TEACHER'S GUIDE

Activity 1 - What's Your Energy Knowledge?

OBJECTIVE

To assess students' prior knowledge and increase their awareness of energy sources

GETTING STARTED/ANSWER KEY

Use this as a preliminary test before you start your unit on energy. Have students check their answers at **www.shell.com/us/EnergizeYourFuture** , **www.eia.doe.gov**, and other energy sites.

ANSWER KEY

1. C. Photovoltaic cells take incoming photons, or particles of light, and convert their energy into electricity.

2. B. Hydrogen can be stored until it's needed for fuel. At that point, hydrogen fuel cells take the energy from the chemical bonds in hydrogen to produce electricity.

3. B. Waves reflect off of oil deposits hidden deep underground. The length of time it takes the waves to travel there and back tells geologists how far down the deposit is.

4. D. All of the above. Ethanol is a renewable fuel source because it comes from plants.

5. D. All of the fuels listed are fossil fuels, so all were formed from organic matter.

6. D. The generator produces electricity by converting the action of the spinning rotor into electricity.

7. B. Hydrogen

8. B. Hydropower is 90% effective. It is the most efficient form of electricity generation.

9. B. Tidal energy is a form of hydropower.

10. D. Wind, the motion of the air, is caused by the uneven heating of the Earth by the sun. Warm air rises because it is lighter than cold air, and cold air rushes in to take its place. Hydropower relies on the movement of water, and therefore on the water cycle. The sun heats water, causing it to evaporate and form clouds. When the clouds become saturated, water falls back down, filling rivers. Rivers flow into oceans, where the cycle begins again.

11. D. Russia

12. B. United States

13. D. All of the above

14. B. It was coal-powered.

NATIONAL STANDARDS

Science

Standard 8. Understands the structure and properties of matter

Standard 9. Understands the sources and properties of energy

Standard 11. Understands the nature of scientific knowledge

Standard 12. Understands the nature of scientific inquiry

Geography

Standard 7. Knows the physical processes that shape patterns on Earth's surface

Standard 11. Understands the patterns and networks of economic interdependence on Earth's surface

Standard 14. Understands how human actions modify the physical environment

Standard 16. Understands the changes that occur in the meaning, use, distribution, and importance of resources

Standard 18. Understands global development and environmental issues

TIME CONSIDERATIONS

Approximately one class period