1. A hydrate composed of the ionic compound cupric chloride, CuCl₂, will dehydrate when heated to 100°C. Upon heating, 0.235 g of the hydrate, CuCl₂ · xH₂O, gives 0.185 g of anhydrate. What is the correct formula for the hydrate?

2. The “alum” used in cooking is potassium aluminum sulfate hydrate, KAl(SO₄)₂ · xH₂O. To find the value of x, you can heat a sample of the compound to drive off all of the water and leave only KAl(SO₄)₂. Assume you heat 4.74 g of the hydrated compound and that the sample loses 2.16 g of water. What is the formula of the hydrate?

3. If “Epsom salt,” MgSO₄ · xH₂O is heated to 250°C, all of the water of hydration is lost. On heating a 1.687 g sample of the hydrate, 0.824 g of MgSO₄ remains. What is the formula of Epsom Salt?

4. When CaSO₄ · xH₂O is heated, all of the water is driven off. If 34.0 g of CaSO₄ remains from 43.0 g of the hydrate, what is the formula of the hydrate?

5. A 26.2 g sample of oxalic acid hydrate (H₂C₂O₄ · 2H₂O) is heated in an oven until all the water is driven off. How much of the anhydrous acid is left? *Hint: think %composition

6. The aluminum sulfate hydrate Al₂(SO₄)₃ · xH₂O contains 8.10% Al by mass. Identify the formula of the hydrate by calculating x (the number of water molecules associated with each Al₂(SO₄)₃ unit. *Challenge question