Matter Homework Packet

Name Key
Period _____

Physical and Chemical Changes and Properties of Matter Worksheet

Classify the following as chemical change (cc), chemical property (cp), physical change (pc), or physical property (pp).

1. PP Heat conductivity
2. CC Silver tarnishing
3. PC sublimation
4. PC magnetizing steel
5. PP length of metal object
6. PC shortening melting
7. CC exploding dynamite
8. CP Combustible
9. PC Water freezing
10. CC Wood burning
11. CP Acid resistance
12. PP Brittleness
13. CC Milk souring
14. CC baking bread

Identify the following as being true or false to the left of the sentence.

T 15. A change in size or shape is a physical change.
T 16. A chemical change means a new substance with new properties was formed.
F 17. An example of a chemical change is when water freezes.
T 18. When platinum is heated, then cooled to its original state, we say this is a physical change.
F 19. When milk turns sour, this is a physical change because a change in odor does not indicate a chemical change.
T 20. When citric acid and baking soda mix, carbon dioxide is produced and the temperature decreases. This must be a chemical change.

Identify each of the following as a physical or chemical change.

21. CC You leave your bicycle out in the rain and it rusts.

22. PC A sugar cube dissolves.

23. CC Scientist break-up water into oxygen and hydrogen gas.

24. CC Burning coal for a barbecue.

25. PC Trimming a bush because it has grown too tall.

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Classifying Matter Worksheet

Classify each of the following substances as an element, a compound, a solution (homogenous mixture, or a heterogeneous mixture.

1. Sand - Heterogeneous mixture
2. Salt Compound
3. Pure Water Compound
4. Soil Heterogenous mixture
5. Soda just opened Homogeneous Mixture
6. Pure air Heterogenous mixture
7. Carbon Dioxide Compound
8. Gold Element
9. Brass Homogenous mixture
10. Oxygen Element
11. Italian Salad Dressing Heterogenous Mixture
12. Salt Water Homogenous mixture
13. Raisin Bran Heterogenous mixture
14. Silver Element
15. Lithium Iodide Compound
16. Apple Pie Homogenous mixture
17. Kool Aid Homogenous Mixture
18. Sugar Water Homogenous mixture
19. Chocolatechip Cookie Heterogenous Mixture
20. Gatorade Homogenous Mixture
21. Gold Element
22. tacos Heterogenous mixture
23. Lead Element
24. Ceasar Salad Heterogenous mixture
25. Calcium Element
26. Whole Milk Homogenous Mixture
27. Skim Milk Homogenous mixture
28. hydrogen peroxide Compound
29. Potassium Element
30. Sugar Compound
31. Raisin Bran Cereal with Milk Heterogenous mixture
32. Raisin Bran Cereal without Milk Heterogenous mixture

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Physical and Chemical Properties Worksheet

Classify the following properties as either chemical or physical by checking the appropriate column.

	Physical property	Chemical property
Blue color	✓	
Density	✓	
Flammability		✓
Dissolves in water	✓	
Boils at 100 degrees	✓	
Scratches glass	✓	
Sour taste	✓	
Rusting		✓
Exploding fireworks		✓
Melting point	✓	
Reacts with H_2O to form gas		✓
Reacts with something to form H_2O		✓
Hardness	✓	
Boiling point	✓	
Luster (shine)	✓	
Odor	✓	

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Identify each of the following as an example of a physical property or a chemical property.

1. Silver tarnishes when it comes in contact with hydrogen sulfide in the air.
   Chemical
2. A banana is yellow.
   Physical
3. A sheet of copper can be pounded into a bowl.
   Physical
4. Barium melts at 725 C.
   Physical
5. Gasoline is flammable.
   Chemical
6. A diamond is the hardest natural substance.
   Physical
7. Helium does not react with any other element.
   Chemical
8. A bar of lead is more easily bent than is a bar of aluminum of the same size.
   Physical
9. Potassium metal is kept submerged in oil to prevent contact with oxygen or water.
   Chemical
10. An apple will turn brown is left in oxygen.
    Chemical
11. Diamond dust can be used to cut or grind most other materials.
    Physical
12. Acid in tomato sauce can corrode aluminum foil.
    Chemical
13. Rocks containing carbonates can be identified because they fizz when hydrochloric acid is applied.
    Chemical
14. A piece of charcoal, which is mostly the substance carbon, glows red, gives off heat, and becomes a gray ash.
    Chemical

PHYSICAL AND CHEMICAL PROPERTIES AND CHANGES

Name _____

PHYSICAL PROPERTY	CHEMICAL PROPERTY
1. observed with senses 2. determined without destroying matter	1. indicates how a substance reacts with something else 2. matter will be changed into a new substance after the reaction

Identify the following as a chemical (C) or physical property (P):

P 1. blue color
P 2. density
C 3. flammability (burns)
P 4. solubility (dissolves)
C 5. reacts with acid
C 6. supports combustion
P 7. sour taste
P 8. melting point
C 9. reacts with water
P 10. hardness
P 11. boiling point
P 12. luster
P 13. odor
C 14. reacts with air

PHYSICAL CHANGE	CHEMICAL CHANGE
1. a change in size, shape, or state 2. no new substance is formed	1. a change in the physical and chemical properties 2. a new substance is formed

Identify the following as physical *(P)* or chemical *(C)* changes.

