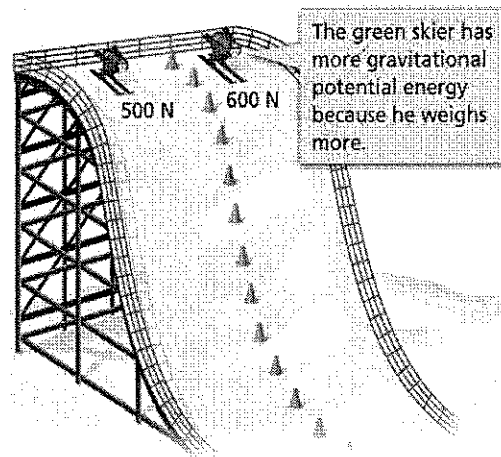
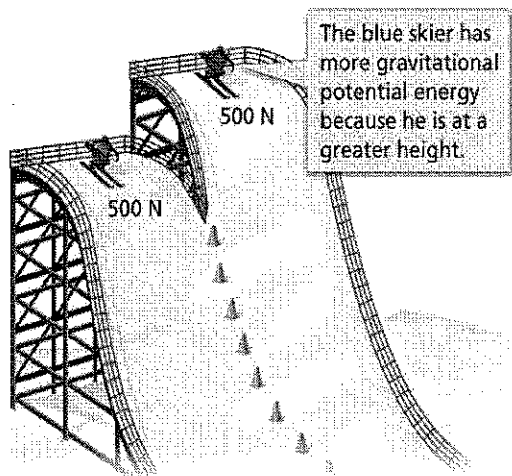
$g$  = Gravitational Field Strength

$h$  = Vertical Height

\* Close to the Earth's surface

## Potential Energy

- Gravitational potential energy increases as weight and height increase.



## Elastic Potential Energy

This is the energy stored in mass-spring system. This energy comes from the work that the restoring force from the spring does on an object as the spring is displaced (stretched or compressed) relative to some zero energy origin usually located at the spring's equilibrium position. Hooke's law gives the relationship between a spring's restoring force and its displacement in relation to its spring constant  $k$ . Stiffer springs have higher  $k$  values and therefore require more force to stretch or compress them by a certain amount.

