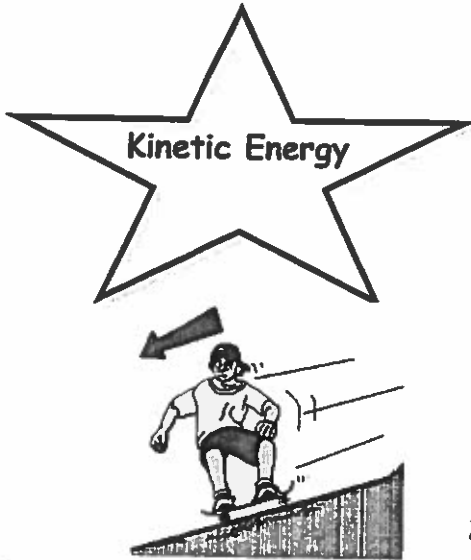


**NOTES**



**Energy:** the ability to do work or cause change.  
(measured in joules)

There are 2 basic kinds of energy:



Kinetic energy - the energy an object has due to its motion.

**\*\*Kinetic energy of an object depends on its mass and velocity\*\***

Kinetic energy increases ↑ as mass increases.

Kinetic energy increases ↑ as velocity increases.

So... the faster an object moves, the more kinetic energy it has!

\* Kinetic energy =  $\frac{1}{2} \times \text{mass} \times \text{velocity}^2$  \*

Question: A jogger whose mass is 70 kg is moving at a speed of 3 m/s. What is the jogger's kinetic energy? (show your work!)

$KE = \frac{1}{2} \times m \times v$

$KE = \frac{1}{2} (70\text{kg})(3\text{m/s})^2 = \frac{1}{2} (70\text{kg})(9\text{m/s}) = 315\text{joules}$

**Potential Energy**



Potential energy - stored energy that results from the position or shape of an object.

Ex: fuels, gasoline, food, tightly wound spring, etc.

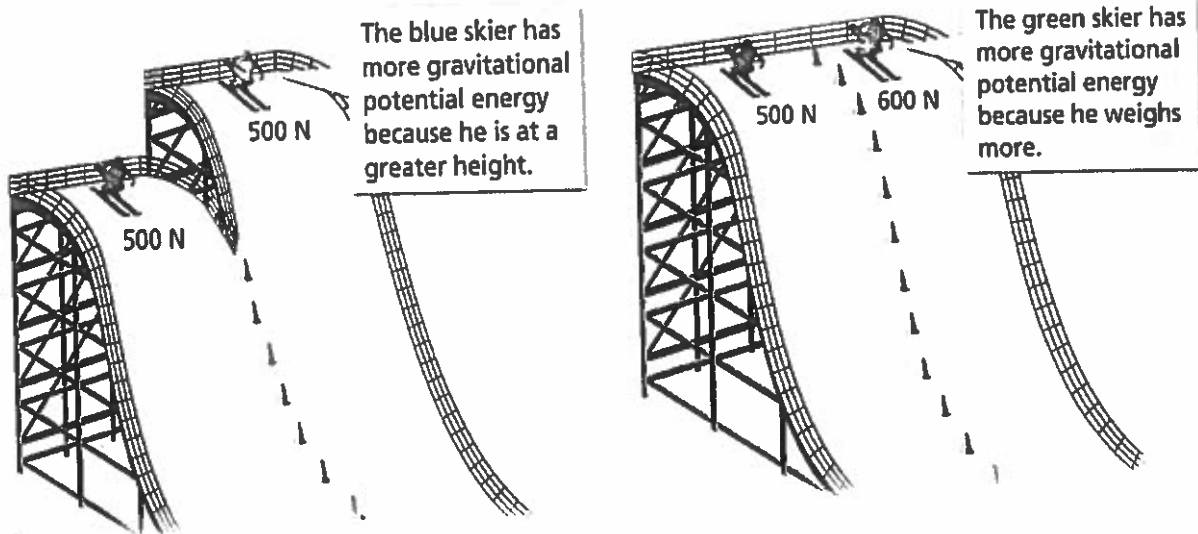
↳ the potential to do work!

Gravitational potential energy - potential energy related to an object's height; increases as weight + height increases.

\* Gravitational Potential Energy = weight x height \*

# Potential Energy

- Gravitational potential energy increases as weight and height increase.



## Questions:

- When you slowly raise an object, what happens to its potential energy? increases
- As a sky diver falls toward the earth, what happens to his/her potential energy? decreases; changes to kinetic energy
- A skier weighs 500N. If the ski jump is 40m high, what would the gravitational potential energy be? (measured in joules)  $GPE = W \times h = 500N(40m) = 20,000 \text{ joules}$

