

Forms of Energy

Eight forms of energy and how energy changes from one form to another



7

printable sheets

17

pages

All

answer keys included

Forms of Energy Teaching Pack

Eight forms of energy and how energy changes from one form to another

How to use this pack. The sheets are in a suggested teaching order: show the labeled diagram, have students label the blank one, then work through the practice sheets and finish with the quiz. Use them all over a week or pick the ones you need. The answer keys are together at the back.

What is inside

1. Teach

Forms of Energy Diagram 3

2. Label

Blank Forms of Energy 4

3. Match

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4. Read

Energy Is Everywhere 6

5. Apply

Energy Changes 8

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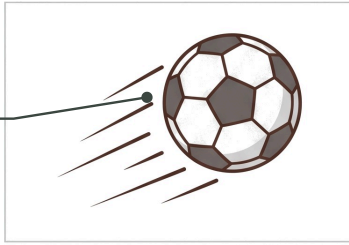
Answer keys

Every answer key, in the same order 12

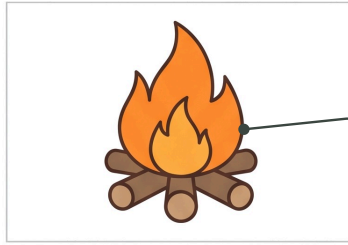
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Forms of Energy

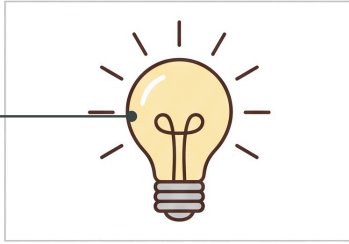
Mechanical



Heat (thermal)



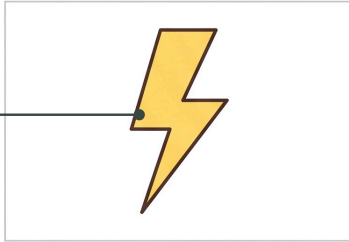
Light (radiant)



