Lesson 53 Homework (page 281, #1-7)

1. **Possible answer**: Absolute zero is the temperature at which the volume of a gas would be equal to zero. It is considered a theoretical temperature because a real gas would condense into a liquid and then a solid before reaching absolute zero, making a volume of zero impossible.
2. **Possible answer**: One advantage that the Kelvin scale has over the Celsius scale is that its zero point is the lowest possible temperature. This means that there can never be any negative temperatures in the Kelvin scale.
3. **Possible answer**: The kinetic theory of gases defines the temperature of a gas as the average kinetic energy of the particles of the gas.
4. The freezing temperatures of water are 0 °C, 273 K, and 32 °F. The boiling temperatures of water are 100 °C, 373 K, and 212 °F.
5. The smallest unit is 1 °F because there are 180 degrees Fahrenheit between the freezing temperature of water and boiling temperature of water, while there are only 100 Celsius degrees or kelvins between the freezing temperature of water and boiling temperature of water.
6. A. cold, 100 K is below the freezing point of water
   B. hot, 60 °C is equivalent to 140 °F
   C. cold, 250 K is below the freezing point of water
   D. warm, 25 °C is equivalent to 75 °F, the temperature of a warm room
   E. warm, 300 K is equivalent to about 81 °F
   F. cold, -100 °C is below the freezing point of water
   G. hot, 400 K is above the boiling point of water
7. A. -173 °C
   B. 333 K
   C. -23 °C
   D. 298 K
   E. 27 °C
   F. 173 K
   G. 127 °C