



ENERGY TRANSFORMATIONS

Essential Question: What is the relationship between an object's potential and kinetic energy?

SC.7.P.11.2 Investigate and describe the transformation of energy from one form to another.

Also Assesses:

- **SC.6.P.11.1** Explore the Law of Conservation of Energy by differentiating between potential and kinetic energy. Identify situations where kinetic energy is transformed into potential energy and vice versa.
- **SC.7.P.11.3** Cite evidence to explain that energy cannot be created nor destroyed, only changed from one form to another.

BELL RINGER

Tabitha ate a turkey sandwich and an apple for lunch. Later that day, she ran 2 miles during soccer practice. Which of the following energy transformations occurred between lunchtime and the end of Tabitha's run?

- A. Thermal energy was converted to kinetic energy.
- B. Kinetic energy was converted to chemical energy.
- C. Electrical energy was converted to thermal energy.
- D. Chemical energy was converted to mechanical energy.

RIGHT SIDE INTERACTIVE JOURNAL "I DO"

Energy Transformations ESSENTIAL QUESTION:

ENERGY TRANSFORMATIONS

Kinetic Energy: the energy of _____.

Ex: a book falling to the floor.

Potential Energy: _____ energy (an object could POTENTIALLY move)

Ex: a book sitting on a shelf

Chemical Energy- Stored energy in _____.

Light Energy- Electromagnetic energy Travels as _____.

Heat Energy-Transfer of molecular _____ energy (_____ → _____)

Mechanical Energy- Transferred by _____ parts.

Sound Energy- Caused by _____ in matter.

Electrical Energy- _____ particles that follow a path.

Chemical Energy:

Potential Chemical: Energy stored in _____.

Kinetic Chemical: Batteries powering your _____.

Mechanical Energy:

Potential Mechanical: Parts of your bike _____ move.

Kinetic Mechanical: Parts of your bike create _____
when you move the pedals.

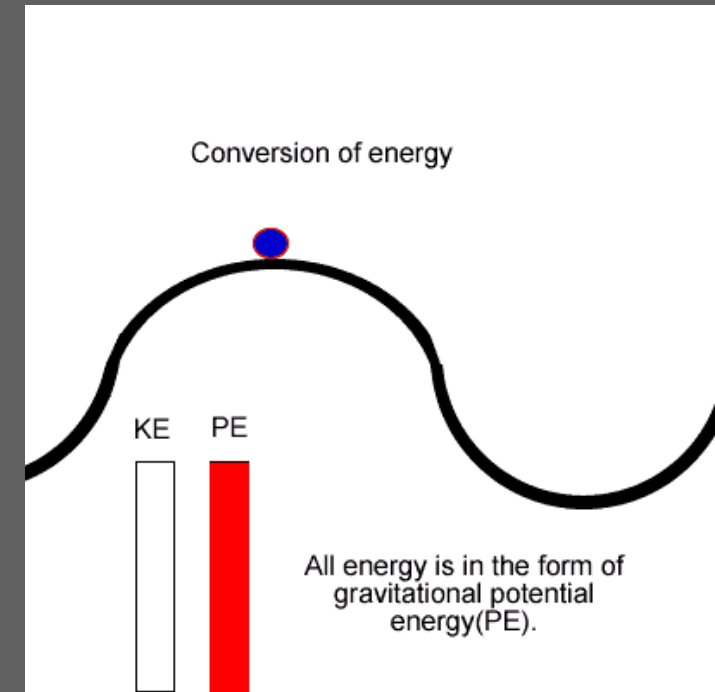
An object can have both potential and kinetic energy at the same time...

but the amount of each can change quickly.



TYPES OF ENERGY I DO

- **Kinetic Energy:** the energy of motion
 - Ex: a book falling to the floor.
- **Potential Energy:** stored energy (an object could POTENTIALLY move)
 - Ex: a book sitting on a shelf