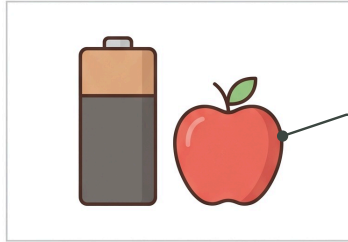
Sound



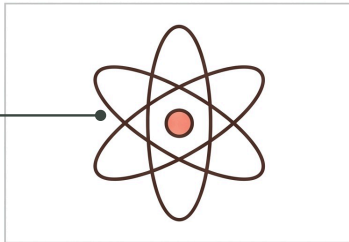
Electrical



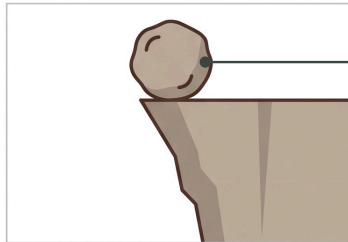
Chemical



Nuclear



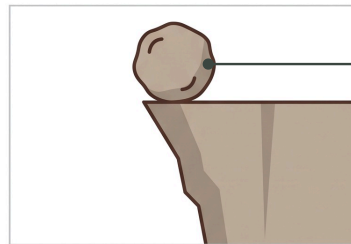
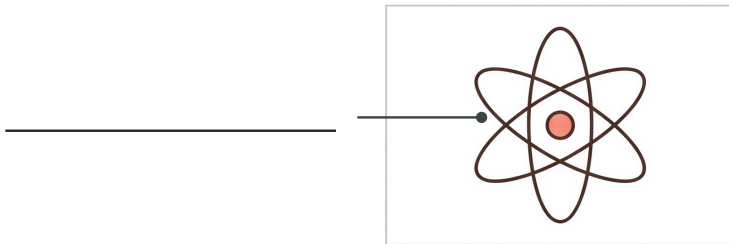
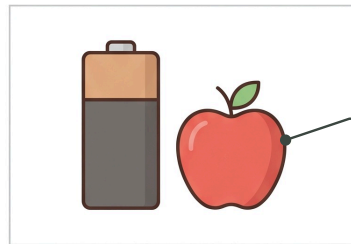
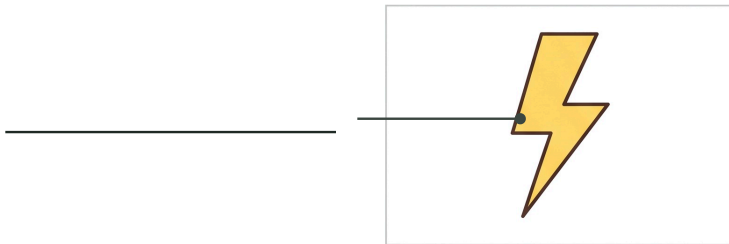
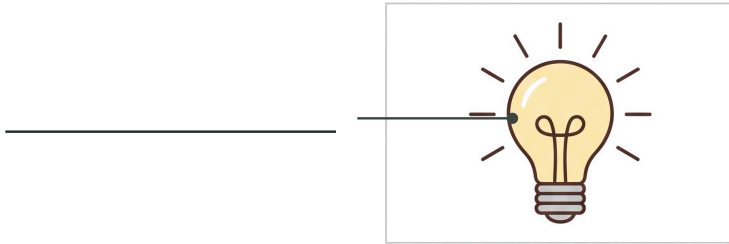
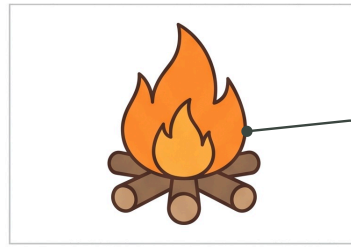
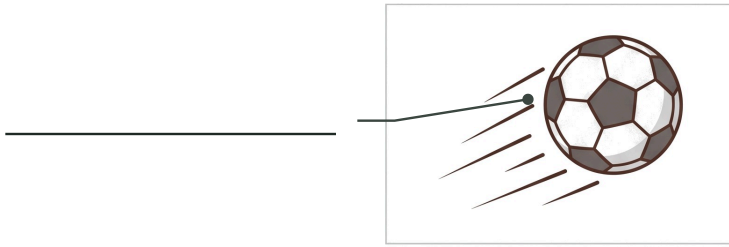
Gravitational



Forms of Energy

Name: _____

Write the name of each part on its line. Use the word bank.



Word bank

Chemical

Electrical

Gravitational

Heat (thermal)

Light (radiant)

Mechanical

Nuclear

Sound

The Forms of Energy

Use the labeled forms of energy diagram to help you.

Part A. Write the form of energy that fits each description.

Word bank

Chemical

Electrical

Gravitational

Heat (thermal)

Light (radiant)

Mechanical

Nuclear Sound

- Energy stored in the bonds between atoms. Food, fuel and batteries
1. hold it. _____
2. Energy carried by vibrations that travel as waves you can hear. _____
- The energy of motion and position. A rolling ball and a stretched spring
3. have it. _____
4. Energy stored in the nucleus of an atom. _____
- Energy from the movement of tiny particles. The faster they move, the
5. hotter a thing is. _____
6. Stored energy that an object has because of its height above the ground. _____
7. Energy from the flow of tiny charged particles called electrons. _____
8. Energy that travels as waves you can see, like the glow of a bulb or the sun. _____

Part B. Answer the questions.

1. The diagram shows a battery and an apple in the same box. What do the two have in common?

2. The boulder at the top of the cliff is not moving. Why does it still have energy?

3. A campfire stands for heat on the diagram. Name one other form of energy a campfire gives off, and tell how you know.

Energy Is Everywhere

Read the text. Then answer the questions on the next page.

- 1 You cannot see energy, but you can see what it does. **Energy** is the ability to do work or cause change. It makes things move, heat up, glow and make noise. Energy comes in many forms.
- 2 Some forms are easy to notice. A rolling soccer ball has **mechanical energy**, the energy of motion and position. A campfire gives off **heat**, also called thermal energy. Everything is made of tiny particles that are always moving. The faster they move, the hotter the thing is. A glowing bulb gives off **light**, which travels as waves. A ringing bell makes **sound**, which is carried by vibrations. **Electrical energy** comes from the flow of tiny charged particles called electrons.
- 3 Other forms are stored. **Chemical energy** is stored in the bonds between atoms. Food, fuel and batteries all hold it. **Nuclear energy** is stored in the nucleus, the center of an atom. **Gravitational energy** is stored energy that an object has because of its height. A boulder at the top of a cliff has a lot of it. Stored energy is called **potential energy**. The energy of motion is called **kinetic energy**.
- 4 Energy can change from one form into another. A toaster changes electrical energy into heat. A solar panel changes light into electrical energy. A flashlight shows a chain of changes. First, chemical energy is stored in the battery. Next, the battery changes it into electrical energy. Last, the bulb changes the electrical energy into light.
- 5 Here is the most important rule. Energy is never made and never destroyed. It only changes form. This rule is called the **law of conservation of energy**. In most energy changes, some of the energy turns into heat, even when nobody wants it. That is why a phone gets warm while it charges.



