

ANSWER KEY

EXTRA PRACTICE: PHYSICAL-CHEMICAL PROPERTIES & CHANGES

Name: _____ Date: _____ Period: _____

PHYSICAL PROPERTY

1. Observed with senses; Describing
2. Identity (composition) of matter does not change

CHEMICAL PROPERTY

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 Physical (P) or Chemical property (C):

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

PHYSICAL CHANGE

1. A change in size, shape, state, or appearance only
2. No new substance is formed

CHEMICAL CHANGE

1. A change in the physical and chemical properties
2. A new substance is formed

Identify the following as Physical (PC) or Chemical (CC) changes:

- | | |
|--|---|
| <u>PC</u> 1. NaCl (Table Salt) <u>dissolves</u> in water | <u>CC</u> 9. Milk <u>sours</u> |
| <u>CC</u> 2. Ag (Silver) <u>tarnishes</u> | <u>PC</u> 10. Sugar <u>dissolves</u> in water |
| <u>PC</u> 3. An apple is <u>cut</u> | <u>CC</u> 11. Wood <u>rots</u> |
| <u>PC</u> 4. Heat changes <u>H₂O</u> to steam | <u>CC</u> 12. Pancakes <u>cook</u> |
| <u>CC</u> 5. Baking soda <u>reacts</u> to vinegar | <u>PC</u> 13. Grass <u>grows</u> |
| <u>CC</u> 6. Fe (Iron) <u>rusts</u> | <u>PC</u> 14. A tire is <u>inflated</u> |
| <u>PC</u> 7. Alcohol <u>evaporates</u> | <u>CC</u> 15. Food is <u>digested</u> |
| <u>PC</u> 8. Ice <u>melts</u> | <u>PC</u> 16. Towel <u>absorbs</u> 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 (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.	PC	An ice cube is placed in the sun. Later there is a puddle of water. Later still the puddle is gone.
2.	CC	Two chemicals are mixed together and a <u>gas is produced</u> .
3.	CC	A bicycle changes <u>color</u> as it <u>rusts</u> .
4.	PC	A solid is <u>crushed</u> to a powder.
5.	CC	Two substances are combined and <u>heat is produced</u> .
6.	CC	Once a piece of ice has melted, it then <u>reacts with sodium</u> .
7.	PC	<u>Mixing</u> salt and pepper.
8.	PC	Chocolate syrup is <u>dissolved</u> in milk.
9.	CC	A marshmallow is <u>toasted</u> over a campfire.
10.	PC	A marshmallow is <u>cut</u> 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.	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.	Your friend decides to toast a piece of bread, but leaves it in the toaster too long. The bread is <u>black</u> and the kitchen is full of <u>smoke</u> .	Chemical Change	- Toasting will change identity of the substance - Production of smoke indicates a chemical change
3.	You forgot to dry the bread knife when you washed it and <u>reddish brown spots</u> appeared on it.	Chemical Change	- Unexpected color change produced - Change in substance (composition)

4.	You blow dry your wet hair.	Physical Change	- Wet hair is simply dried with the application of heat - No new substance is produced
5.	In baking biscuits and other quick breads, the baking powder <u>reacts</u> to <u>release</u> carbon dioxide <u>bubbles</u> . The carbon dioxide bubbles causing the dough to rise.	Chemical Change	- Chemical reaction was required - Effervescence (Release of gas bubbles) - CO ₂ produced (New substance)
6.	You take out your best silver spoons and notice that they are very dull and have some <u>black spots</u> .	Chemical change	- A reaction was required to produce the unexpected black spots - Unexpected color change
7.	A straight piece of wire is <u>coiled</u> to form a spring.	Physical Change	- Wire is simply coiled up - No change in identity (Composition) - No new substance produced
8.	Food color is dropped into water to give it color. (Remains as water, just with color)	Physical change	- Although water itself turned a different color, it is result of original color of food color, not a chemical reaction - Still water; No new substance produced
9.	Chewing <u>food</u> to break it down into smaller particles represents a <u>①</u> change, but the changing of starch into sugars by enzymes in the <u>digestive system</u> represents a <u>②</u> change.	① PC ② CC	① No change in chemical identity; only appearance changes ② Digestion requires chemical reaction starch → sugar (New substance made)
10.	In a fireworks show, the fireworks <u>explode</u> giving off <u>heat</u> and light.	Chemical Change	- An explosion is result of a combustion reaction - Production of heat & light

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

1.	F	Changing the size and shape of pieces of wood would be a chemical change. → PC
2.	F	In a physical change, the makeup of matter is changed. → No change in identity (Comp)
3.	T	Evaporation occurs when liquid water changes into a gas. → PC (Changes in State of Matter)
4.	T	Evaporation is a physical change.
5.	F	Burning wood is a physical change. → CC
6.	F	Combining hydrogen and oxygen to make water is a physical change. → Reaction needed (CC)
7.	T	Breaking up concrete is a physical change.
8.	F	Sand being washed out to sea from the beach is a chemical change. → Erosion (still sand)
9.	F	When ice cream melts, a chemical change occurs. → PC (Changes in State of Matter)
10.	F	Acid rain damaging a marble statue is a physical change. → CC (Change in composition; Rxn)