PHYSICAL AND CHEMICAL PROPERTIES AND CHANGES

Name ANSWERS

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 vinegar.
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.	C	Can't be reversed change in colour new substance
3.	You forgot to dry the bread knife when you washed it and reddish brown spots appeared on it.	C	new substance (rust) colour change
4.	You blow dry your wet hair.	P	water evapourates hair is now dry
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.	C	bubbles are produced
6.	You take out your best silver spoons and notice that they are very dull and have some black spots.	C	new substance change in colour
7.	A straight piece of wire is coiled to form a spring.	P	change in form
8.	Food color is dropped into water to give it color.	P	no new substance just a solution
9.	Chewing food to break it down into smaller particles represents a __P__ change, but the changing of starch into sugars by enzymes in the digestive system represents a __C__ change.		chewing - change in form digesting - new substance
10.	In a fireworks show, the fireworks explode giving off heat and light.	C	heat and light are produced

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.	T	Acid rain damaging a marble statue is a physical change.

Worksheet #2: Physical/Chemical Properties/Changes Name ANSWERS

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 state 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 condensation 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	C
crushing rocks	P	dissolving salt in water	P

Name: ANSWERS Date: _____

Physical and Chemical Change Worksheet

True or False. If false, correct the underlined portion of the statement so that it is true.

T 1. A physical change is a change of matter from one form to another without a change in chemical properties.

F 2. A ~~physical~~ chemical change is a change that occurs when a substance changes composition by forming one or more new substances.

T 3. Color change is evidence that a chemical change may have occurred.

T 4. Fizzing or foaming is evidence that a chemical change may have occurred.

F 5. Production of light is evidence that a ~~physical~~ chemical change may have occurred.

T 6. Production of heat or light is evidence that a chemical change may have occurred.

F 7. A change in odor is evidence that a ~~physical~~ chemical change may have occurred.

F 8. Chemical changes can be reversed by ~~physical~~ chemical changes.

Identify each of the following as either a Physical change (P) or a chemical change (C).

1. You cut your hair. P
2. Making a peanut, pretzel and cereal mixture. P
3. Baking soda reacts with vinegar and forms a gas. C
4. A piece of metal is bent in half. P
5. An aspirin is crushed into fine powder. P
6. Copper turns green when exposed to the environment. C
7. Two clear liquids are mixed and a yellow color forms. C
8. Baking cookies. C
9. Diamonds are used to scratch glass. P
10. A tree burns to form ashes. C
11. A piece of paper is crumpled up. P
12. Water freezes to form ice. P
13. Food spoiling. C
14. A candle burning. C
15. A candle melting. P