Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Homeroom: \_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_ **4.1**

**Introduction to Physical and Chemical Changes (SPI.9.8)**

|  |  |
| --- | --- |
| ***Key Point*** | ***Notes*** |
| **Physical Change** | **A physical change** is a type of change that **alters the** ­­­­­­­­­\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_ of a substance but **does NOT change** the **composition or** \_\_\_\_\_\_\_\_\_\_\_\_\_ of the substance  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is what a substance is *\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_*  **What happens to particles during a physical change?**   * **No** \_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ **are formed**; particles just move around * Physical changes can cause a **change** in \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ such as **volume, mass, or state**   **Evidence of physical change:**  Bending, \_\_\_\_\_\_\_\_\_\_\_\_, smashing, freezing, \_\_\_\_\_\_\_\_\_\_\_\_, evaporating, crushing, cutting, tearing, sanding, grinding, \_\_\_\_\_\_\_\_\_\_\_\_, separating, dissolving  **Physical changes** may be \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_! |
| **Chemical Change** | In a **chemical change** matter changes, becomes \_\_\_\_\_\_\_ substance   * Start and end with \_\_\_\_\_\_\_\_\_\_\_\_ things * Usually irreversible (can’t change back) * A chemical \_\_\_\_\_\_\_\_\_\_\_\_ occurs * Examples: burning, rusting, milk going sour   **The Common Outcomes of ALL Chemical Changes:**  **1.**  **2.** The **new substances (products) formed** have \_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_  **3.** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ are created between atoms  **4.** The new substances (products) have a \_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  **What happens to particles during a chemical change?**   * **New substances are formed**; particles \_\_\_\_\_\_\_\_\_\_\_\_ or rearrange * This new substance will have **new** \_\_\_\_\_\_\_\_\_\_\_\_\_ **properties**   **Evidence of Chemical Change:**  \_\_\_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_\_\_ or combustion, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, production of odor, heat, cold, light, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, solids, smoke, decomposition, oxidation, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, digestion |
| **So What?!** |  |

**“We Own This” (Guided Practice):**

*Describe the following as a physical or chemical change.*

Sugar dissolving-

Logs burning-

Breaking water up by separating it into hydrogen and oxygen-

Cutting paper-

Crushing an aspirin-

Metal rusting-

Egg rotting-

Egg breaking-

**“I Own This” (Independent Practice):**

1. Describe the differences between a physical and chemical change.
2. For each example, write whether it’s a chemical (C) or physical (P) change:
   1. Melting ice: \_\_\_\_\_\_
   2. Bending a piece of metal: \_\_\_\_\_\_
   3. Vinegar reacting with baking soda: \_\_\_\_\_\_
   4. Mixing blue and red water to make purple: \_\_\_\_\_\_
   5. Digestive juices breaking down food in your stomach: \_\_\_\_\_\_
   6. A hot dog is cooked: \_\_\_\_\_\_
   7. Thousand Island dressing and mayonnaise are mixed to make “secret sauce” for hamburgers: \_\_\_\_\_\_
   8. Water is boiled in preparation for making pasta: \_\_\_\_\_\_
   9. A rock star gets a tattoo on his forehead: \_\_\_\_\_\_
   10. A piece of cork is cut in half: \_\_\_\_\_\_
   11. A bicycle chain rusts: \_\_\_\_\_\_
   12. Water is absorbed by a paper towel: \_\_\_\_\_\_
   13. A piece of an apple rots on the ground: \_\_\_\_\_\_
   14. A tire is inflated with air: \_\_\_\_\_\_
   15. A plant turns sunlight, CO2, and water into sugar and oxygen: \_\_\_\_\_\_
   16. Sugar dissolves in water: \_\_\_\_\_\_
   17. Milk sours: \_\_\_\_\_\_
   18. A Popsicle melts: \_\_\_\_\_\_
   19. An egg is cooked to turn into an omelet: \_\_\_\_\_\_