Chemistry Worksheet: Matter #1

1. A mixture (**is**/**is not**) a chemical combining of substances.

2. In a compound the (**atoms**/**molecules**) are (**chemically**/**physically**) combined so that the elements that make up the compound (**retain**/**lose**) their identities and (**do**/**do not**) take on a new set of properties.

3. The smallest identifiable unit of a compound is a(n) molecule, which is made up of atoms (two or more) which are chemically bonded.

4. True or False: A mixture is always made up of a combination of elements.
could also be a combination of compounds, e.g. salt water

5. In a mixture, the substances (**lose**/**retain**) their identities.

6. In a mixture the substances involved (**can**/**cannot**) be separated by a simple physical process.
In a compound the elements involved (**can**/**cannot**) be separated by a simple physical process because the elements are (**physically combined**/**chemically bonded**).

7. True or False: An element can be broken down into a simpler substance.
(unless you mean protons/neutrons/electrons; but they don't really have properties of a substance or element)

8. The smallest identifiable unit of an element is a(n) atom.

9. From the following list of substances, circle the ones that are elements: (just look at the periodic table)

silver	carbon dioxide	wood alcohol	chromium
water	hydrogen	carbon	nitrogen
oxygen	gold	sugar	salt
air	sulfur	magnesium	nickel

10. Explain how to separate the sugar and water in a solution of sugar and water.
Let the water evaporate, leaving behind solid sugar.

11. How would you separate a mixture of alcohol and water?
Heat the mixture and collect the vapors, which will be (mostly) alcohol. Cool the vapors and collect that liquid separately from the water that is in the original container.

12. How would you separate sand and water?
Filter the mixture. Water will flow through the filter but sand will be trapped in the filter.

13. Classify the following as pure substances or as mixtures:

air mix	gasoline mix	grain alcohol pure
water {deionized - pure / tap or lake - mix}	sugar pure	gold pure
mercury pure	oxygen pure	salt water mix

14. Classify the following as heterogeneous or as homogeneous:

sand & salt mixture het.	hydrogen hom.	iron hom.
salt water hom.	unfiltered air het (if there is dust)	iron with rust het.
pure water hom.	an apple het.	nitric acid hom.
tossed salad het.	granite het.	wood het.

15. Classify the following as an element, a compound, a solution, or a heterogeneous mixture:

(a solution = homogeneous mixture)

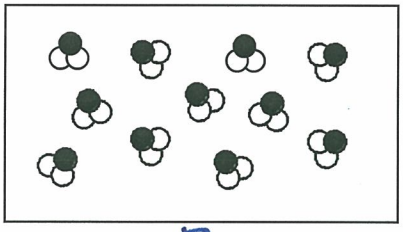
aluminum	element	raisin bread	het. mix
carbon dioxide	compound	water	{deionized = compound / tap or lake = homogen. mix = solu.
sugar and water	hom. mix (solution)	sulfur	element.
sulfuric acid	compound	mercury	element.
an orange	het. mix	water & instant coffee	{no grit? = solution / gritty? = het. mix
a pencil	het. mix	carbon particles & sugar	het. mix
nitrogen	element	air	hom. mix = solution
gasoline	hom. mix (solution)	grain alcohol	compound.

Elements, Compounds, and Mixtures

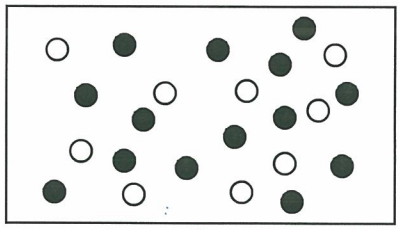
Classify each of the pictures below by placing the correct label in the blanks below:

A= Element
B= Compound
C= Mixture of elements
D= Mixture of compounds
E= Mixture of elements and compounds

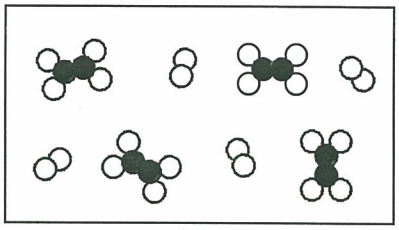
Each circle represents an atom and each different color represents a different kind of atom. If two atoms are touching then they are bonded together.



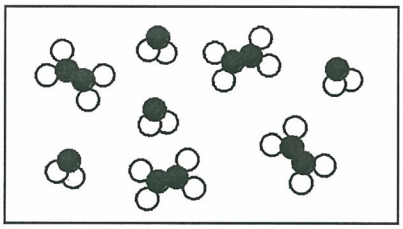
1) B



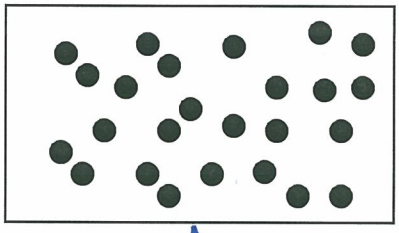
2) C



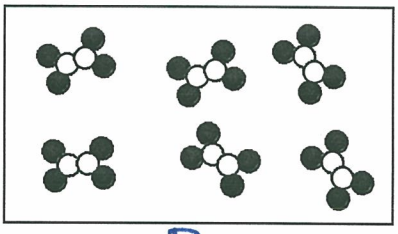
3) E



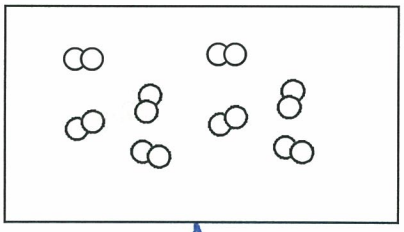
4) D



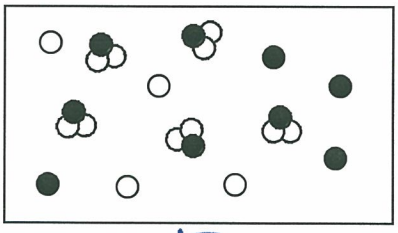
5) A



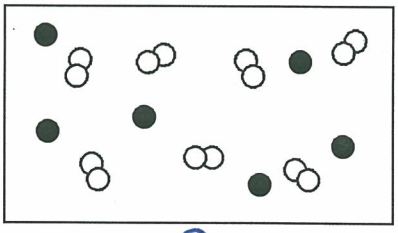
6) B



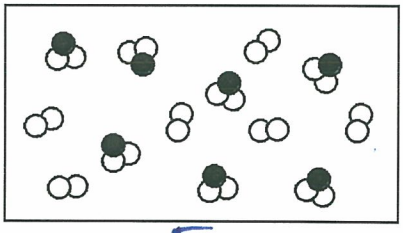
7) A



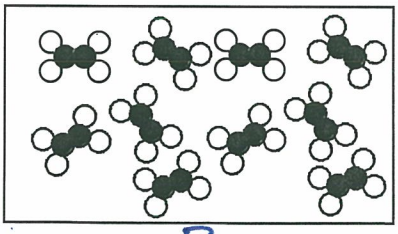
8) E



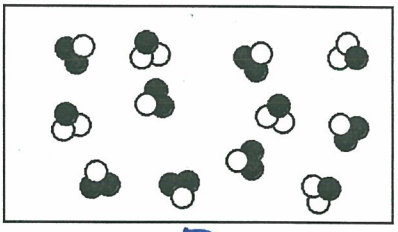
9) C



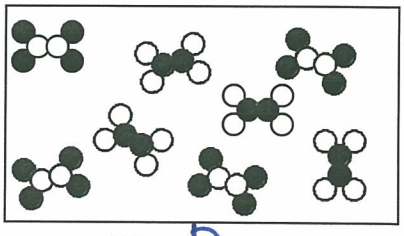
10) E



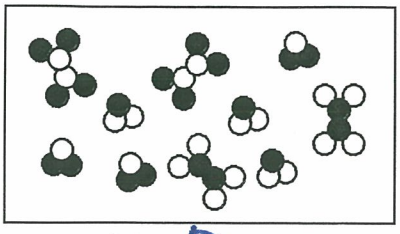
11) B



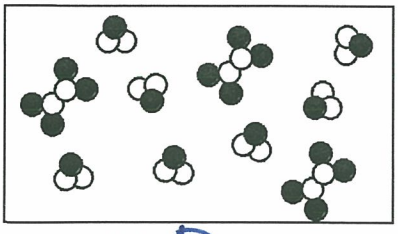
12) D



13) D



14) D



15) D

Physical and Chemical Changes

Name: _____

Date: _____ Hour: ___

Place a check in the appropriate column:

Change	Physical Change	Chemical Change
Salt dissolves in water.	✓	
Hydrochloric acid reacts with magnesium to produce hydrogen gas.		✓
A piece of copper is cut in half.	✓	
A sugar cube is ground up.	✓	
Water is heated and changed to steam.	✓	
Iron rusts. (reacts w/ oxygen)		✓
Ethyl alcohol evaporates.	✓	
Ice melts.	✓	
Milk sours (goes bad). milk sugar (lactose) turns to acid		✓
Sugar dissolves in water.	✓	
Sodium and potassium react violently with water.		✓
Pancakes cook on a griddle.	✓	✓
Grass grows on a lawn.		✓
A tire is inflated with air.	✓	
Food is digested in the stomach.	✓	✓
Water is absorbed by a paper towel.	✓	
Ethyl alcohol boils at 79°C.	✓	
Paper burns.		✓
Water freezes at 0°C.	✓	
Fireworks explode.	✓	✓
Alka-Seltzer gives off carbon dioxide when added to water.		✓
Clouds form in the sky.	✓	

Chemistry I Worksheet
Classification of Matter and Changes

NAME _____

INSTRUCTIONS: Write ~~E~~ het in the blank if the material is *heterogeneous* or ~~O~~ hom. if it is *homogeneous*.

1. Wood — het
2. Freshly-brewed black coffee — maybe either?
3. Water — hom.
4. Lucky Charms® — het
5. Salt — hom
6. Dirt — het
7. Sausage-and-mushroom pizza — het
8. Air — hom
9. Milk — homogenized = hom; ~~pasteurized~~ farm fresh = het
10. Gold — hom

INSTRUCTIONS: Classify each of the following as an *element* [**E**], a *compound* [**C**], or a *mixture* [**M**].

11. Gold — E
12. Water — C
13. Seawater — M
14. Sugar — C
15. A chocolate sundae — M
16. Air — M
17. Carbon dioxide — C
18. Silver — E
19. Ice — C
20. A Big Mac® — M

INSTRUCTIONS: Classify each of the following properties of matter as *physical* [**P**] or *chemical* [**C**].

21. Color — P
22. Density — P
23. Burns easily (flammable) — C
24. Not affected by acids — C
25. Boils at 450 °C — P
26. Reacts violently with chlorine — C
27. Good conductor of heat — P
28. Dissolves readily in water — P
29. Melts at 145 °C — P
30. Malleable — P

INSTRUCTIONS: Classify each of the following changes in matter as *physical* [**P**] or *chemical* [**C**].

31. Grinding chalk into powder — P
32. Dissolving salt in water — P
33. Dissolving zinc in acid — C
34. Tearing a piece of paper — P
35. Stretching copper into wire — P
36. Burning gasoline — C
37. Hammering gold into foil — P
38. Melting ice — P
39. Digesting food — P & C
40. Making hydrogen from water — C

* **INSTRUCTIONS:** Classify each of the following as an *intensive property* [**I**] or an *extensive property* [**E**].

41. Mass — E
42. Density — I
43. Melting point — I
46. Color — I
47. Volume — E
48. Length — E

* not specifically tested, but mentioned when measuring density