

Thermal Decomposition and % Unknown

Name _____

Period _____ Date _____

1. In the first of two experiments, a student is assigned the task of determining the moles of water in one mole of $\text{Fe}(\text{NO}_3)_3 \cdot n \text{H}_2\text{O}$. The student collects the data shown in the following table:

Mass of empty container	57.812 g
Initial mass of sample and container	61.143 g
Mass of sample and container after first heating	60.251 g
Mass of sample and container after second heating	59.806 g
Mass of sample and container after third heating	59.808 g

- a) Explain why the student can correctly conclude that the hydrate was heated a sufficient number of times in the experiment.
- b) Use the data above to:
- calculate the total number of moles of water lost when the sample was heated
 - determine the formula of the hydrated compound.
 - determine the molar mass of the hydrate.
2. A mixture contains only KCl and $\text{Ba}(\text{NO}_3)_2$. A 7.38 g sample of the mixture is dissolved in water, to which an excess Na_2SO_4 is added, producing a precipitate of BaSO_4 . The precipitate is filtered, dried and weighed. The mass of the precipitate is 0.685 g. What is the mass percent of each component in the sample?