Name Date Class

Chapter Review Thermal Energy

Part A. Vocabulary Review

Directions: *In the space at the left, write the term from the word list that best completes each statement. Use each term once.*

second law of thermodynamics **thermal energy** **solar collector** **conduction**
insulators **radiation** **heat** **temperature**
heat engine **convection**

_____ **1.** The _____ increases when the average kinetic energy of the particles in a material increases.

_____ **2.** Thermal energy transfer that does not require matter is _____.

_____ **3.** Thermal energy that flows from a higher to a lower temperature is _____.

_____ **4.** Thermal energy is transferred through matter by direct contact of particles by _____.

_____ **5.** According to the _____ , heat never flows spontaneously from a lower to a higher temperature.

_____ **6.** _____ is the total kinetic and potential energy of the particles in a material.

_____ **7.** Materials in which thermal energy does not move easily are _____.

_____ **8.** The transfer of thermal energy by movement of matter is _____.

_____ **9.** A device that absorbs radiant energy from the Sun is a(n) _____.

_____ **10.** A device that changes thermal energy into mechanical energy is called a(n) _____.

Directions: *Explain the difference between the terms in each pair. Write your answers on the lines provided.*

11. air conditioner, heat pump

_____

_____

_____

_____

_____

Chapter Review (continued)

12. internal combustion engine, external combustion engine

Part B. Concept Review

Directions: *Determine whether the italicized term makes each statement true or false. If the statement is true, write* **true** *in the blank. If the statement is false, write in the blank the term that makes the statement true.*

_____ **1.** The transfer of thermal energy by conduction and convection *does not* require matter.

_____ **2.** The transfer of thermal energy by radiation *does not* require matter.

_____ **3.** A material in which thermal energy moves easily is *an insulator*.

_____ **4.** Solar collectors are used in *passive* solar heating systems.

_____ **5.** A heat engine converts thermal energy into *radiation.*

_____ **6.** According to the *second* law of thermodynamics, the thermal energy of a system changes when work is done on the system.

_____ **7.** The thermal energy of a material *increases* when the temperature of the material increases.

_____ **8.** *Refrigerators* transfer thermal energy from a cooler area to a warmer area.

_____ **9.** At the same temperature, 1 kg of water has *the same amount of* thermal energy as 2 kg of water.

_____ **10.** Because dark colors *reflect* more radiant energy than light colors, solar collectors are usually painted black.

_____ **11.** Thermal energy is transferred by radiation more easily in *gases*.

_____ **12.** *Temperature* is a measure of the average kinetic energy of the particles that make up an object.