

Sample Lesson Guidance



5.8A

TRANSFER OF

ENERGY



Teacher Background

Consider the principles of student learning in the science classroom to improve your instruction. Students should have the opportunity to experiment with different forms of energy in the classroom, science lab, and in field investigations.

We use energy in our everyday lives. Energy is the ability to move or change matter. Anything that is moving has energy. In grade 5, energy can be observed in the form of chemical, mechanical energy, light, thermal (heat), electrical, and sound. One form of energy can be changed or transformed into another form. For example, electrical energy can be changed into thermal energy and light energy in a circuit.

Possible Student Misconceptions

- Failing to recognize the types of energy present in everyday objects or situations that are new to them.
- Misinterpreting light energy as thermal energy, or not realizing that one can exist without the other.
- Believing that energy can be created or depleted.
- Not realizing that batteries and fuel represent forms of chemical energy.
- Not grasping that energy can be converted into multiple types.
- Not understanding which types of energy are required to perform specific tasks, such as turning on a light or riding a bicycle.

GUIDED QUESTION

How is energy transformed in
a system?



What is Energy?

Energy is the ability to make things happen or cause changes. It can make objects **move, light up, or get warm.**



What are the examples of energy shown in the image?

Forms of Energy

the energy stored in substances like **food**, **batteries**, and **fuels**



Chemical

the energy that comes from **electricity**



Electrical

the energy that helps us **see things**



Light

Forms of Energy

the energy an object has because of its **movement** or **position**



Mechanical

the energy that comes from **vibrations**



Sound

the energy that comes from **heat**



Thermal

What's a System?

A system is a group of **parts** that work **together** to perform a **function**.



cell phone



human body



a fan

Transformation of Energy

Playing the Guitar



mechanical → sound

Using the Microwave



electrical → thermal

Transformation of Energy

Riding a Bike



chemical \rightarrow mechanical

Using a Flashlight



chemical \rightarrow electrical \rightarrow light

Transformation of Energy

Forms of Energy

chemical

food



electrical

power
lines



light

Sun



mechanical

hamm
er



sound

radio



thermal

fire



Energy Transformation



toaster

mechanical

electrical →



windmill



portable
fan

mechanical

sound →



whistle

electrical
thermal →

chemical
mechanical →

Explain the energy transformation in the images shown.

Guided Question

A battery-powered flashlight is turned on, and the bulb lights up. What energy transformation occurs when the flashlight is in use?

- A. Electrical energy to light energy to mechanical
- B. Light energy to thermal energy to chemical energy
- C. Chemical energy to electrical energy to light energy
- D. Thermal energy to chemical energy to light energy

Learner/Securing Question 2

When a hair dryer is plugged into a wall outlet and switched on, its motor runs and it blows hot air. What energy transformations are occurring?

- A. Electrical energy transforms into thermal energy and mechanical energy.
- B. Electrical energy transforms into sound energy and chemical energy.
- C. Thermal energy transforms into electrical energy and sound energy.
- D. Mechanical energy transforms into thermal energy and chemical energy.

Learner/Securing Question 3

In a toaster, what energy transformation occurs to heat the bread?

- A. Chemical to thermal
- B. Mechanical to thermal
- C. Electrical to thermal
- D. Solar to thermal