Station 1: Physical vs. Chemical Property

PHYSICAL PROPERTY	***CHEMICAL PROPERTY***
1. Observed with senses; Describing 2. Identity (composition) of matter does not change	1. Indicates how a substance reacts with something else 2. Matter will be changed into a new substance after the reaction

Record the definition of physical and chemical pro in your notebook.

Identify the following as a Physical (P) or Chemical property (C):

_____1. blue color

_____2. density

_____3. flammability (burns)

_____4. solubility (dissolves)

_____5. reacts with acid

_____6. supports combustion

_____7. sour taste

_____8. melting point

_____9. reacts with water

_____10. hardness

_____11. boiling point

_____12. luster

_____13. vaporizes

_____14. reacts with air

Station 2: Physical vs. Chemical Change

PHYSICAL CHANGE	***CHEMICAL CHANGE***
1. A change in size, shape, state, or appearance only 2. No new substance is formed	1. A change in the physical and chemical properties 2. A new substance is formed

Record the definition of physical and chemical changes in your notebook.
Identify the following as Physical *(PC)* or Chemical *(CC)* changes:

_____1. NaCl (Table Salt) dissolves in water

_____2. Ag (Silver) tarnishes

_____3. An apple is cut

_____4. Heat changes H_2O to steam

_____5. Baking soda reacts to vinegar

_____6. Fe (Iron) rusts

_____7. Alcohol evaporates

_____8. Ice melts

_____9. Milk sours

_____10. Sugar dissolves in water

_____11. Wood rots

_____12. Pancakes cook

_____13. Grass grows

_____14. A tire is inflated

_____15. Food is digested

_____16. Towel absorbs water

Station 3:

Can you recognize the chemical and physical changes that happen all around us? If you change the way something looks, but haven't made a new substance, a **physical change** (PC) has occurred. If the substance has been changed into another substance, a **chemical change** (CC) has occurred. Identify as ***PC*** or ***CC*** for each:

1.		An ice cube is placed in the sun. Later there is a puddle of water. Later still the puddle is gone.
2.		Two chemicals are mixed together and a gas is produced.
3.		A bicycle changes color as it rusts.
4.		A solid is crushed to a powder.
5.		Two substances are combined and heat is produced.
6.		Once a piece of ice has melted, it then reacts with sodium.
7.		Mixing salt and pepper.
8.		Chocolate syrup is dissolved in milk.
9.		A marshmallow is toasted over a campfire.
10.		A marshmallow is cut in half.

Station 4:

Read each scenario. Decide whether a physical or chemical change has occurred and give evidence for your decision. If you change the way something looks, but haven't made a new substance, a **physical change** has occurred. If the substance has been changed into another substance, a **chemical change** has occurred. The first one has been done for you to use as an example.

	Scenario	**Physical or Chemical Change?**	**Evidence…**
1.	A student removes a loaf of bread hot from the oven. The student cuts a slice off the loaf and spreads butter on it.	Physical	No change in substances No unexpected color change No temperature change or gas given off
2.	When preparing a piece of toast, you friend leaves it in the toaster too long. The bread is black and the kitchen is full of smoke.		
3.	You forgot to dry the bread knife when you washed it and reddish brown spots appeared on it.		
4.	You blow dry your wet hair.		
5.	In baking biscuits and other quick breads, the baking powder reacts to release carbon dioxide bubbles causing the dough to rise.		

Read each scenario. Decide whether a physical or chemical change has occurred and give evidence for your decision. If you change the way something looks, but haven't made a new substance, a **physical change** has occurred. If the substance has been changed into another substance, a **chemical change** has occurred. The first one has been done for you to use as an example.

	Scenario	**Physical or Chemical Change?**	**Evidence…**
6.	You take out your best silver spoons and notice that they are very dull and have some black spots.	Chemical	Change in luster, appearance of different color spots
7.	A straight piece of wire is coiled to form a spring.		
8.	Food color is dropped into water to give it color. (Remains as water, just with color)		
9.	Chewing food to break it down into smaller particles represents a _____ change, but the digestion of starch into sugars by enzymes represents a _____change.		
10.	In a fireworks show, the fireworks explode giving off heat and light.		

