



# The Nature of Energy

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# Recognizing Energy

- A runner starts out fast but then slows down.
- The runner is getting tired.
- The runner is running out of . . . **energy**.
- When something is moving, such as a runner, it has energy.



# Having Energy

- Imagine a sledge hammer is on the edge of a cliff.
- The hammer could fall.
- It has the *potential* to move. It has **potential** energy.
- When the hammer falls, it *is* moving. It has **kinetic** energy.



# Types of Energy



- Kinetic energy is the energy an object has due to its motion.
  - The faster an object moves the more kinetic energy it has.
  - The more mass a moving object has, the more kinetic energy it has.
- Potential energy is stored energy *or* energy of position.
  - The higher an object is from earth the more potential.
  - Energy something has due to its position.

# Defining Energy

- Look closer at the falling hammer.
- It is banging in a railroad spike.
- It is doing work!
- Energy is the ability to do work or to cause change.



# Forms of Energy



- Thermal energy (heat) is the kinetic energy of moving molecules
- Light energy (radiant energy) is the kinetic energy of moving photons.
- Electrical energy is the kinetic energy of moving electrons.
- Chemical energy is energy stored in chemical bonds.
- Nuclear energy is the energy stored in the nucleus of an atom.

Kinetic

Potential