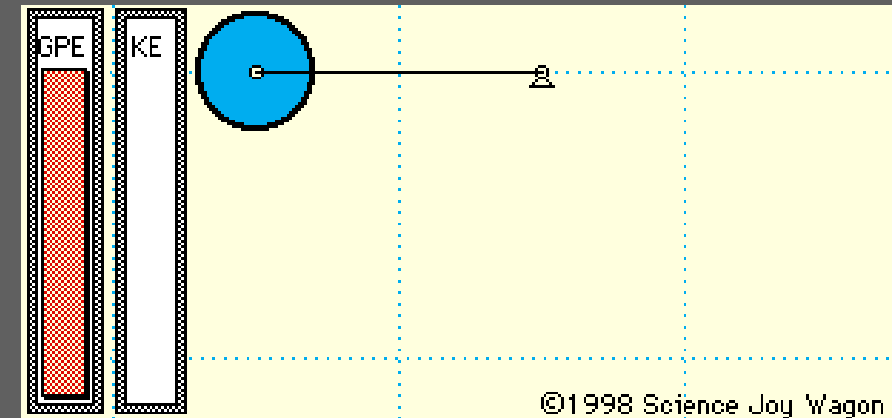


MORE TYPES OF ENERGY I DO

- Chemical Energy- Stored energy in compounds.
- Light Energy- Electromagnetic Energy Travels as radiation.
- Heat Energy- Transfer of molecular kinetic energy(Hot→Cold)
- Mechanical Energy- Transferred by moving parts.
- Sound Energy- Caused by vibrations in matter.
- Electrical Energy- Charged particles that follow a path.

GRAVITATIONAL POTENTIAL ENERGY

- Gravity: the force of attraction between two objects with mass.
- Gravitational Potential Energy: The amount of stored energy can be different depending of the distance it could fall. The farther you fall, the greater the GPE!



POTENTIAL AND KINETIC ENERGY IN DIFFERENT FORMS OF ENERGY

Chemical Energy:

- Potential Chemical: Energy stored in batteries.
- Kinetic Chemical: Batteries powering your electronics.

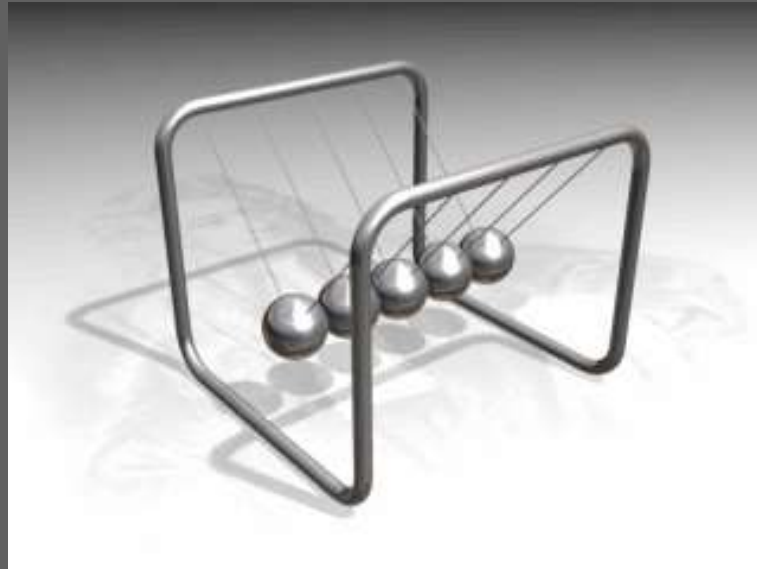
Mechanical Energy:

- Potential Mechanical: Parts of your bike could move.
- Kinetic Mechanical: Parts of your bike create movement when you move the pedals.

LAW OF CONSERVATION OF ENERGY



Law of Conservation of Energy:

Energy cannot be created or destroyed, only changed from one form to another.



LEFT SIDE INTERACTIVE JOURNAL "WE DO"

Determine the energy of the object or scenario.

OBJECT/SCENARIO	PE or KE	FORM OF ENERGY
BURNING WOOD		
ROLLER COASTER GOING DOWN THE TRACK		
ROLLER COASTER AT THE TOP OF THE HILL		
RINGING BELL		
LAMP TURNED ON		
GEARS TURNING IN A WATCH		
CURRENT FLOWING IN A LAMP		
CAR BATTERY NOT HOOKED UP		
		
		

Where is the potential energy the greatest?

Where is the kinetic energy the greatest?



Essential Question EXIT TICKET: What is the relationship between an object's potential and kinetic energy?

REVISITING BELL RINGER

Tabitha ate a turkey sandwich and an apple for lunch. Later that day, she ran 2 miles during soccer practice. Which of the following energy transformations occurred between lunchtime and the end of Tabitha's run?

- A. Thermal energy was converted to kinetic energy.
- B. Kinetic energy was converted to chemical energy.
- C. Electrical energy was converted to thermal energy.
- D. Chemical energy was converted to mechanical energy. *