Eight forms of energy. The soccer ball stands for mechanical energy and the boulder on the cliff for gravitational energy.

Energy Is Everywhere: Questions

Go back to the text to find each answer. The paragraphs are numbered to help you.

1. What is this text mostly about?

- ☐ How to build a campfire
- ☐ The forms of energy and how energy changes form
- ☐ Why batteries run out
- ☐ How a soccer ball is made

2. What is energy?

- ☐ A kind of tiny particle
- ☐ Anything that is hot
- ☐ The ability to do work or cause change
- ☐ A fuel that is burned

3. According to paragraph 2, what makes one thing hotter than another?

4. Which form of energy is stored in food, fuel and batteries?

- ☐ Sound energy
- ☐ Nuclear energy
- ☐ Mechanical energy
- ☐ Chemical energy

5. What is kinetic energy?

- ☐ Stored energy
- ☐ The energy of motion
- ☐ Energy in the nucleus of an atom
- ☐ Energy that is wasted

6. Number the steps 1, 2 and 3 to show the energy changes in a flashlight (paragraph 4).

- ☐ The battery changes the energy into electrical energy.
- ☐ The bulb changes electrical energy into light.
- ☐ Chemical energy is stored in the battery.

7. What does the law of conservation of energy say?

8. Why does a phone get warm while it charges?

Energy Changes

Each row tells you the energy that goes in. Write the useful form it is changed into. You will use two of the words twice.

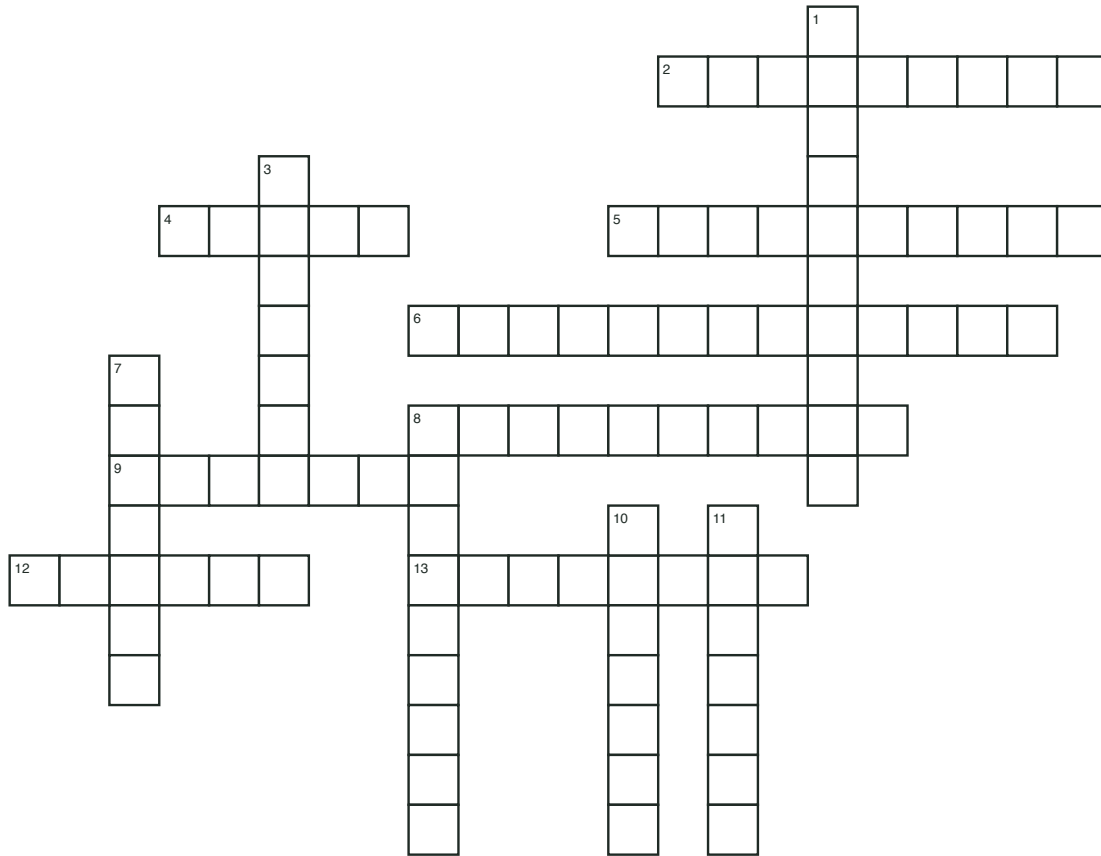
DEVICE OR EVENT	WHAT HAPPENS	USEFUL ENERGY IT IS CHANGED INTO
1. Toaster	Electrical energy goes in. The wires glow red and brown the bread.	_____
2. Solar panel	Light from the sun goes in. The panel powers a house.	_____
3. Drum	The mechanical energy of the stick makes the drum skin vibrate.	_____
4. Car engine	The chemical energy in gasoline goes in. The engine turns the wheels.	_____
5. Flashlight bulb	Electrical energy goes in. The bulb helps you see in the dark.	_____
6. Green leaf	Light from the sun goes in. The leaf makes sugar, which stores energy as food.	_____
7. Electric fan	Electrical energy goes in. The blades spin and push the air.	_____
8. Rubbing hands	The mechanical energy of your moving hands goes in. Your hands warm up.	_____
9. Elevator	Electrical energy goes in. The car is lifted to the top floor and stops. It now has stored energy because of its height.	_____
Word bank Chemical Electrical Gravitational Heat (thermal) Light (radiant) Mechanical Sound		

