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#### How much heat can water hold? Read the passage and answer questions #1-6.

**Specific Heat** It is a steamy summer day. The air is hot, the sidewalk is hot, and the sandy beach is hot. But when you jump into the ocean, the water is surprisingly cool! If you go for an evening swim, however, the water is warmer than the cool air.

You feel this difference in temperature because of water's unusually high specific heat. Specific heat is the amount of heat needed to increase the temperature of a certain mass of a substance by 1°C. Compared to other substances, water requires a lot of heat to increase its temperature.

Water's high specific heat is due to the strong attraction among water molecules. Other substances, such as air and rocks, have weaker attractions between their molecules. The temperature of each of these substances rises more quickly than that of water that is heated the same amount.

One effect of water's high specific heat is that land areas located near large bodies of water experience less dramatic temperature changes than areas far inland. In summer, the sun's heat warms the land more quickly than the water. The warm land heats the air above it to a higher temperature than the air over the ocean. As a result, the air is warmer inland than on the coast. The opposite effect occurs in winter—land loses heat more quickly than water, so the air above the land is cooler.

### **Probing Questions:**

1. What is specific heat?

2. Why does water have a high specific heat?

Name Date	Class
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Earth: The Water Planet • Review and Reinforce

## The Properties of Water

# Textbook pp. 46-51

### **Understanding Main Ideas**

Label the parts of this water molecule by writing the name of the element and the electrical charge in items 1 through 3.

Answer the following questions on a separate sheet of paper.

- 4. Why is water considered a polar substance?
- 5. Which state of water allows fish to remain in a lake when winter temperatures are below 0°C? Explain.
- 1. Element \_\_\_\_\_\_
  Charge \_\_\_\_\_

  2. Element \_\_\_\_\_
  Charge \_\_\_\_\_
  Charge \_\_\_\_\_
- 6. What happens to the molecules of water vapor when the temperature of the gas cools to 100°C?
- 7. Why is water often called the "universal solvent"?

### **Building Vocabulary**

Match each term with its definition by writing the letter of the correct definition in the right column on the line beside the term in the left column.

- \_\_\_\_ 8. capillary action
  - 9. condensation
- \_\_\_\_ 10. evaporation
- \_\_\_\_ 11. specific heat
- 12. solution
- \_\_\_\_ 13. solvent
- \_\_\_\_ 14. state
- \_\_\_\_ 15. surface tension

- a. a mixture that forms when one substance dissolves another
- **b.** form of a substance, including solid, liquid, or gas
- c. the tightness across the surface of water caused by the polar molecules pulling on each other
- d. the process by which molecules at the surface of a liquid absorb enough energy to change to the gaseous state
- e. the combined force of attraction among water molecules and with the molecules of surrounding materials
- f. the process by which a gas changes to a liquid
- g. a substance that dissolves another substance
- h. the amount of heat needed to increase the temperature of a certain amount of a substance by 1°C