



# What is Energy?

The ability to do work. (force through a distance)

## KINDS OF ENERGY

### 1. Potential Energy

Stored energy resulting from relative positions of an object in a system. (stored, energy of Position)

#### Elastic Potential Energy

Stored in compressed or stretched materials

#### Chemical Potential Energy

Stored in the chemical bonds of molecules

#### Gravitational Potential Energy

Stored by position above the ground

$$\text{Gravitational PE} = mgh$$

(mass X acceleration due to gravity X height)

Read 6.4 (pages 87-88)

Do Practice Problems #1-3 (page 88)

### 2. Kinetic Energy

Energy of a moving object due to its motion.

(energy of motion) (depends on mass and velocity)

$$\text{KE} = 1/2mv^2$$

(half X mass X velocity<sup>2</sup>)

Read 6.5 (page 88)

Do Practice Problems #1-3 (page 89)



# What is Energy?

## **3. Mechanical Energy Read 6.3 (page 86)**

**The sum of the Kinetic and the Potential Energy of large-scale objects in a system.**

### **Atoms Have Energy of Motion**

**Explain what happens, on a molecular level, when a solid melts, then boils into a gas.**

**"The dance of the molecules"**

### **Chemical Bonds Have Stored Energy**

**Explain how molecules have energy in their bonds.**

**"From a Big Mac to energy"**

### **Energy Comes From the Sun (all except Nuclear power)**

**Explain how all life on earth is connected to the Sun.**

**"The Food Web" Read Section 6.11**

### **Electricity is Energy**

**Explain what electricity is and how it works.**

### **Energy is Transformed**

**Explain the transformations in a fly ball hit to .**

**Explain the transformations in a bungee jumper.**

**Explain why a ball doesn't bounce as high as dropped.**

### **Energy is Conserved Read Section 6.7**

**Explain the Law of Conservation of Energy.**

### **Nuclear, Solar, Wind, Geothermal Energy**

**Read Section 6.10**