Unit 1 Review Name: KEY Period: ____

1. The two general properties that all matter shares are Mass and Volume.
2. Place a check mark next to each item that is matter which is made of atoms. (has mass and takes up space).

✓ a. apple	____ f. heat
✓ b. air	✓ g. proton
____ c. light	✓ h. oil
✓ d. water	✓ i. ice
✓ e. RNA	____ j. radio waves

3. List the 4 states of matter, and *circle* the correct descriptions of their properties.

a. Solid
shape: indefinite *or* (definite)
volume: indefinite *or* (definite)
particle motion: vibrate in place

b. liquid
shape: (indefinite) *or* definite
volume: indefinite *or* (definite)
particle motion: movement freedom+ flow around

c. gas
shape: (indefinite) *or* definite
volume: (indefinite) *or* definite
particle motion: high energy, random

d. plasma
shape: (indefinite) *or* definite
volume: (indefinite) *or* definite
particle motion: highest energy+ random

4. Classify each type of substance as represented in diagrams 1-4 as element, compound, or mixture.

Diagram Key:
- ● atom A
- ○ atom B

(1) (2) (3) (4)

Classification: element mixture compound element

5. Which of the diagrams from question 5. represent *pure substances*? (that is, *NOT mixtures*)
How could you tell? 1, 3, 4 made of one type of particle
(make sure you understand this explanation and ask if you need more discussion about it)

6. Classify the following materials as:

element | compound | homogeneous mixture | heterogeneous mixture

		Can be separated by _____ means. (circle one)		
a. cheeseburger	hetero	(physical)	chemical	NO
b. salt water	homogeneous	(physical)	chemical	NO
c. air	homogeneous	(physical)	chemical	NO
d. hydrogen gas (H_2)	element	physical	chemical	(NO)
e. silver (Ag)	element	physical	chemical	(NO)
f. steel	homogeneous	(physical)	chemical	NO
g. ice cream sundae	hetero	(physical)	chemical	NO
h. steam (H_2O)	compound	physical	(chemical)	NO
i. table salt (NaCl)	compound	physical	(chemical)	NO
j. carbon dioxide (CO_2)	compound	physical	(chemical)	NO
k. ice (H_2O)	compound	physical	(chemical)	NO

7. For the materials listed in question 6, list all that are <u>pure substances</u>. *(recall your #5 answer above)*

① hydrogen, H_2
② silver, Ag
③ steam, H_2O
④ table salt, NaCl
⑤ carbon dioxide, CO_2
⑥ ice, H_2O

8. A student tries to identify three unknown white solids by observing and recording the data listed below (a-e). Which property would be the best to identify this unknown solid?

A. white crystalline solid
B. mass is 7.00 g
C. volume is 2.0 mL
(D) density is 3.50 g/mL
E. insoluble (does not dissolve) in water

9. A few properties of aluminum are listed. Classify each property as a chemical or physical property.

P a. can be rolled into sheets
C b. reacts with HCl to produce H_2 gas
C c. thin, white coat of aluminum oxide forms the surface
P d. melts at 660.3 °C
P e. density is 2.70 g/mL

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Al
ALUMINUM
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10. Match each item with the correct statement below.

A. element
B. compound
C. homogeneous
D. heterogeneous

D describes mixture with a non-uniform composition (has different parts)

B substance that can only be changed into simpler substances by chemical means

A cannot be separated (broken down) by chemical means

C describes mixture with a uniform composition

11. Read each of the following descriptions, then determine if the substance described in each case is

Element , **Compound** , **Homogeneous Mixture** , **Heterogeneous Mixture**. **Explain your choice.**

Pure Substance ***Solution***

a) A cloudy white liquid is left to stand for several hours. At the end of this time, the top of the liquid is clear and there is a clump of white solid at the bottom of the liquid.

Heterogeneous because It separates into a clear liquid + a white solid

b) A clear, colorless liquid is heated. Some of it boils away (evaporates) at 25 °C, then the rest boils away at 100 °C.

Homogeneous because 2 liquids w/ different boiling points separated physically (distillation)

c) When heated strongly, a pure green solid decomposes into a white solid and a colorless gas.

Compound because it is chemically broken down into 2 new substances (Green solid → white solid + gas)

d) A pure yellow solid cannot be broken down into other substances chemically.

Element because it cannot be decomposed or broken down into a simpler substance

12. Which of the following warnings refers to a chemical property?

a. Shake well b. fragile c. flammable d. handle with care

13. Baking soda is a white powdery solid which reacts with acids. It has a density of 2.20 g/mL Identify each of these descriptions as a physical or chemical property.

P: white, powdery, solid, density of 2.20 g/mL

C: reacts with acids

14. Describe the steps you would take to separate a mixture of sand and sugar.

1. place mixture in a funnel w/filterpaper
2. pour hot, boiling water trough it + collect filtrate
3. Evaporate the filtrate until the sugar recrystallizes

15. Substances formed from atoms of two or more elements are called: compounds

16. List three physical properties of a copper penny

orange luster malleable
ductile density = 8.9 g/cm^3

17. What do you do if the flame of your Bunsen burner goes out?

Shut off the gas immediately

18. How do you put out an alcohol fire?

With the fire extinguisher