Station 5:

Decide whether each is True (T) or False (F): If you change the way something looks, but haven't made a new substance, a **physical change** has occurred. If the substance has been changed into another substance, a **chemical change** has occurred.

1.		Changing the size and shape of pieces of wood would be a chemical change.
2.		In a physical change, the makeup of matter is changed.
3.		Evaporation occurs when liquid water changes into a gas.
4.		Evaporation is a physical change.
5.		Burning wood is a physical change.
6.		Combining hydrogen and oxygen to make water is a physical change.
7.		Breaking up concrete is a physical change.
8.		Sand being washed out to sea from the beach is a chemical change.
9.		When ice cream melts, a chemical change occurs.
10.		Acid rain damaging a marble statue is a physical change.

Station 6:

Fill in the blanks using the word bank below. Write the sentences in your notebook:

1. A chemical reation is a process in which _____ of one or more substances are _____ in order to form new substances.

2. All _____ is _____ in a chemical reaction. No new matter is _____ or _____. All chemical reations MUST obey this law.

3. We follow this law by _____chemical equations so that the number of atoms of each element type are _____ on both _____and _____sides of the equation!

Word Bank:

conserved	**balancing**	**protons**
driven	**upper**	**electrons**
mass	**lower**	**coefficients**
created	**equal**	**subscripts**
destroyed	**reactant**	**atoms**
moving	**product**	**rearranged**

Station 7: Do It Yourself Chemical Changes Part 1

At this station you will complete 2 chemical changes. Recreate the table shown below in your notebook, list the clues to a chemical reaction that you observed. Record your procedure and observations.

The following are the clues to a chemical reaction:

1. Gas/bubbles form
2. A change in color
3. A solid forms when you mix two liquids together.
4. Burning
5. A change in smell **Baking Soda and Vinegar**- add one teaspoon of baking soda and 10 drops of vinegar
6. Heat/Light/Sound Energy is produced.

Chemical Reaction	Clues to a Chemical Reaction	Possible Explanation
Baking Soda and Vinegar- add one teaspoon of baking soda and 10 mL of vinegar.		
Candle and Product of Reaction 1- Light the candle. Without spilling the vinegar and baking soda on the candle or touching the candle, bring the beaker next to the candle. Gently tip the side of the beaker over the flame.		

Station 8: Do It Yourself Chemical Changes Part 2

At this station you will complete 2 chemical changes. Recreate the table shown below in your notebook, list the clues to a chemical reaction that you observed. Record your procedure and observations.

The following are the clues to a chemical reaction:

1. Gas/bubbles form
2. A change in color
3. A solid forms when you mix two liquids together.
4. Burning
5. A change in smell
6. Heat/Light/Sound Energy is produced.

Chemical Reaction	**Clues to a Chemical Reaction**	**Possible Explanation**
Salt and Coke – Add one teaspoon of salt to the 20 mL of Diet Coke.		
Mentos and Diet Coke – Add one Mentos to the 20 mL of DIET coke.		

Station 9: Do It Yourself Chemical Changes Part 3

At this station you will complete 2 chemical changes. Recreate the table shown below in your notebook, list the clues to a chemical reaction that you observed. Record your procedure and observations.

The following are the clues to a chemical reaction:

1. Gas/bubbles form
2. A change in color
3. A solid forms when you mix two liquids together.
4. Burning
5. A change in smell
6. Heat/Light/Sound Energy is produced.

Chemical Reaction	**Clues to a Chemical Reaction**	**Possible Explanation**
Alka-Seltzer and Water – Add a half of a tablet of Alka Seltzer to a half a beaker of water.		
Vinegar and Chalk – Add 10 drops of vinegar to 1 piece of chalk		