

Skills Worksheet

Critical Thinking**ANALOGIES**

In the space provided, write the letter of the pair of terms or phrases that best complete the analogy shown. An analogy is a relationship between two pairs of words or phrases written as **a : b :: c : d**. The symbol **:** is read "is to," and the symbol **::** is read "as."

- _____ 1. wind power : renewable energy ::
a. tidal power : geothermal energy c. hydrogen fuel : alternative energy
b. the sun : fuel cells d. biomass fuel : hydroelectric energy
- _____ 2. active solar heating : hot water ::
a. photovoltaic cells : electricity c. fuel cells : hybrid cars
b. passive solar heating : ethanol d. energy conservation : fluorescent bulbs
- _____ 3. moving water : hydroelectric energy ::
a. semiconductors : wind power
b. solar collectors : passive solar heating
c. hydrogen : photovoltaic cells
d. cold ocean water : tidal power
- _____ 4. gasoline engine : energy inefficiency ::
a. hybrid car : energy efficiency
b. incandescent bulb : fluorescent bulb
c. generating hydrogen : energy conservation
d. ocean water : thermal conversion
- _____ 5. burning biomass fuel : air pollution ::
a. geothermal energy : land pollution
b. solar energy : noise pollution
c. hydroelectric energy : disrupted ecosystems
d. fuel cells : water pollution
- _____ 6. sunlight : solar cells ::
a. geysers : heat pumps c. hydrogen : fuel cells
b. gasoline : octane d. air conditioning : heat pumps
- _____ 7. tidal power : salt water ::
a. gasoline : hybrid car c. fuel efficiency : hybrid car
b. hydroelectric power : fresh water d. turbine : passive solar
- _____ 8. energy conservation : pollution ::
a. oil : gas c. gravity : hydroelectric
b. sun : light d. hybrid cars : emissions

Critical Thinking *continued***INTERPRETING OBSERVATIONS**

Read the following passage, and then answer the questions below.

Imagine that you are a civil engineer who was just hired by the government of Iceland to plan a city. On the airplane you read about the “land of fire and ice,” and learn that it was formed from tectonic activity. As a result, there are many volcanoes, geysers, and hot springs on the island. Also, because Iceland is located in northern latitudes, it receives a lot of snowfall in winter.

As your plane zooms in for a landing, you notice that the annual springtime snowmelt has formed large lakes and colossal waterfalls—two of which are very impressive! The sky is overcast, and some volcanoes are still capped with snow. There aren’t very many trees around, only grass and shrubs in a rocky landscape.

- 9.** What are two sources of energy you would use for your city? Explain your answer.

- 10.** What might be a cost-effective way to provide hot water?

- 11.** Would it be effective to use rooftop solar collectors to provide electricity or hot water? Explain your answer.

Critical Thinking *continued*

AGREE OR DISAGREE

Agree or disagree with the following statements, and support your answer.

12. Renewable energy sources cannot generate large amounts of electricity.

13. Fossil fuels are biomass fuel sources and are renewable.

14. Fifty years from now, the major source of energy for people on Earth will be solar cells.

Critical Thinking *continued*

REFINING CONCEPTS

The statements below challenge you to refine your understanding of concepts covered in the chapter. Think carefully, and answer the questions that follow.

- 15.** If hydrogen is the most common element on Earth, what makes generating hydrogen expensive and polluting? What is a possible solution that would generate hydrogen without polluting the environment?

- 16.** You heat your home with electricity. You wish to reduce your electric bills, so you have decided to use a wood furnace. What are the environmental advantages and disadvantages of doing this? What other steps could you take to conserve electricity?

- 17.** Nearly all forms of renewable energy come directly or indirectly from the sun. List the forms of renewable energy. Describe how the sun creates the various forms of renewable energy you listed. If you named any forms of renewable energy that do not come from the sun, identify their sources.