Your turn

A light bulb gets hot when it is on, but its job is to give light. Where does the heat come from? Is any energy destroyed?

Forms of Energy Crossword

Read each clue. Write the answer in the puzzle, one letter in each box. Use the word bank if you get stuck.



ACROSS

2. Stored energy is called ____ energy.
4. Energy carried by vibrations. A ringing bell makes it.
5. Fast back-and-forth movements that carry sound.
6. Stored energy that an object has because of its height.
8. Energy from the flow of electrons.
9. Another word for heat energy.
12. The ability to do work or cause change.
13. Energy stored in the bonds between atoms.

DOWN

1. The form of energy that comes from motion and position.
3. Energy stored in the center of an atom.
7. It stores chemical energy and powers a flashlight.
8. Tiny charged particles that flow through a wire.
10. The energy of motion is called ____ energy.
11. Another word for light energy.

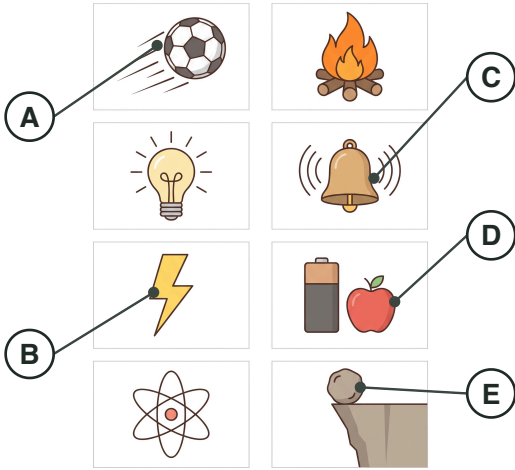
Word bank battery chemical electrical electrons energy gravitational kinetic
mechanical nuclear potential radiant sound thermal vibrations

Forms of Energy Quiz

Score _____ / 13

Show what you know about the forms of energy.

Part A. Each picture stands for one form of energy. Write the form.



A _____

B _____

C _____

D _____

E _____

Chemical · Electrical · Gravitational · Mechanical · Sound

Part B. Choose the best answer.

- What is energy?**
 - ☐ A kind of fuel
 - ☐ The ability to do work or cause change
 - ☐ A tiny particle
 - ☐ The weight of an object
- Which form of energy is stored in the nucleus of an atom?**
 - ☐ Chemical
 - ☐ Electrical
 - ☐ Nuclear
 - ☐ Sound
- A toaster changes electrical energy mainly into which form?**
 - ☐ Sound
 - ☐ Chemical
 - ☐ Nuclear
 - ☐ Heat (thermal)
- What is stored energy called?**
 - ☐ Potential energy
 - ☐ Kinetic energy
 - ☐ Sound energy
 - ☐ Wasted energy
- Which form of energy is carried by vibrations?**
 - ☐ Light (radiant)
 - ☐ Sound
 - ☐ Gravitational
 - ☐ Chemical
- What happens to energy when it is used?**
 - ☐ It is destroyed.
 - ☐ It is made from nothing.
 - ☐ It changes into other forms.
 - ☐ It turns into matter.

