

Chapter 6

CHAPTER REVIEW

● Using Thermal Energy

Part A. Vocabulary Review

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

combustion
conduction
solar energy
electricity

radiator
insulators
fluid
convection

solar collector
radiation
heat engine

- _____ 1. Thermal transfer by convection takes place in materials that are ____.
- _____ 2. A type of heat transfer that does not require matter is ____.
- _____ 3. Energy from the sun is ____.
- _____ 4. Energy is transferred through matter by direct contact of particles by ____.
- _____ 5. The rapid burning of fuels that takes place in engines is called ____.
- _____ 6. A device with a large surface area designed to heat the air near it by conduction is a(n) ____.
- _____ 7. Materials such as air, wood, and rubber that do not allow heat to pass through them easily are called ____.
- _____ 8. The transfer of heat energy by movement of matter is called ____.
- _____ 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) ____.
- _____ 11. Scientists are hoping to change the thermal energy in ocean water into ____.

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

- 12.** heat mover, heat pump:

- 13.** internal combustion engine, external combustion engine:

Chapter 6 Review (continued)

Part B. Concept Review

Determine whether the italicized term makes each statement true or false. If the statement is true, write the word "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 that allows heat to pass through it easily is an *insulator*.
- _____ 4. Insulation rated R-35 allows *more* heat to pass through it than insulation rated R-1.
- _____ 5. Solar collectors are used in *passive* solar heating systems.
- _____ 6. A solar heating system that does not use fans or electrical devices is an *active* solar heating system.
- _____ 7. A steam engine is an example of an *internal* combustion engine.
- _____ 8. The fuel of an external combustion engine is burned *outside* the engine.
- _____ 9. A *steam-heating* system uses radiators to transfer thermal energy.
- _____ 10. Refrigerators and air conditioners are *heat pumps*.
- _____ 11. Steam-heating systems require *more* water than hot-water systems.
- _____ 12. Because dark colors *reflect* more radiant energy than light colors, solar collectors are usually painted black.
- _____ 13. Many external combustion engines use *turbines* to produce mechanical energy.
- _____ 14. Two drawbacks to trying to harness the thermal energy of *ocean water* for use as electricity are they require a lot of energy to operate and may cause damage to the environment.