Name _____ # ____ Name _____ # ____

Lab # ___ Date _____

Thermal Expansion of Solids

Purpose: To record and draw conclusions from observations made upon heating: (A) a ball and ring; (B) a compound bar

Materials: alcohol burner, ball and ring (brass), compound bar (brass & iron), matches, water

Procedure: IMPORTANT! Handle the apparatus by the wooden handles only. When you havefinished with the materials, allow them to cool on the base of thering stand before returning them to the tray.

1. Check to see that the ball fits through the ring. Heat the ball in the flame of the alcohol burner for several minutes. Again check to see if the ball fits through the ring. (If there is no change in the diameter of the ball, heat it again for a little longer. Be certain to write down the length of time the ball was actually heated).

2. Hold the ring in the flame for about the same length of time that the ball was heated and again try to fit the ball through the ring.

3. Cool the ring in water. Again check to see if the ball will fit through the ring.

4. GENTLY! Heat the compound bar in the flame of the alcohol burner. What happens?

5. NOTE: Too much heat will destroy the properties of the compound bar. The care with which you heat the bar will enable your fellow classmates to use the same material at a later date.

6. Cool the bar by running water over it. What happens?

Follow-up: (Quiz questions)

1. Make a drawing of the ball and ring. Show what happens to the ball after heating. Be certain to label your drawings. Explain what happens in each diagram.

2. Make a drawing of the compound bar. Label one side iron and the other side brass. Make additional drawings showing what happened to the bar when it was heated, and when it was cooled.

3. Use the Kinetic Molecular Theory to aid in your explanation of the events that took place during this laboratory.