Part C. Write your answer.

7. What energy change takes place in a solar panel?

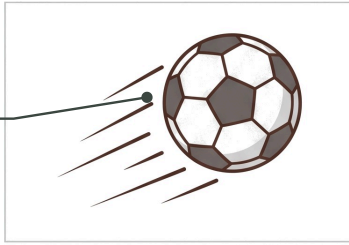
8. What does the law of conservation of energy say?

Answer Keys

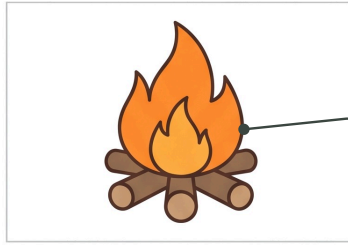
In the same order as the sheets.

Forms of Energy: Answer Key

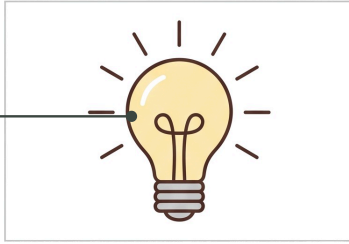
Mechanical



Heat (thermal)



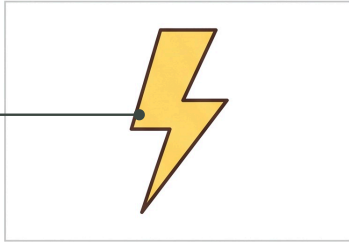
Light (radiant)



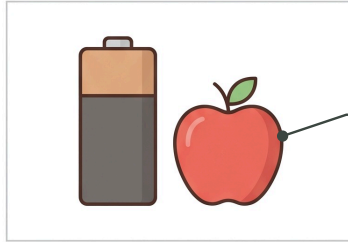
Sound



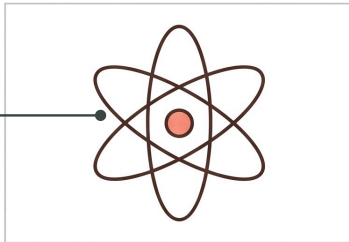
Electrical



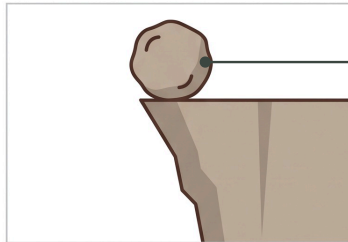
Chemical



Nuclear



Gravitational



The Forms of Energy: Answer Key

Answers are in green. Written answers will vary; these are examples.

Part A. Write the form of energy that fits each description.

Word bank

Chemical

Electrical

Gravitational

Heat (thermal)

Light (radiant)

Mechanical

Nuclear

Sound

- | | | |
|----|--|------------------------|
| 1. | Energy stored in the bonds between atoms. Food, fuel and batteries hold it. | Chemical |
| 2. | Energy carried by vibrations that travel as waves you can hear. | Sound |
| 3. | The energy of motion and position. A rolling ball and a stretched spring have it. | Mechanical |
| 4. | Energy stored in the nucleus of an atom. | Nuclear |
| 5. | Energy from the movement of tiny particles. The faster they move, the hotter a thing is. | Heat (thermal) |
| 6. | Stored energy that an object has because of its height above the ground. | Gravitational |
| 7. | Energy from the flow of tiny charged particles called electrons. | Electrical |
| 8. | Energy that travels as waves you can see, like the glow of a bulb or the sun. | Light (radiant) |

Part B. Answer the questions.

1. The diagram shows a battery and an apple in the same box. What do the two have in common?
Both store chemical energy.
2. The boulder at the top of the cliff is not moving. Why does it still have energy?
It is high above the ground, so it has stored gravitational energy.
3. A campfire stands for heat on the diagram. Name one other form of energy a campfire gives off, and tell how you know.
Light. You can see the flames glow. (Sound is also correct: a fire crackles.)

Energy Is Everywhere: Answer Key

Answers are in green. Written answers will vary; these are examples.

