**Your Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Partners’ Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**The “Cat” Came Back Lab (Endo and Exo)**

**Necessary Info:**

Hydrated copper (II) sulphate is a compound that has a certain number of water molecules chemically bonded to it. Heating is required to “rip” the water molecules off of the compound.

Your mission is to determine how many water molecules, **x** , are bonded to each copper (II) sulfate.

**CuSO4 ; x H2O You are solving for x!!**

**Procedure:**

1. Observe the **hydrated compound**

2. Mass a crucible to 2 dp. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

3. Mass approx. 5.00 g of **hydrated compound** in the crucible. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

4. Heat the crucible and contents over a Bunsen Burner for 10.00 minutes

at the tip of the inner blue cone (the hottest part).

5. Do NOT touch the crucible. Let it cool for at least 10.00 minutes.

6. Mass the crucible and the contents (**anhydrous compound**).

7. Observe the contents.

8. **In your group** at the sink **while everyone is looking** add approx. one mL of

tap water to the contents and observe.

**Data Table:**

**Processing:**

**1.** What did the original chemical look like and what happened to it upon heating?

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**2.** a) Was what happened a physical or chemical change: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

b) What evidence do you have to back up your answer?

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**3.** Which step of the procedure was endothermic? How do you know? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**4.** Which step of the procedure was exothermic? How do you know? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**5.** Write the **BCE** for what happened in the forward direction. Use subscripts always!

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**6.** Where, last year, did you use a compound that was 2 different colours depending on whether it was hydrated or not?

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**7.** a) Calculate the number of moles of the **anhydrous compound** produced:

b) Calculate the number of moles of **water** “lost”:

c) Calculate the number of moles of **hydrated compound** you started with:

c) Calculate the ratio of moles of **water** to moles of **hydrated compound**:

**8.** The formula for the hydrated compound is: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**9.** **Percent Error = O – A x 100**

**A**