

Name SUGGESTED ANSWERS Date _____ Period _____

Elements, Compounds & Mixtures Worksheet

Elements:

- A pure substance containing only one kind of Atom.
- An element is always uniform all the way through (homogeneous).
- An element CANNOT be separated into simpler materials (except during nuclear reactions).
- Over 100 existing elements are listed and classified on the PERIODIC TABLE.

Compounds:

- A pure substance containing two or more kinds of Atoms.
- The atoms are CHEMICALLY combined in some way. Often times (but not always) they come together to form groups of atoms called molecules.
- A compound is always homogeneous (uniform).
- Compounds CANNOT be separated by physical means. Separating a compound requires a chemical reaction.
- The properties of a compound are usually different than the properties of the elements it contains.

Mixtures:

- Two or more ELEMENTS or COMPOUNDS NOT chemically combined.
- No reaction between substances.
- Mixtures can be uniform (called HOMOGENEOUS) and are known as solutions.
- Mixtures can also be non-uniform (called HETEROGENEOUS).
- Mixtures can be separated into their components by chemical or physical means.
- The properties of a mixture are similar to the properties of its components.

Part 2: Classify each of the following as elements (E), compounds (C) or Mixtures (M).

E Diamond (C)

C Sugar ($C_6H_{12}O_6$)

M Milk (a colloid!)

E Iron (Fe)

E Uranium (U)

M A dog

M Air

M Gasoline

E Krypton (K)

C Alcohol (CH_3OH)

C Salt (NaCl)

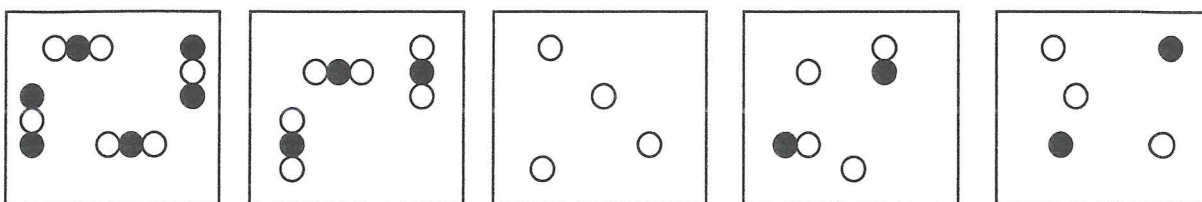
C Water (H_2O)

M Wood

M Pizza

E Gold (Au)

Part 3: Match each diagram with its correct description. Diagrams will be used once.



A

B

C

D

E

C 1. Pure Element - only one type of atom present.

E 2. Mixture of two elements - two types of uncombined atoms present.

B 3. Pure compound - only one type of compound present.

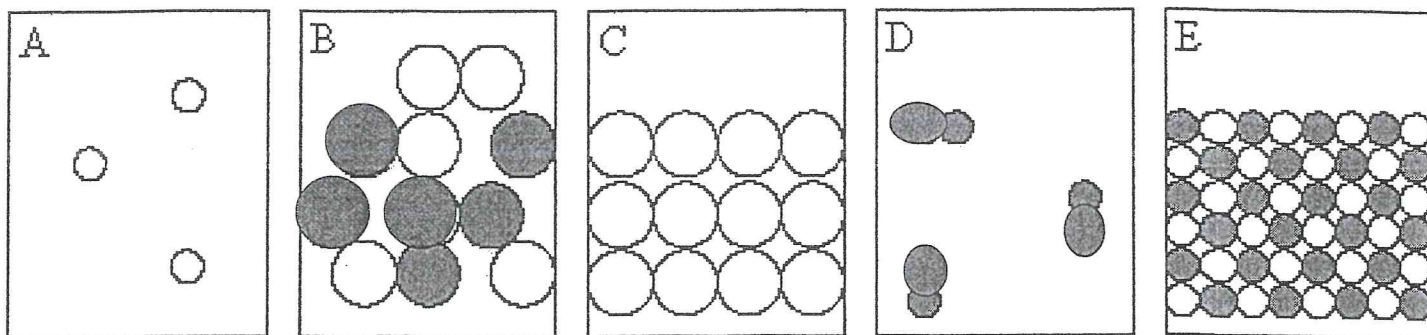
A 4. Mixture of two compounds - two types of compounds present.

D 5. Mixture of a compound and an element.

Part 4: Read each description and determine whether it is a pure substance or mixture. Then further classify the matter (element, compound, homogeneous mixture, heterogeneous mixture)

Description	Pure Substance or Mixture?	Classification?
1. Chocolate syrup is added to milk and stirred	Mixture	Homogenous mixture (solution)
2. Copper metal (used to make wires)	PS	ELEMENT (Cu)
3. Sand is added to water	M	HETEROGENEOUS
4. Distilled water	PS	COMPOUND (H ₂ O)
5. Tap water	M	HOMOGENEOUS (SOLUTION)
6. Helium gas (used to inflate a balloon)	PS	ELEMENT (He)
7. Table sugar	PS	COMPOUND (C ₆ H ₁₂ O ₆)
8. Table sugar added to a cup of coffee and stirred	M	HOMOGENEOUS (SOLUTION)
9. The air we breathe	M	HOMOGENEOUS

PART 5: Sorting and classifying... *there may be more than one option for each...*



1) Which of these represent(s) a pure substance? A, C, D

2) Which of these represent(s) a mixture? B, E

3) Which of these represent(s) heterogeneous? B

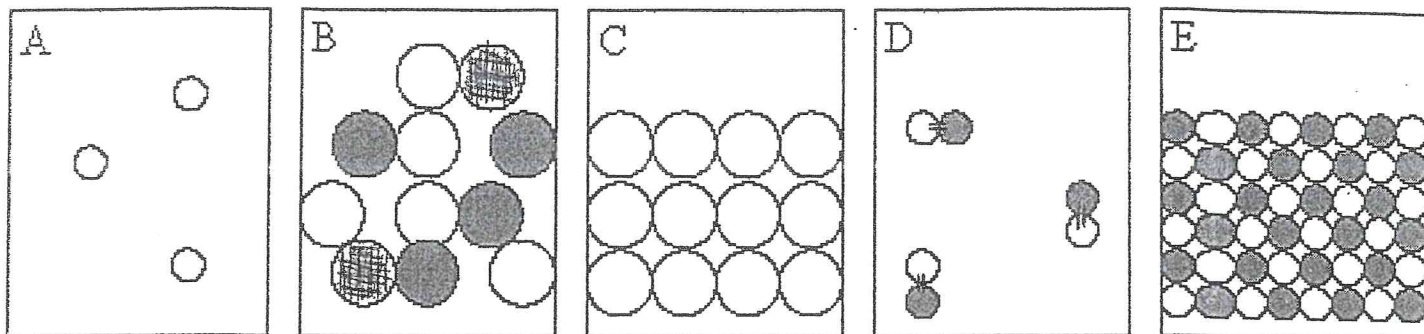
4) Which of these represent(s) homogeneous? A, C, D, E

5) Which of these represent(s) a solid? C, E

6) Which of these represent(s) a liquid? B

7) Which of these represent(s) a gas? A, D

PART 6: Sorting and classifying...



1) Which of these represent(s) **an element**?

A, C

2) Which of these represent(s) **a compound**?

D

3) Which of these represent(s) **a mechanical mixture**?

B

4) Which of these represent(s) **a solution**?

E

5) Which of these represent(s) **a solid**?

C, E

6) Which of these represent(s) **a liquid**?

B

7) Which of these represent(s) **a gas**?

A, D