Energy

Unit 3 Physics Essentials

What is energy?

- Ability to do work
- Scalar Quantity
- Unit: Joule (J)
- Can exist in many different forms and at the same time!
- What forms of energy are you familiar with?

Potential Energy

- Often called Gravitational Potential Energy
- Energy when an object has position
- "Stored" energy of position

P = mgh

m = mass (in kg) g = 9.8 N/kg h = height

Kinetic Energy

- Energy of Motion
- An object must be in motion to have kinetic energy

$$K = \frac{1}{2}mv^2$$

Conservation of Energy

Total energy never changes- moves from one form to another

Can I have kinetic and potential energy at the same time?



Kinetic vs Potential Energy

- Most Potential Energy?
- Most Kinetic Energy?
- Both Potential and Kinetic?



Practice Problems

- Justin Verlander can throw a baseball (mass = 0.145 kg) 98 miles per hour (43.6 m/s). What is the kinetic energy of the ball?
- 2. Because of the snow that fell, you decided to go sledding. The mass of you and your sled is 48 kg. You are sitting at the top of a hill that is 35 m high. What is your potential energy?
- 3. A car is traveling at 30 m/s and has a mass of 1200 kg. What is its kinetic energy?
- 4. A crane suspends an 800 kg iron beam 25 meters in the air. What is the beam's potential energy?