Physical and Chemical Changes…

S1-2-12 Differentiate between physical and chemical changes.

S1-2-13 Experiment to determine indicators of chemical change. *Examples: colour change, production of heat and / or light, production of a gas or precipitate or new substance*

Remember the difference between physical and chemical properties:

Physical Properties

- Describe how a substance "**LOOKS**"
- Are **CHARACTERISTICS** of a substance.

Examples:

Colour	*Lustre*	*Malleability*
Ductility	*Magnetism*	*Melting point*
Boiling Point	*Solibility*	*Conductivity*

Chemical Properties:

- Describe how a substance **BEHAVES** (**REACTS**)

Examples:

Flammable *Reacts with acids/bases*
Corrosive

Physical Changes:

- When a substance undergoes a **CHANGE** in **FORM**, **SHAPE** or **STATE**.
- The substance is **STILL** the **SAME** after a **PHYSICAL CHANGE**.

→ ***Nothing new is made!***

Examples:

- Tearing a piece of paper
- Melting ice cream
- Dissolving sugar

Chemical Change:

- The substance is changed into **ONE** or **MORE** **DIFFERENT** **SUBSTANCES** with **DIFFERENT** **PROPERTIES**.
- The **ATOMS** are the **SAME**, but they are **REARRANGED** into **DIFFERENT** **MOLECULES**.
- The **PRODUCTS** are **DIFFERENT** than the **REACTANTS**.

→ ***Something new is made!***

Examples:

- A car rusts
- Wood burns

Identify the following as physical changes and chemical changes?

- Margarine spoils in the fridge
- Chocolate goes soft in the hot sun
- Clear liquid is mixed with a base and turns purple
- Metal on a bike frame rusts
- Water disappears from a glass over time
- Sawdust is formed when wood is being sawed
- Brown liquid is being formed when coffee grinds are put in hot water
- Ice breaks into smaller pieces
- CO_2 is dissolved in carbonated drinks.

10 Signs of a Chemical Change…

1. **BUBBLES**
   - Bubbles show that a **GAS** has been **PRODUCED**. The bubbles are produced when a **GAS** is trying to **ESCAPE** a **LIQUID**.

2. **PRECIPITATE FORMS**
   - A precipitate is a **SOLID** that is **FORMED** from **TWO** **LIQUIDS**, so something **NEW** is produced.

3. **COLOUR CHANGE**
   - Occurs when a compound is **ALTERED**.

4. **LIGHT IS EMITTED**
   - Light is a result of **BONDS** between **ATOMS** being **BROKEN**.

5. **VOLUME CHANGE**
   - A change in volume of the starting substances indicates a **CHEMICAL CHANGE**.

6. **TEMPERATURE CHANGE**
    - When bonds are broken **ENERGY** is **RELEASED** or **ABSORBED** in the form of **HEAT**. As a result, a **TEMPERATURE** change occurs.

7. **CHANGE IN CONDUCTIVITY**
    - Electrical conductivity may **INCREASE** or **DECREASE** in a **CHEMICAL** change.

8. **BOILING POINT/MELTING POINT CHANGE**
    - If a substance has been altered, it's **BOILING POINT** or **MELTING POINT** may change.

9. **CHANGE IN SMELL OR TASTE**
    - Do **NOT TASTE** chemicals in the lab!!!

10. **CHANGE IN DISTINCT CHEMICAL PROPERTIES**
    - A change in **PROPERTIES** means something **NEW** is produced.