Last\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_First\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Date\_\_\_\_\_\_\_\_\_\_\_\_\_\_Per\_\_\_\_

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| **MAS** **ADV MTS APP BEG**  **10 8-9 6-7 4-5 0-3** |

**LAB – It’s in the Bag** (Ch 14 Chemical Reactions)

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| Pre-lab & Observations  **5** **4** **3** **2** **1** | Conclusions  **5** **4** **3** **2** **1** |

**PRE-LAB INFO and NOTES**

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| --- | --- |
| Question | Answer |
| 1. What are some clues that a chemical reaction took place? (p 351) 2. This is a **BIG CLUE** a chemical reaction occurred. (not in your book) 3. What is meant by **mass is always conserved**?   (POINT OF LAB) (p 357)   1. If you take the mass of the **reactants** and then take the mass of the **products**, what MUST BE TRUE based on #3 above (see Figure 12 on p 357) 2. In a chemical equation we show that *mass is conserved* by having the SAME # of ATOMS on BOTH SIDES OF THE EQUATION. (p 356) | 1.  2.  3.  4.  IT CANNOT BE EASILY REVERSED!!!  COPY EXAMPLE #3 ON PAGE 356 |

**PROCEDURES** (CHECK OFF EACH STEP AS YOU GO!)

\_\_\_\_ 1. Goggles and aprons

\_\_\_\_2. Zero or Tare balance with petri dish on it, and then measure 5g of sodium bicarbonate (NaHCO3) or baking soda.

\_\_\_\_3. Put the 5 grams of sodium bicarbonate in a plastic zip lock bag.

\_\_\_\_4. Measure 5 g Calcium Chloride (CaCl2) using a petri dish like in #2 above.

\_\_\_\_5. Put the Calcium Chloride in the same bag as the sodium bicarbonate.

\_\_\_\_6. Get 8 mL phenol red which will TURN YELLOW in the presence of an ACID.

\_\_\_\_7. Add the 8mL of phenol red into a test tube, put a cork on top, and carefully place it in the bag.

\_\_\_\_8. Close the Ziploc bag with the 2 powders and the test tube and carefully squeeze all the air out as you close it. DO NOT uncork your test tube or allow the phenol red to mix yet.

\_\_\_\_9. Take the ***mass of the bag*** with all the chemicals and record it in the observation/data table.

\_\_\_\_10. Make 4 or more ***observations*** about the chemicals in the bag and record it in the observation/data table.

\_\_\_\_11. Carefully open the test tube of the phenol red and let the chemicals all mix. **Record your observations** in the observations/data table. Make sure to feel the ***temperature*** during the reaction!

\_\_\_\_12. Take the ***mass of the bag*** after the reaction and record it in the observation/data table.

\_\_\_\_13. Squeeze some of the gas onto a burning match and add this to your observations.

\_\_\_\_14. Clean up. Throw away Ziploc bags. Clean test tube and put back at lab station.

\_\_\_\_15. Begin CONLCUSIONS questions.

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| **Question** | **Answer** |
| 1. What must you do before you uncork the test tube? | 1.  2. |
| 1. Why must you take the mass of the bag again before opening it? |  |
| 1. Why is it important to TARE (zero) the scale before placing the powder in the petri dish? What must you do again before weighing the bag if you take the petri dish off? |  |

**OBSERVATIONS / DATA**

|  |  |
| --- | --- |
| **BEFORE REACTION** | **AFTER REACTION** |
| Mass of bag with REACTANTS = \_\_\_\_\_\_\_\_\_\_g | Mass of bag with PRODUCTS = \_\_\_\_\_\_\_\_\_\_\_g |

**Observations BEFORE mixing reactants**

|  |  |
| --- | --- |
| 1 | 1 |
| 3 | 4 |

**Observations DURING/AFTER mixing the reactants**

|  |  |
| --- | --- |
| CLUE | EVIDENCE (From observations during/after reaction) |
| Temperature Change  YES / NO |  |
| Color Change  YES / NO |  |
| Gas Formation  YES / NO | What happened when you held the match up to the bag?  What gas might this be? |
| Easily Reversed???  YES / NO |  |

**CONCLUSIONS**

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|  | **Sentence Ideas** | **Your Answers (Complete Sentences)** |
| **Claim** | Answer the question below in a single sentence.  *Did a chemical reaction occur?* | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| **Evidence** | When we mixed the substances together we observed…  We also saw \_\_\_\_\_, which is evidence of \_\_\_\_\_\_.  Another important observation was… | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| **Reasoning** | Chemical reactions often have \_\_\_\_\_\_, \_\_\_\_\_, and \_\_\_\_\_.  Since the ingredients in the bag changed \_\_\_\_\_, got \_\_\_\_\_\_, and produced a \_\_\_\_\_\_, this shows that a \_\_\_\_\_\_ \_\_\_\_\_\_\_ occurred.  Furthermore, the reaction \_\_\_\_\_\_\_\_ be easily reversed, which is another indication that new substances were formed. | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |

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|  | **Sentence Ideas** | **Your Answers (Complete Sentences)** |
| **Discuss how you investigated the conservation of mass law in the lab.** Include answers to the following:  What was the mass before and after the reaction?  Why were these masses similar/ different? Discuss possible sources of error (if necessary).  Why is mass conserved in a chemical reaction? | In this lab we took the mass before and after the reaction to determine if the mass of the \_\_\_\_\_\_\_ and \_\_\_\_\_\_\_ was equal.  Our data showed that the two masses (were/were not) equal.  If the masses were not equal, this is likely due to experimental error such as…  The reason that mass is conserved in a chemical reaction is because… | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |

Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Period:\_\_\_\_\_\_

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| **Claim** | Answer the question below in a single sentence.  *Did a chemical reaction occur?* |
| **Evidence** | When we mixed the substances together we observed…  We also saw that the bag \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, which is evidence of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.  Another important observation was… |
| **Reasoning** | Chemical reactions often have \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_,  Since the ingredients in the bag changed \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, got \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, and produced a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, this shows that a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ occurred.  Furthermore, the reaction \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ be easily reversed, which is another indication that new substances were formed. |

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| **Discuss how you investigated the conservation of mass law in the lab.** Include answers to the following:  What was the mass before and after the reaction?  Why were these masses similar/ different? Discuss possible sources of error (if necessary).  Why is mass conserved in a chemical reaction? | In this lab we took the mass before and after the reaction to determine if the mass of the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ was equal.  Our data showed that the two masses WERE / WERE NOT equal.  If the masses were not equal, this is likely due to experimental error such as…  The reason that mass is conserved in a chemical reaction is because… |