*Title:*  Percent Composition of a Hydrated Crystal

*Purpose:*       To determine the percent water (by mass) in a hydrated crystalline ionic compound.

*Equipment:*   Burner, Ring Stand, Ring, Clay Triangle, Crucible, Balance, Crucible Tongs (PAY CLOSE ATTENTION TO DIRECTIONS FOR USE), hydrated $CuSO_4$.

*Background Information:*     Some ionic compounds naturally absorb water from the air to form hydrates. Formulas for the hydrated crystals are written in the following manner: $MgSO_4 \bullet 7H_2O$.  **This means that for every one formula unit of $MgSO_4$ there are 7 water molecules incorporated into the crystalline structure**.  The water molecules are physically attached to the structure.

Today we will be working with $CuSO_4 \bullet XH_2O$ in order to experimentally determine the percentage of water by mass in this compound.

*Procedure --you decide.*

*HINTS*
Use the data table on the back of the page as a guide

Use about 3 - 5  grams of solid.

Heat for approximately 5 MINUTES.

Mass only after cooling.  DO NOT MASS WHILE HOT.

Just for fun: after the lab, add drops of water one at a time to the dehydrated salt in order to re-hydrate it.  DO NOT HOLD THE CRUCIBLE IN THE PALM OF YOUR HAND WHILE RE-HYDRATING it.  Observe what happens.  Dispose of waste in the sink with lots of water.

*Data:*

Obtain the data indicated in the data table on the back of the page.

*Calculations:*

Show the calculations indicated on the back of the page.

*Conclusion:*

Using the following words, write a paragraph ON THE BACK OF THE PAGE, describing how you found the percentage of water in the hydrated crystal.

CIRCLE THE WORDS/phrases AS YOU USE THEM.  There are 10.

Hydrated $CuSO_4$ ;      Crucible ;       Mass ;          Heated ;        Vaporize(d) ;         Anhydrous ;

Divide ;        Clay Triangle ;        Subtract ;       Multiply by 100

# Percent Composition of a Hydrated Crystal----Calculations and Conclusion

**Raw Data:**

Mass of crucible           12.25 g

Mass of crucible and hydrated $CuSO_4$      16.42 g

Mass of crucible and anhydrous $CuSO_4$      13.63 g

**Calculations---show work**

Mass of the original hydrated salt      _____

Mass of the water driven off of the hydrated salt      _____

Percentage of water in the hydrated salt      _____

WRITE CONCLUSION HERE: