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. ____ Heat conductivity
2. ____ Silver tarnishing
3. ____ Sublimation
4. ____ Magnetizing steel
5. ____ Length of metal object
6. ____ Shortening melting
7. ____ Exploding dynamite
8. ____ Combustible
9. ____ Water freezing
10. ____ Wood burning
11. ____ Acid resistance
12. ____ Brittleness
13. ____ Milk souring
14. ____ Baking bread

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

___ 15. A change in size or shape is a physical change.
___ 16. A chemical change means a new substance with new properties was formed.
___ 17. An example of a chemical change is when water freezes.
___ 18. When platinum is heated, then cooled to its original state, we say this is a physical change.
___ 19. When milk turns sour, this is a physical change because a change in odor does not indicate a chemical change.
___ 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. ____ You leave your bicycle out in the rain and it rusts.

22. ____ A sugar cube dissolves.

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

24. ____ Burning coal for a barbecue.

25. ____ Trimming a bush because it has grown too tall.
Classifying Matter Worksheet

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

1. Sand
2. Salt
3. Pure Water

4. Soil
5. Soda just opened
6. Pure air

7. Carbon Dioxide
8. Gold
9. Brass

10. Oxygen
11. Italian Salad Dressing
12. Salt Water

13. Raisin Bran
14. Silver
15. Lithium Iodide

16. Apple Pie
17. Kool Aid
18. Sugar Water

19. Chocolatechip Cookie
20. Gatorade
21. Gold

22. tacos
23. Lead
24. Cesasar Salad

25. Calcium
26. Whole Milk
27. Skim Milk

28. hydrogen peroxide
29. Potassium
30. Sugar

31. Raisin Bran Cereal with Milk
32. Raisin Bran Cereal without Milk
# Physical and Chemical Properties Worksheet

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

<table>
<thead>
<tr>
<th>Property</th>
<th>Physical property</th>
<th>Chemical property</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blue color</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Density</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Flammability</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dissolves in water</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Boils at 100 degrees</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Scratches glass</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sour taste</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rusting</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Exploding fireworks</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Melting point</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reacts with H\textsubscript{2}O to form gas</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reacts with something to form H\textsubscript{2}O</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hardness</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Boiling point</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Luster (shine)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Odor</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
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.

2. A banana is yellow.

3. A sheet of copper can be pounded into a bowl.

4. Barium melts at 725 C.

5. Gasoline is flammable.

6. A diamond is the hardest natural substance.

7. Helium does not react with any other element.

8. A bar of lead is more easily bent than is a bar of aluminum of the same size.

9. Potassium metal is kept submerged in oil to prevent contact with oxygen or water.

10. An apple will turn brown is left in oxygen.

11. Diamond dust can be used to cut or grind most other materials.

12. Acid in tomato sauce can corrode aluminum foil.

13. Rocks containing carbonates can be identified because they fizz when hydrochloric acid is applied.

14. A piece of charcoal, which is mostly the substance carbon, glows red, gives off heat, and becomes a gray ash.
**Physical and Chemical Changes**

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 changed into another substance, a chemical change (C) has occurred.

<table>
<thead>
<tr>
<th>Physical Change</th>
<th>Chemical Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>NaCl (Table Salt) dissolves in water.</td>
<td>9. Milk sours.</td>
</tr>
<tr>
<td>Ag (Silver) tarnishes.</td>
<td>10. Sugar dissolves in water.</td>
</tr>
<tr>
<td>An apple is cut.</td>
<td>11. Wood rots.</td>
</tr>
<tr>
<td>Heat changes H₂O to steam.</td>
<td>12. Pancakes cook.</td>
</tr>
<tr>
<td>Baking soda reacts to vinegar.</td>
<td>13. Grass grows.</td>
</tr>
<tr>
<td>Alcohol evaporates.</td>
<td>15. Food is digested.</td>
</tr>
<tr>
<td>Ice melts.</td>
<td>16. Paper towel absorbs water.</td>
</tr>
</tbody>
</table>

**Part A**

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

<table>
<thead>
<tr>
<th>Scenario</th>
<th>Physical or Chemical Change?</th>
<th>Evidence...</th>
</tr>
</thead>
<tbody>
<tr>
<td>A student removes a loaf of bread hot from the oven. The student cuts a slice off the loaf and spreads butter on it.</td>
<td>Physical</td>
<td>No change in substances. No unexpected color change, temperature change or gas given off.</td>
</tr>
<tr>
<td>Your friend decides to toast a piece of bread, but leaves it in the toaster too long. The bread is black and the kitchen is full of smoke.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>You forgot to dry the bread knife when you washed it and reddish brown spots appeared on it.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>You blow dry your wet hair.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>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.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>You take out your best silver spoons and notice that they are very dull and have some black spots.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A straight piece of wire is coiled to form a spring.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Food color is dropped into water to give it color.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>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.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>In a fireworks show, the fireworks explode giving off heat and light.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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

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

I. Fill in the Blanks

___________ properties can be observed without chemically changing matter. ________ properties describe how a substance interacts with other substances. ________ have definite shapes and definite volumes. ________ have indefinite shapes and definite volumes. ________ have indefinite shapes and indefinite volumes.

Phase changes are ________ changes. ________ point is the temperature at which a liquid turns to a solid. It is also equal to the ________ point which is the temperature at which a ________ turns to a ________. ________ point is the temperature at which a liquid turns to a gas, and ________ 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 _________.

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

combustibility _______ density _______
maelleability _______ tendency to corrode _______
weight _______ volume _______
failure to react _______ melting point _______
ductility _______ odor _______
texture _______ flammability _______

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

digestion of food _______ explosions _______
getting a haircut _______ lighting a candle _______
evaporation _______ tarnishing silver _______
ice cube melting _______ formation of acid rain _______
crushing rocks _______ dissolving salt in water _______
## Worksheer on Cheenal Fees vs Physical Properties and Changes

**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.

<table>
<thead>
<tr>
<th>Vocabulary Word</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical Property</td>
<td></td>
</tr>
<tr>
<td>Physical Change</td>
<td>Change in which the identity of the substance does NOT change</td>
</tr>
<tr>
<td>Chemical Property</td>
<td></td>
</tr>
<tr>
<td>Chemical Change</td>
<td></td>
</tr>
</tbody>
</table>

### Part One: Physical or Chemical Property?

**Vocabulary words**

<table>
<thead>
<tr>
<th>Boiling point</th>
<th>Ability to rust</th>
<th>Melting point</th>
<th>Brittleness</th>
<th>Reactivity with vinegar</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flammability</td>
<td>Density</td>
<td>Transparency</td>
<td>ductility</td>
<td></td>
</tr>
</tbody>
</table>

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

**Chemical Property:**

- The ability to burn
- Reacts with oxygen to produce rust

**Physical Property:**

- The property of letting light pass through something

### Part Two: Physical or Chemical Change?

Indicate with a ‘P’ or a ‘C’ which type of change is taking place.

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