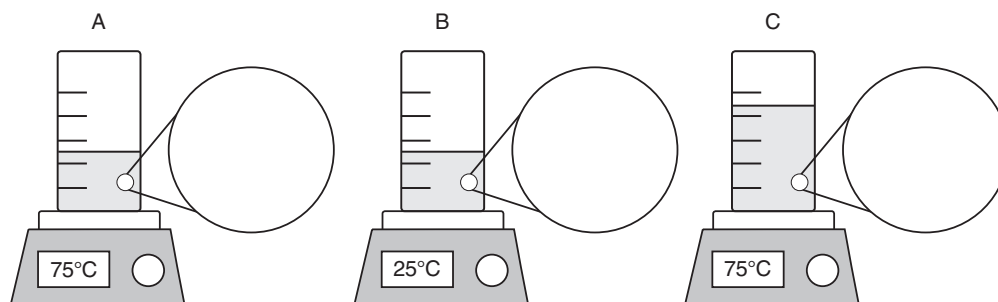


Checkout Questions

Lab 1. Thermal Energy and Matter

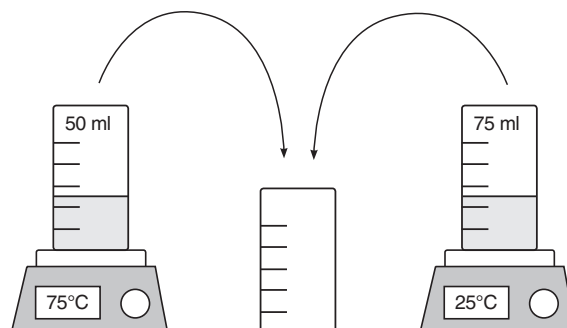
What Happens at the Molecular Level When Thermal Energy Is Added to a Substance?

The image below shows three beakers filled with water. Each beaker is sitting on a different hot plate, and each hot plate is set to a specific temperature. Draw a model inside each circle that explains the behavior of the water molecules in each beaker.



1. Explain your model. Why did you draw it that way?

2. A scientist has two beakers of water. As shown in the figure at right, one beaker has 50 ml of water at 75°C and the other beaker has 75 ml of water at 25°C. She then mixes the water together in a third beaker.



What will be the temperature of the water after they are mixed?

- a. $> 45^{\circ}\text{C}$
- b. 45°C
- c. $< 45^{\circ}\text{C}$
- d. Unsure

Explain your answer. What rule did you use to make your decision?

3. A scientific law describes the behavior of a natural phenomenon or a generalized relationship under certain conditions; a scientific theory is a well-substantiated explanation.
- I agree with this statement.
 - I disagree with this statement.

Explain your answer, using an example from your investigation about thermal energy.

4. Scientists need to be creative and have a good imagination.
- I agree with this statement.
 - I disagree with this statement.

Explain your answer, using an example from your investigation about thermal energy.

5. Scientists often need to be able to recognize proportional relationships between groups or quantities. Explain why recognizing a proportional relationship is important, using an example from your investigation about thermal energy.

6. It is often important to track how matter flows into, out of, and within a system during an investigation. Explain why it is important to keep track of matter when studying a system, using an example from your investigation about thermal energy.