

# Science Homework #29

SECTIONS 3A, B, C, D, & E

MAY 25-29, 2026

## Homework

- Complete and review the study guide for the Topic 7 Forms of Energy test.

## Vocabulary

[Topic 7 Forms of Energy Vocabulary Quizlet](#)



## Reminders

- Forms of Energy Test Monday, June 1<sup>st</sup>.

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# ☀ 3rd Grade Science Study Guide: Forms & Properties of Energy

## Part 1: Forms of Energy Review

### What is Energy?

- **The Definition:** Energy is the ability to do work, to make matter move, or to cause matter to change.
- **Energy vs. Matter:**
  - **Matter** has mass and takes up space (volume).
  - **Energy** has **no mass** and **no volume**. You cannot see energy itself, but you can see or feel its effects.
- **Force and Work:** The more energy that is used, the greater the force applied. A greater force allows more work to be done (like hitting a ball harder to make it move faster).

### Solar Energy (Light and Heat)

- **The Sun:** The ultimate source of solar energy, providing Earth with both light and heat energy.
- **Photosynthesis:** Plants capture solar energy to make their own food.
- **Light Energy:** A form of energy that helps us see.
  - Light rays always travel in **straight lines**.
  - **Transparent matter** lets light pass completely through it (like a clear fish tank).
  - **Opaque matter** blocks light completely and casts a shadow (like a wooden cabinet).
  - Light **bends (refracts)** when it passes through certain transparent objects, like curved glass. This property is used in microscopes, magnifying glasses, and spectacles to make small objects look much larger.
- **Heat Energy (Thermal):** The energy that keeps things warm or changes their temperature. Heat flows into cold items, causing solids (like an ice cube) to melt into liquids.

### Mechanical Energy (Moving Objects)

- **Energy of Motion:** Mechanical energy is the form of energy that moving objects have. Wherever there is motion, mechanical energy is present (like a cat running or a ball flying).
- **Energy of Position:** An object does not have to be moving to have mechanical energy. When an object stops moving, it can have **stored mechanical energy** simply because of its position (like a ball resting at the top of a hill or a toy pulled back).

### Sound Energy

- **Vibrations:** Sound is produced when matter moves back and forth rapidly, which is called a **vibration** (like plucking a guitar string).
- **Sound Waves:** Sound travels through particles of matter in the form of sound waves to reach our ears.
- **How We Hear:** When sound waves travel through the air and strike a thin layer of skin inside our ear called the **eardrum**, it vibrates. The brain recognizes these vibrations as sound.
- **Mediums:** Sound travels by passing from one particle to another. Because particles are closest together in **solids**, sound travels the **fastest through solids** and the **slowest through gases**.
- **Space:** Space is a vacuum with **no matter**. Because there is no matter to carry vibrations, there is absolutely **no sound in space**.

## Electrical Energy (Electricity)

- **Electric Current:** Current electricity is a flow of tiny particles called **electric charges** along a path.
- **Electric Circuits:** For electricity to flow, it must have a **closed, continuous path** and a source of energy (like a battery). Wires, a battery, a switch, and a bulb must all connect perfectly to make a complete circuit.
- **Energy Transformations:** Electrical energy easily changes into other useful forms of energy in our homes:
  - **Into Light:** Light bulbs, digital clocks, and televisions.
  - **Into Heat:** Ovens, room heaters, toasters, and stoves.
  - **Into Sound:** Headphones, music players, and televisions.

## Part 2: Practice Questions

**Directions:** Read each question carefully. Circle the best answer choice.

**1. A student places a solid plastic block and a shining flashlight beam side by side on a desk. Which statement correctly describes the difference between the matter and the energy?**

- **A.** The light beam is matter because you can see it shining across the room.
- **B.** The plastic block is matter because it takes up space and has mass, while the light beam is energy because it has no mass or volume.
- **C.** Both the plastic block and the light beam are matter because they are both on top of the desk.
- **B.** The plastic block is energy because it can be pushed to make it roll.

**2. Mia is looking at a tiny ant on the pavement. When she looks at the ant through a magnifying glass, the ant looks much larger than it really is. What is happening to the light rays to cause this?**

- **A.** The curved glass blocks all the light rays, creating a dark shadow over the ant.
- **B.** The light rays travel in wavy, looping lines through the air before reaching her eyes.
- **C.** The curved glass bends the light rays as they pass through the transparent lens.
- **D.** The magnifying glass changes the light energy into sound energy.

**3. A heavy bowling ball is sitting perfectly still at the very top of a tall, steep ramp. What kind of energy does the bowling ball have?**

- **A.** It has no energy at all because it is not moving.
- **B.** It has stored mechanical energy because of its high position.
- **C.** It has sound energy because it is made of solid, heavy plastic.
- **D.** It has electrical energy flowing through it from the wooden ramp.

**4. If an astronaut hits two metal wrenches together while working outside in open space, another astronaut standing close by cannot hear it. Why is there no sound in space?**

- **A.** Sound waves travel too fast in space for human ears to catch.
- **B.** The metal material of the tools absorbs all the sound waves.
- **C.** Space has no matter (particles) to carry the vibrations from one place to another.
- **D.** The light from the Sun blocks sound waves from moving.

**5. A student sets up a circuit with a battery, wires, a switch, and a light bulb. When the student moves the switch to the "open" position, the light bulb goes out. Why did the electricity stop flowing?**

- A. The electrical path is no longer closed and continuous.
- B. Opening the switch drains all the energy out of the battery instantly.
- C. The copper wires suddenly turned into opaque matter.
- D. The electrical energy changed entirely into mechanical motion energy.

**6. A metal spoon is placed inside a bowl of hot soup. After a few minutes, the handle of the spoon feels hot. What is happening?**

- A. The spoon is creating its own solar energy from the light in the room.
- B. The spoon is vibrating rapidly back and forth to make sound energy.
- C. Heat energy from the hot soup is flowing into the cooler solid spoon.
- D. The soup is working as a battery to send an electric current up the metal.

**7. When a musician plucks a string on a harp, it produces a clear musical note. What must the string be doing to create that sound energy?**

- A. It must be moving back and forth rapidly, causing a vibration.
- B. It must be traveling in a straight line across the room.
- C. It must be melting from a solid into a liquid.
- D. It must be blocking all the transparent matter around the instrument.

**8. A child dives underwater in a swimming pool and shouts. Another child swimming deep underwater nearby can easily hear the shout. What does this demonstrate about sound?**

- A. Sound can only travel when there are no particles of matter present.
- B. Sound waves are capable of traveling through liquids like water.
- C. Sound waves turn the water into a closed electrical circuit.
- D. Sound waves change the liquid water into an opaque solid.

**9. When a family plugs in and turns on a television set, electrical energy enters the TV. What useful forms of energy is it transformed into so they can enjoy a show?**

- A. Mechanical energy and solar energy
- B. Light energy and sound energy
- C. Thermal energy and stored position energy
- D. It stays electrical energy and does not change form

**10. Why can you see a toy fish inside a glass fish tank clearly, but you cannot see a toy stored inside a closed wooden box?**

- A. Glass is transparent and lets light pass through, while wood is opaque and blocks light rays.
- B. The wooden box has an open electrical circuit inside keeping it dark.
- C. Glass bends light rays to turn the toy into pure heat energy.
- D. Wood completely absorbs all the electrical charges from the toy.