From Textbook, ***Prentice Hall Science Explorer: Motion, Forces, and Energy***
Chapter 6 Review and Assessment (hints available at the end of Chapter 6 in the online textbook, under Chapter 6 Review and Assessment)

1. A measure of the average kinetic energy of the particles of an object is its
   A. heat.
   B. temperature.
   C. specific heat.
   D. thermal energy.

2. If you want to know the amount of heat needed to raise the temperature of 2 kg of steel by 10°C, you need to know steel's
   A. temperature.
   B. thermal energy.
   C. state.
   D. specific heat.

3. The process by which heat moves from one particle of matter to another without the movement of matter itself is called
   A. convection.
   B. conduction.
   C. radiation.
   D. thermal expansion.

4. Vaporization that occurs below the surface of a liquid is called
   A. evaporation.
   B. melting.
   C. boiling.
   D. freezing.

5. The process of burning a fuel is called
   A. combustion.
   B. thermal expansion.
   C. radiation.
   D. boiling.

If the statement is true, write true. If it is false, change the underlined word or words to make the statement true.

6. A temperature reading of zero on the <u>Celsius scale</u> is equal to absolute zero.

7. A <u>convection current</u> is the circular motion of a fluid caused by the rising of heated fluid.

8. An <u>insulator</u> conducts heat well.

9. When a substance is <u>freezing</u>, the thermal energy of the substance decreases.

10. In an external combustion engine, the fuel is burned inside the engine.

11. What happens to the particles of a solid as the thermal energy of the solid increases?

12. During a summer night, the air temperature drops by 10°C. Will the temperature of the water in a nearby lake change by the same amount? Explain why or why not.

13. When you heat a pot of water on the stove, a convection current is formed. Explain how this happens.

14. How can you add thermal energy to a substance without increasing its temperature?

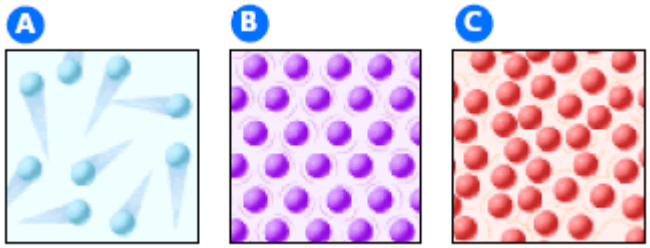
15. When molten steel becomes solid, is energy absorbed or released by the steel? Explain.

16. Describe how a thermostat controls the temperature in a building.

17. Why is the air pressure in a car's tires different before and after the car has been driven for an hour?

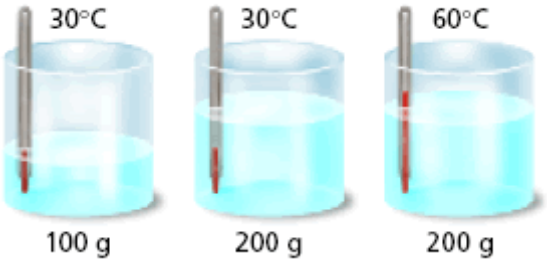
18. When they are hung, telephone lines are allowed to sag. Can you think of a reason why?

19. The three illustrations below represent the molecules in three different materials. Which is a solid? A liquid? A gas?



20. Developing Hypotheses A refrigerator is running in a small room. The refrigerator door is open, but the room does not grow any cooler. Use the law of conservation of energy to explain why the temperature does not drop.

Use the illustration of three containers of water to answer Questions 23–25.



23. Interpreting Data Compare the average motion of the molecules in the three containers. Explain your answer.

24. Drawing Conclusions Compare the total amount of thermal energy in the three containers. Explain your answer.

25. Calculating Which container would need the least amount of thermal energy to raise its temperature by 1 K? The specific heat of water is 4,180 J/(kg·K).