

Assessment

Heat**Section Quiz: Changes in Temperature and Phase**

Write the letter of the correct answer in the space provided.

- _____ 1. What is the quantity of energy needed to raise the temperature of a unit mass of a substance by 1°C called?
- latent heat
 - specific heat capacity
 - internal energy
 - thermal energy
- _____ 2. Which property of a substance is *not* needed to determine the amount of energy transferred as heat to or from the substance?
- temperature change
 - specific heat capacity
 - volume
 - mass
- _____ 3. The specific heat capacity of a substance is determined using a calorimeter containing water. Besides the substance's mass and the change in temperature of the test substance, what other quantities must be measured in calorimetry?
- the mass, specific heat capacity, and temperature change of the water
 - the volume, specific heat capacity, and temperature change of the water
 - the density, specific heat capacity, and temperature change of the water
 - the mass, thermal conductivity, and temperature change of the water
- _____ 4. A metal bolt in a calorimeter gives up $3.6 \times 10^3 \text{ J}$ of energy as heat to the surrounding water. The bolt has a mass of 0.25 kg and a specific heat capacity of $360 \text{ J/kg}\cdot^{\circ}\text{C}$. What is the change in the bolt's temperature?
- 0.40°C
 - 2.5°C
 - 4.0°C
 - $4.0 \times 10^1 \text{ }^{\circ}\text{C}$

Heat *continued*

_____ 5. What is the energy transferred to or from a unit mass of a substance during a phase change called?
a. latent heat
b. specific heat capacity
c. internal energy
d. thermal energy

_____ 6. During a phase change, which of the following properties does *not* change?
a. internal energy
b. physical state
c. temperature
d. volume

_____ 7. In a heating curve, what does a line with a positive slope indicate?
a. the change in the substance's state with added or removed energy
b. the increase in the substance's temperature with added energy
c. the decrease in the substance's temperature with added energy
d. the change in the substance's latent heat with added energy

_____ 8. In a heating curve, what does a line with zero slope indicate?
a. the change in the substance's state with added or removed energy
b. the increase in the substance's temperature with added energy
c. the decrease in the substance's temperature with added energy
d. the change in the substance's specific heat capacity with added energy

9. Using the concept of specific heat capacity, explain why water remains cool on a hot day whereas the air above it becomes hot.

10. A metal part with a mass of 7.50×10^{-2} kg and a temperature of 93.0°C is placed in a calorimeter containing 0.150 kg of water. If the initial temperature of the water is 25.0°C , and the final temperature of the part and water 29.0°C , what is the specific heat capacity of the part? ($c_{p,w} = 4186 \text{ J/kg}\cdot^\circ\text{C}$)