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: \_\_\_\_\_\_