1. What is this text mostly about?

- ☐ How to build a campfire
- ☒ **The forms of energy and how energy changes form**
- ☐ Why batteries run out
- ☐ How a soccer ball is made

2. What is energy?

- ☐ A kind of tiny particle
- ☐ Anything that is hot
- ☒ **The ability to do work or cause change**
- ☐ A fuel that is burned

3. According to paragraph 2, what makes one thing hotter than another?

Its tiny particles move faster.

4. Which form of energy is stored in food, fuel and batteries?

- ☐ Sound energy
- ☐ Nuclear energy
- ☐ Mechanical energy
- ☒ **Chemical energy**

5. What is kinetic energy?

- ☐ Stored energy
- ☒ **The energy of motion**
- ☐ Energy in the nucleus of an atom
- ☐ Energy that is wasted

6. Number the steps 1, 2 and 3 to show the energy changes in a flashlight (paragraph 4).

- 2** The battery changes the energy into electrical energy.
- 3** The bulb changes electrical energy into light.
- 1** Chemical energy is stored in the battery.

7. What does the law of conservation of energy say?

Energy is never made and never destroyed. It only changes form.

8. Why does a phone get warm while it charges?

Some of the energy turns into heat.

Energy Changes: Answer Key

Answers are in green. The last answer will vary; one example is given.

DEVICE OR EVENT	WHAT HAPPENS	USEFUL ENERGY IT IS CHANGED INTO
1. Toaster	Electrical energy goes in. The wires glow red and brown the bread.	Heat (thermal)
2. Solar panel	Light from the sun goes in. The panel powers a house.	Electrical
3. Drum	The mechanical energy of the stick makes the drum skin vibrate.	Sound
4. Car engine	The chemical energy in gasoline goes in. The engine turns the wheels.	Mechanical
5. Flashlight bulb	Electrical energy goes in. The bulb helps you see in the dark.	Light (radiant)
6. Green leaf	Light from the sun goes in. The leaf makes sugar, which stores energy as food.	Chemical
7. Electric fan	Electrical energy goes in. The blades spin and push the air.	Mechanical
8. Rubbing hands	The mechanical energy of your moving hands goes in. Your hands warm up.	Heat (thermal)
9. Elevator	Electrical energy goes in. The car is lifted to the top floor and stops. It now has stored energy because of its height.	Gravitational
Word bank Chemical Electrical Gravitational Heat (thermal) Light (radiant) Mechanical Sound		

