


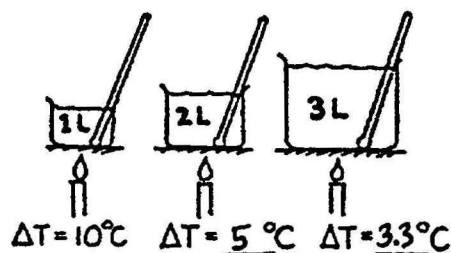
**CONCEPTUAL Physics** PRACTICE PAGE**Chapter 15 Temperature, Heat, and Expansion**  
**Measuring Temperatures**

1. Complete the table.



TEMPERATURE OF MELTING ICE	0 °C	32 °F	K
TEMPERATURE OF BOILING WATER	100 °C	212 °F	K

2. Suppose you apply a flame and warm 1 liter of water, raising its temperature 10°C. If you transfer the same heat energy to 2 liters, how much will the temperature rise? For 3 liters? Record your answers on the blanks in the drawing at the right.



3. A thermometer is in a container half-filled with 20°C water.

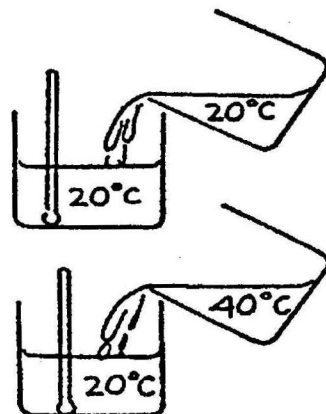
a. When an equal volume of 20°C water is added, the temperature of the mixture will be

[10°C] (20°C) [40°C].

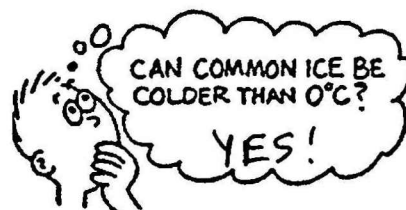
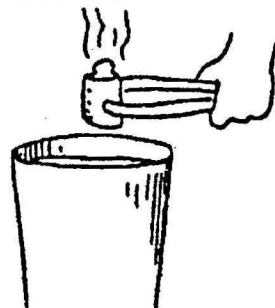
b. When instead an equal volume of 40°C water is added, the temperature of the mixture will be

[20°C] (30°C) [40°C].

c. When instead a small amount of 40°C water is added, the temperature of the mixture will be

[20°C] [between 20°C and 30°C] [30°C] [more than 30°C].

4. A small red-hot piece of iron is put into a bucket of cool water. (Ignore the heat transfer to the bucket.)

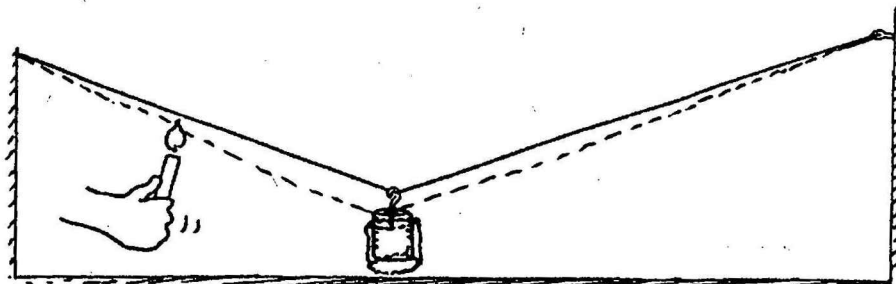
a. [True] [False] The decrease in iron temperature equals the increase in the water temperature.b. [True] [False] The quantity of heat lost by the iron equals the quantity of heat gained by the water.c. [True] [False] The iron and water both will eventually reach the same temperature.d. [True] [False] The final temperature of the iron and water is halfway between the initial temperatures of each.Hewitt  
Drewitt!

## Chapter 15 Temperature, Heat, and Expansion

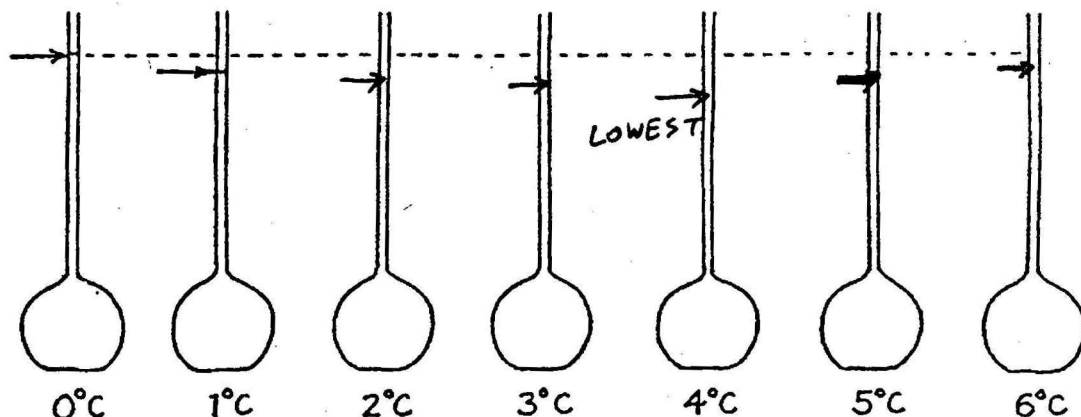
### Thermal Expansion

1. The weight hangs above the floor from the copper wire. When a candle is moved along the wire and heats it, what happens to the height of the weight above the floor? Why?

The height decreases as the wire lengthens.



2. The levels of water at  $0^{\circ}\text{C}$  and  $1^{\circ}\text{C}$  are shown below in the first two flasks. At these temperatures there is microscopic slush in the water. There is slightly more slush at  $0^{\circ}\text{C}$  than at  $1^{\circ}\text{C}$ . As the water is heated, some of the slush collapses as it melts, and the level of the water falls in the tube. That's why the level of water is slightly lower in the  $1^{\circ}\text{C}$  tube. Make rough estimates and sketch in the appropriate levels of water at the other temperatures shown. What is important about the level when the water reaches  $4^{\circ}\text{C}$ ?



3. The diagram at the right shows an ice-covered pond. Fill in the blanks for likely temperatures of the water at the top and bottom of the pond and answer the questions below.

