1. ____ On a fall Michigan day the air temperature increases from 40°F to 67°F. What is the change in temperature as measured in °C?
   A. 20°C C. 40°C
   B. 15°C D. 30°C

2. ____ Which of the following statements best describes the idea of absolute temperature?
   A. The temperature of a gas in Kelvins is proportional to the average kinetic energy of the gas molecules.
   B. The temperature of a gas in Kelvins is proportional to the average speed of the gas molecules.
   C. The temperature of a gas in °C is proportional to the average kinetic energy of the gas molecules.
   D. The temperature of a gas in °C is proportional to the average speed of the gas molecules.

3. ____ How much energy must be transferred to 5 kg of lead at 20°C to warm it to 80°C?
   A. 300 kcal C. 12 kcal
   B. 40 kcal D. 9 kcal

4. ____ A 2 kg mass of aluminum is taken from an ice-water bath and is placed in an insulated container of 1 kg of water that is at a temperature of 20°C. A 4 kg mass of lead is taken from the same ice-water bath and is placed in another insulated container that contains 1 kg of water that is at a temperature of 20°C.
   A. The water - aluminum system would be cooler than the water - lead system.
   B. The water - aluminum system would be warmer than the water - lead system.
   C. The water - aluminum system would the same temperature as the water - lead system.
   D. More information is required to answer this question.

5. ____ Helium gas molecules have a mass number of 4 while diatomic nitrogen molecules have a mass number of 28. For a gas of helium and nitrogen at the same temperature how do the speeds of the molecules compare?
   A. The nitrogen molecules move with a speed that is the same as the speed of the helium molecules.
   B. The nitrogen molecules move with a speed that is about 7 times the speed of the helium molecules.
   C. The nitrogen molecules move with a speed that is about 0.4 times the speed of the helium molecules.
   D. The nitrogen molecules move with a speed that is about 2.6 times the speed of the helium molecules.

6. ____ On a cool morning you fill to the brim the gasoline tank of your car. As the day warms you note that gasoline spills out of the tank. What can you conclude from this observation?
   A. The volume of the steel gasoline tank becomes less as it warms up.
   B. The volume of the gasoline expands by an amount that is equal to the volume of gasoline that runs out.
   C. The volume of the gasoline expands at a rate that is greater than three times the linear expansion of the steel of the gasoline tank.
   D. The volume of the gasoline expands at a rate that is less than three times the linear expansion of the steel of the gasoline tank.