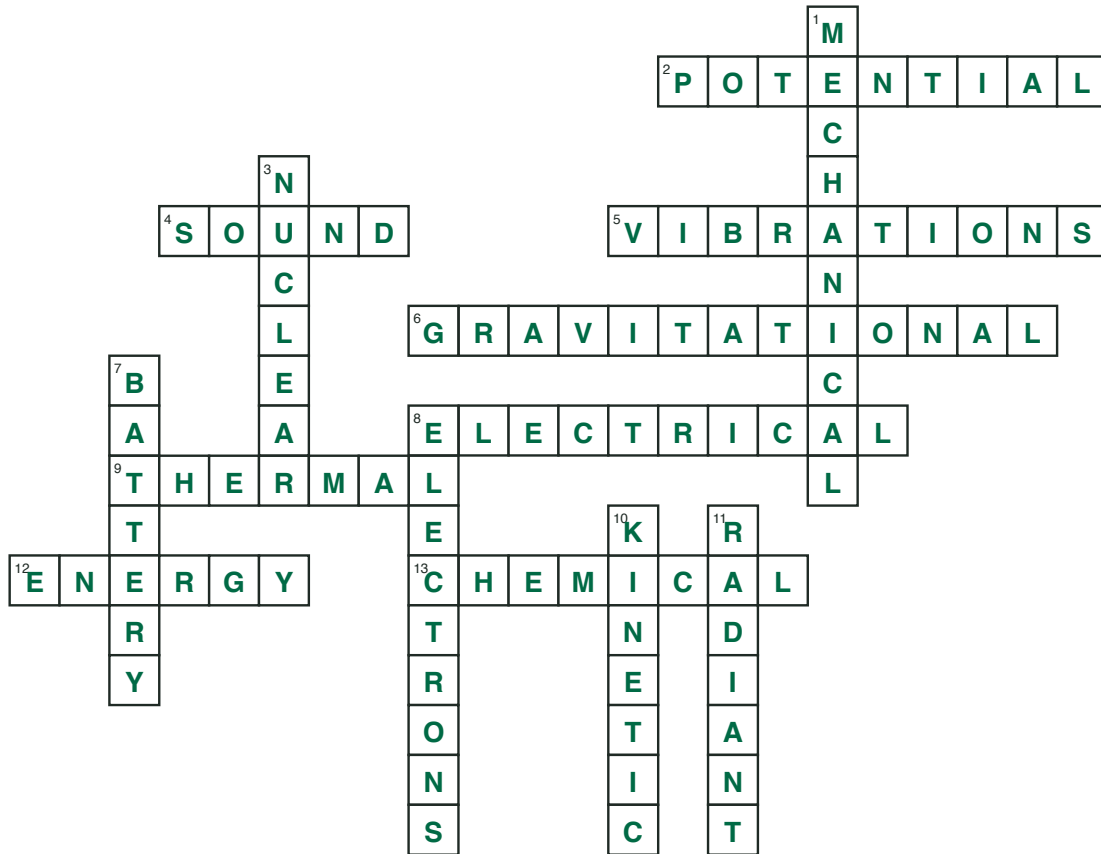
Your turn

A light bulb gets hot when it is on, but its job is to give light. Where does the heat come from? Is any energy destroyed?

Some of the electrical energy changes into heat instead of light. No energy is destroyed. It only changes form.

Forms of Energy Crossword: Answer Key

Answers are in green.



ACROSS

2. Stored energy is called ____ energy.
4. Energy carried by vibrations. A ringing bell makes it.
5. Fast back-and-forth movements that carry sound.
6. Stored energy that an object has because of its height.
8. Energy from the flow of electrons.
9. Another word for heat energy.
12. The ability to do work or cause change.
13. Energy stored in the bonds between atoms.

DOWN

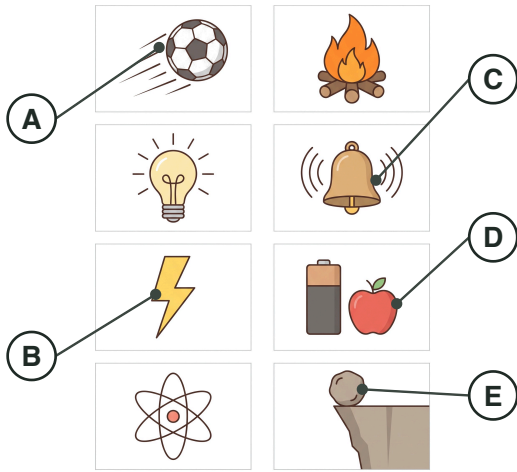
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7. It stores chemical energy and powers a flashlight.
8. Tiny charged particles that flow through a wire.
10. The energy of motion is called ____ energy.
11. Another word for light energy.

Word bank battery chemical electrical electrons energy gravitational kinetic
mechanical nuclear potential radiant sound thermal vibrations

Forms of Energy Quiz: Answer Key

Answers are in green. Written answers will vary; these are examples.

Part A. Each picture stands for one form of energy. Write the form.



A **Mechanical**

B **Electrical**

C **Sound**

D **Chemical**

E **Gravitational**

Chemical · Electrical · Gravitational · Mechanical · Sound

Part B. Choose the best answer.

1. What is energy?

- ☐ A kind of fuel
- ☒ **The ability to do work or cause change**
- ☐ A tiny particle
- ☐ The weight of an object

2. Which form of energy is stored in the nucleus of an atom?

- ☐ Chemical
- ☐ Electrical
- ☒ **Nuclear**
- ☐ Sound

3. A toaster changes electrical energy mainly into which form?

- ☐ Sound
- ☐ Chemical
- ☐ Nuclear
- ☒ **Heat (thermal)**

4. What is stored energy called?

- ☒ **Potential energy**
- ☐ Kinetic energy
- ☐ Sound energy
- ☐ Wasted energy

5. Which form of energy is carried by vibrations?

- ☐ Light (radiant)
- ☒ **Sound**
- ☐ Gravitational
- ☐ Chemical

6. What happens to energy when it is used?

- ☐ It is destroyed.
- ☐ It is made from nothing.
- ☒ **It changes into other forms.**
- ☐ It turns into matter.

Part C. Write your answer.

7. What energy change takes place in a solar panel?

It changes light energy into electrical energy.

8. What does the law of conservation of energy say?

Energy is never made and never destroyed. It only changes form.