

## Free Transfer



The faster a given object is moving, the more energy it possesses. This kind of energy is called “kinetic energy,” from the Greek word *kinesis*, meaning motion. The faster a given object is moving, the greater its kinetic energy.

Imagine you’re trying to hit a target with a bow and arrow. If you just throw the arrow with your hand, it won’t go very fast, and even if your aim is good, the arrow won’t penetrate the target—it’ll just bounce off!

But if you use the bow, you can shoot the arrow much faster. The faster the arrow is going, the more kinetic energy it has. Kinetic energy is what allows the arrow to puncture the target.

Energy can never be created or destroyed, only transferred—moved from place to place. One way energy is moved from place to place is by moving objects.

Imagine hitting a tee ball with a bat. When you hit the ball with the bat, energy is transferred from the bat to the ball. If you swing the bat slowly, the ball won’t go very far when you hit it. But if you swing the bat faster, it will have more kinetic energy. That energy will be transferred to the ball, and the ball will go much farther.

Energy can also be transferred through sound. Try high-fiving your friend *very slowly*. You probably won’t make very much sound. If you high-five at the normal speed, your hands each have more kinetic energy, and you’ll make a nice *smack*. What you’re hearing is energy turned into sound. The same thing happens when you hit a drum, or pluck the strings of a guitar.

Energy can also be transferred through light. Light from the sun makes your body feel warmer. Plants use energy from light and grow bigger and make oxygen.

Energy can also be transferred through electricity. This kind of energy can be used for almost anything. But remember: Energy cannot be created. Energy in the form of electricity has to be transferred from another kind of energy. Wind power uses a machine called a turbine that turns the energy of the wind into electricity. Coal, oil, and gas power burn different kinds of material, creating heat that gets turned into electricity. Solar power generates electricity from the sun's light—although not as easily as a plant.

Name: \_\_\_\_\_ Date: \_\_\_\_\_

1. According to the passage, energy

- A** can be destroyed
- B** can be created
- C** can be moved from place to place
- D** is not kinetic

2. What does the author list in the passage?

- A** the different ways energy can be transferred
- B** the different theories about energy transfer
- C** the different types of energy
- D** the problems with transferring energy through electricity

3. Energy can be transferred through light. What evidence from the text supports this statement?

- A** A turbine changes wind energy into electricity.
- B** Burning gas creates heat.
- C** Light from the sun makes your body feel warmer.
- D** Energy is transferred when coal is burned.

4. If drummers are playing their drums loudly, what can be concluded about how their hands are moving?

- A** They must be moving slowly when they hit the drum.
- B** They must be moving quickly when they hit the drum.
- C** They must be tapping the drum softly.
- D** They must be resting on the drum.

5. What is this passage mainly about?

- A** what happens when you swing a baseball bat quickly
- B** how energy makes sound
- C** different ways energy is transferred
- D** different ways electricity is produced

6. Read the following sentence from the passage.

"If you just throw the arrow with your hand, it won't go very fast, and even if your aim is good, the arrow won't **penetrate** the target – it'll just bounce off!"

In this sentence, what does the word "**penetrate**" mean?

- A pierce into
- B bounce away from
- C miss
- D go around

7. \_\_\_\_\_ energy cannot be created, it can be transferred.

- A Instead of
- B Although
- C After
- D Including

8. List at least two sources of energy that can be transferred into electricity.

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9. Explain at least one way electricity can be transferred from another kind of energy using information from the passage.

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10. Explain whether the speed of the wind will determine how much electricity can be produced by that wind.

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## Teacher Guide &amp; Answers

Passage Reading Level: Lexile 850

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7. \_\_\_\_\_ energy cannot be created, it can be transferred.

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- B **Although**
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8. List at least two sources of energy that can be transferred into electricity.

**Suggested answer:** Answers may vary but should include wind, coal, oil, gas, and the sun.

9. Explain at least one way electricity can be transferred from another kind of energy using information from the passage.

**Suggested answer:** Answers may vary but should include one of the following: 1) wind power uses a machine called a turbine that turns the energy of the wind into electricity; 2) coal, oil, and gas power burn different kinds of material, creating heat that gets turned into electricity; 3) solar power generates electricity from the sun's light.

10. Explain whether the speed of the wind will determine how much electricity can be produced by that wind.

**Suggested answer:** Answers may vary but students should indicate that the speed of the wind will determine how much electricity can be produced by that wind. The greater the speed of the wind, the more energy there is available to be transferred into electricity.