Heat, Temperature, and Thermal Equilibrium

As you work through the steps in the lab procedure, record your observations for later input.

Part I: Temperature and Absolute Zero

Report your results for Part I: Temperature and Absolute Zero here by matching the correct response to the condition of the system you studied.

Observations:

- All motion has stopped. The molecules are stationary.
- Most of motion is vibrational; little translational or rotational movement. Very few free molecules. Water is a solid.
- Very few molecules are without spin; however, they do not remain so for long.
- Nearly all motion is vibrational; exceedingly little translational or rotational motion. Water is a solid.
- The majority of motion is vibrational and translational; little rotational movement. Some free molecules. Water is a liquid.
- The majority of motion is translational and rotational movement. Free molecules come and go. Water is a boiling.
- The majority of motion is rotational and translational movement. Many free molecules. Water is a hot steam (gas).

Table 1

Location	Observation
Describe the motion of the molecules at 157 K.	
Describe the motion of the molecules at 283 K.	
Describe the motion of the molecules at 394 K.	
Describe the motion of the molecules at 700 K.	
Are there any molecules that are not spinning at 1000 K?	
Describe the motion of the molecules at 1 K.	
Describe the motion of the molecules at 0 K.	

Referring to the case where the temperature is 0 K, what is the name of this special point on the temperature scale?

Part II: Thermal Equilibrium – Questions

After a short time of mixing, the cooler chamber has more particles than the warm chamber because the particles in the warm chamber are moving faster and have a greater chance of moving through the opening than the particles in the cooler chamber.

- True
- False

Complete the following sentences.

The motion of the particles is a model of _____.

The movement of particles from one chamber to another is a model of _____.

When the average motion of the particles is the same in both chambers, this is a model of

_____.