P 1. NaCl (Table Salt) dissolves in water.
C 2. Ag (Silver) tarnishes.
P 3. An apple is cut.
P 4. Heat changes H_2O to steam.
C 5. Baking soda reacts to vinger.
C 6. Fe (Iron) rusts.
P 7. Alcohol evaporates .
P 8. Ice melts.
C 9. Milk sours.
P 10. Sugar dissolves in water.
C 11. Wood rots.
C 12. Pancakes cook.
C 13. Grass grows.
P 14. A tire is inflated.
C 15. Food is digested.
P 16. Paper towel absorbs water.

Physical and Chemical Changes

Part A

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** (P) has occurred. If the substance has been changes into another substance, a **chemical change** (C) has occurred.

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

Part B

Read each scenario. Decide whether a physical or chemical change has occurred and give evidence for your decision. The first one has been done for you to use as an example.

	Scenario	Physical or Chemical Change?	Evidence...
1.	Umm! 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, temperature change or gas given off.
2.	Your friend decides to toast a piece of bread, but leaves it in the toaster too long. The bread is black and the kitchen if full of smoke.	Chemical	Substance changes color change odor, taste change
3.	You forgot to dry the bread knife when you washed it and reddish brown spots appeared on it.	Chemical	Rust is a chemical change. Iron to Iron oxide
4.	You blow dry your wet hair.	Physical	Water evaporates
5.	In baking biscuits and other quick breads, the baking powder reacts to release carbon dioxide bubbles. The carbon dioxide bubbles cause the dough to rise.	Chemical	Gas formation means chemical change new substance formed
6.	You take out your best silver spoons and notice that they are very dull and have some black spots.	Chemical	Black spots are tarnish (silver version of rust) new substance formed
7.	A straight piece of wire is coiled to form a spring.	Physical	No new substance only a new shape.
8.	Food color is dropped into water to give it color.	Physical	No new substance
9.	Chewing food to break it down into smaller particles represents a _____ change, but the changing of starch into sugars by enzymes in the digestive system represents a _____change.	Physical Chemical	
10.	In a fireworks show, the fireworks explode giving off heat and light.	Chemical	

Part C: True (T) or False (F)

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

Worksheet #2: Physical/Chemical Properties/Changes

Name_____

I. Fill in the Blanks

Physical properties can be observed without chemically changing matter. Chemical properties describe how a substance interacts with other substances. Solids have definite shapes and definite volumes. Liquids have indefinite shapes and definite volumes. Gases have indefinite shapes and indefinite volumes.

Phase changes are Physical changes. Freezing point is the temperature at which a liquid turns to a solid. It is also equal to the Melting point which is the temperature at which a Solid turns to a Liquid. Boiling point is the temperature at which a liquid turns to a gas, and Condensing point is the temperature at which a gas turns to a liquid. Occasionally, a solid turns directly into a gas without turning into a liquid first. This is called Sublimation.

II. Label these properties as chemical (C) or physical (P). Be certain to know the definition of each of these properties.

combustibility	C	density	P
malleability	P	tendency to corrode	C
weight	P	volume	P
failure to react	C	melting point	P
ductility	P	odor	P
texture	P	flammability	C

III. Label these changes as chemical (C) or physical (P).

digestion of food	C	explosions	C
getting a haircut	P	lighting a candle	C
evaporation	P	tarnishing silver	C
ice cube melting	P	formation of acid rain	P
crushing rocks	P	dissolving salt in water	P

WORKSHEET ON CHEMICAL VS PHYSICAL PROPERTIES AND CHANGES

Keep this in your binder as a study guide! You will have a quiz on this next class!

Background: Keeping the difference between physical and chemical properties as well as changes can be a challenge! This worksheet will help you do this. First, use the book to define the following terms.

VOCABULARY WORD	DEFINITION
Physical Property	Description using senses or measurement
Physical Change	Change in which the identity of the substance does NOT change
Chemical Property	Description of possible interactions
Chemical Change	change in which a new substance is formed.

Part One: Physical or Chemical Property? Fill in the chart using the vocabulary words or phrases provided.

Vocabulary words

Boiling point	Ability to rust	Melting point	Brittleness	Reactivity with vinegar
elasticity	Flammability	Density	Transparency	ductility

Each word is used once. Define the word when done!

Chemical Property↓	Definition
Flammability	• The ability to burn
Ability to Rust	• Reacts with oxygen to produce rust
Reactivity with vinegar	• Reacts with vinegar

Physical Property↓	Definition
Transparency	• The property of letting light pass through something
Boiling Point	• Measure of temperature at which liquid becomes gas
Elasticity	• Measure of how stretchy substance is.
Melting Point	• Measure of temperature at which solid becomes liquid
Density	• measure of how much stuff is in a given space.
Brittleness	• measure of how easily something breaks
Ductility	• measure of how easily something can be made into wire

Part Two: Physical or Chemical Change? Indicate with a 'P' or a 'C' which type of change is taking place.

1. P glass breaking
2. P hammering wood together
3. C a rusting bicycle
4. P melting butter
5. P separate sand from gravel
6. C bleaching your hair
7. C frying an egg
8. P squeeze oranges for juice
9. P melting ice
10. P mixing salt and water
11. P mixing oil and water
12. P water evaporating
13. P cutting grass
14. C burning leaves
15. C fireworks exploding
16. P cutting your hair
17. P crushing a can
18. P boiling water