Title: Virtual Lab: Determining the Formula of a Hydrate

Purpose: In this lab you will determine the formula of the hydrate of copper II sulfate, virtually.

Procedure: Access the virtual lab by clicking on the following link:
Chemistry Dept IA State - Formula of a Hydrate
1. The first frame shows an evaporating dish with crystals of copper II sulfate, in hydrated form. Click on the right arrow.
2. Write down the chemical reaction for the heating of the hydrated form of copper II sulfate. The triangle is the symbol for "heat added".
3. Note the initial mass of the reactant in your data table below.
4. Click to start heating. Make observations about the physical changes that the crystals are undergoing.
5. Note the final mass of the crystals after heating in your data table below.

Data:

	Mass (g)	Calculations
Copper Sulfate Initial		n/a
Copper Sulfate Final		n/a
Water		

Analysis/Calculations (Be sure to show all work for each calculation.):
1. Find the molar mass of the copper II sulfate, anhydrous form.

2. Find the molar mass of water.

3. Divide the final mass of the anhydrous salt by the molar mass of $CuSO_4$ to find the number of moles of $CuSO_4$.

4. Subtract the final mass from the initial mass to find the amount of water that was lost through heating. Record this in the data table.

5. Divide the number of grams of water from Step #4 by the molar mass of water to find the number of moles of water.

6. Find the ratio of moles of anhydrous salt : moles of water by dividing the number of moles of water (Step #5) by the number of moles of anhydrous salt (Step #3). This is the value of "x" in the hydrate.

7. Express the hydrate with the correct value for "x". Note: "x" should be a whole number!

If you did not calculate a whole number, you need to go back and find your error.

from http://cms.gavirtualschool.org/Shared/Science/Chemistry/mass_relationships_shared/mass_relationships_shared10.html