

Formula of a Hydrate

Name: _____

Block: _____

of Beaker and letter of HYDRATE USED: _____ *(If none indicated, NO CREDIT FOR LAB!)*

Anhydrous molar mass of your hydrate used: _____ g/mole (from board)

Mass of completely dry crucible AND its cover (WITHOUT hydrate)	Grams
Mass of crucible, cover and hydrate - before heating	Grams
Mass of crucible, cover and contents - after first heating	Grams
Mass of crucible, cover and contents - after second heating	Grams
Mass of crucible, cover and contents - after third heating	Grams
Mass of crucible, cover and contents - after fourth heating (if necessary)	Grams
Mass of crucible, cover and contents - after fifth heating (if necessary)	Grams

Data Calculations

1. Mass of hydrate *BEFORE* heating (NO CRUCIBLE OR COVER)
(Show math work below)

Grams
(If no work shown to left, no credit)

2. Mass of anhydrous salt (*AFTER FINAL* heating - NO CRUCIBLE OR COVER)
(Show math work below)

Grams
(If no work shown to left, no credit)

3. Mass of water evaporated
(Show math work below)

Grams
(If no work shown to left, no credit)

1. What was the final mass of the water that was driven off by heating (see calculations made on data table #3)?

_____ g H₂O

Using **dimensional analysis**, take the #g of water and convert to moles of water. Show work here:

2. What was the final mass of the anhydrous salt (see calculations made on data table #2)?

_____ g anhydrous salt

Using **dimensional analysis**, take the #g of anhydrous salt and convert to moles. For the molar mass of the anhydrous salt, use what you copied off the board (on other side of this sheet up at the top). Show work here:

3. Compare your results in question #1 to the results to question #2. Use a ratio.

$$\frac{\text{moles of water (from \#1 above)}}{\text{moles of anhydrous salt (from \#2 above)}}$$

=

Go out 3 decimal places.

4. Look at your answer above in the box. You probably will *not* have a whole number but round it to the nearest whole number.

Example: **0.646** moles of water / **0.106** moles anhydrous salt = **6.09** which rounds to **6**. So your ratio of water to salt is **6 : 1**. Therefore, your formula would be **1 "X" • 6 H₂O**.

Go ahead and do the same thing for YOUR results.

WRITE THE ANSWER HERE: 1 "X" • _____ H₂O

6. Calculate your % error. For example, let's say you actually got 6.1 moles of water in #4. But, remember that the moles of water will be an *integer* value. So, your % error would be:

$$\frac{|\underline{6.102} - 6 \text{ moles}|}{6 \text{ moles}} \times 100 = 1.7 \% \text{ error}$$

SHOW ALL WORK and calculate YOUR error.