

Active Reading

Section 2: Nuclear Energy

Read the passage below and answer the questions that follow.

Inside a reactor, metal fuel rods that contain solid uranium pellets are bombarded with neutrons. The chain reaction that results releases energy and produces more neutrons. The reactor core contains control rods that control the rate of fission in the reactor. They do this by absorbing neutrons, which prevents the neutrons from causing fission reactions in the uranium fuel.

The heat released during nuclear reactions is used to generate electricity in the same way that power plants burn fossil fuels to generate electricity. In a nuclear power plant, energy released from the fission reactions heats a closed loop of water that heats another body of water. As the water boils, it produces steam that drives a steam turbine, which is used to generate electricity.

IDENTIFYING MAIN IDEAS

One reading skill is the ability to identify the main idea of a passage. The main idea is the main focus or key idea. Frequently, a main idea is accompanied by supporting information that offers detailed facts about the main idea.

Read each question and write the answer in the space provided.

1. What must metal fuel rods inside a nuclear reactor be bombarded with in order to start a chain reaction?

RECOGNIZING CAUSE AND EFFECT

One reading skill is the ability to recognize cause and effect.

Read each question and write your answer in the space provided.

2. How can the rate of fission in a reactor be controlled?

3. What happens when the control rods in a reactor core are completely lowered between the fuel rods?

Active Reading *continued*

SEQUENCING INFORMATION

One reading skill is the ability to sequence information, or to logically place items or events in the order in which they occur.

Sequence the statements below to show the steps in the process of how nuclear energy generates electricity. Write “1” on the line in front of the first step, “2” on the line in front of the second step, and so on.

- _____ 4. The closed loop of water heats another body of water.
- _____ 5. A chain reaction results that releases energy and produces more neutrons.
- _____ 6. The body of water boils.
- _____ 7. Energy released from the fission reaction heats a closed loop of water.
- _____ 8. The boiling water produces steam.
- _____ 9. Metal fuel rods containing uranium pellets are bombarded with neutrons.
- _____ 10. The turbine generates electricity.
- _____ 11. The steam drives a steam turbine.

RECOGNIZING SIMILARITIES AND DIFFERENCES

One reading skill is the ability to recognize similarities and differences between two phrases, ideas, or things. This is sometimes known as comparing and contrasting.

Read each question and write the answer in the space provided.

12. How are nuclear power plants like other power plants?

13. How are nuclear power plants different from other power plants?
