Name _____ Period _____ Date _____

# *Elements, Compounds, & Mixtures Worksheet*

1. Read the following information on elements, compounds and mixtures. Fill in the blanks where necessary.

## Elements:

- The simplest form of matter that has a _____ set of properties.
- Are always uniform all the way through (_____).
- Are able / unable to be broken down into simpler substances. *(circle the correct term)*
- Exist in over 100 forms that are listed and classified on the _____.

## Compounds:

- A pure substance containing two or more kinds of _____.
- The atoms are _____ combined in some way. Often times (but not always) they come together to form groups of atoms called molecules.
- Are always homogeneous (uniform).
- Are able / unable to be separated by physical means. Separating a compound requires a chemical reaction. *(circle the correct term)*
- The properties of a compound are usually _____ than the properties of the elements it contains.

## Mixtures:

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

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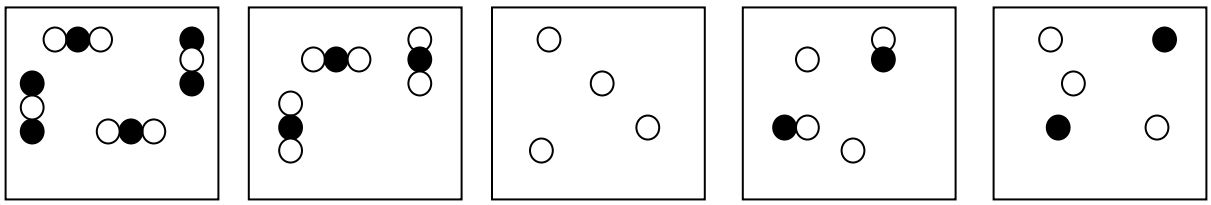
2. Classify each of the following as element (E), compound (C) or mixture (M). Write the letter X if it is none of these.

_____ Diamond (C)
_____ Sugar ($C_6H_{12}O_6$)
_____ Milk
_____ Iron (Fe)
_____ Air
_____ Sulfuric Acid ($H_2SO_4$)
_____ Gasoline
_____ Electricity
_____ Krypton (K)
_____ Bismuth (Bi)
_____ Uranium (U)
_____ Popcorn
_____ Water ($H_2O$)
_____ Alcohol ($CH_3OH$)
_____ Pail of Garbage
_____ A dog
_____ Ammonia ($NH_3$)
_____ Salt (NaCl)
_____ Energy
_____ Gold (Au)
_____ Wood
_____ Bronze
_____ Ink
_____ Pizza
_____ Dry Ice ($CO_2$)
_____ Baking Soda ($NaHCO_3$)
_____ Titanium (Ti)
_____ Concrete

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



**A** **B** **C** **D** **E**

_____ Element

_____ Mixture of elements

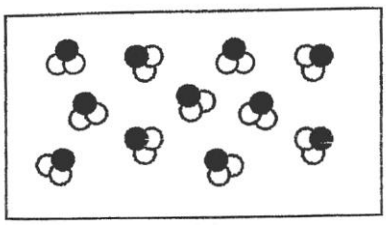
_____ Compound

_____ Mixture of compounds

_____ Mixture of elements and compounds

Name _____ Period _____ Date _____

4. Continue the classification from the question above. For each of the images presented, place the correct label on the blank below:
   - A = Element
   - B = Compound
   - C = Mixture of elements
   - D = Mixture of compounds
   - E = Mixture of elements and compounds



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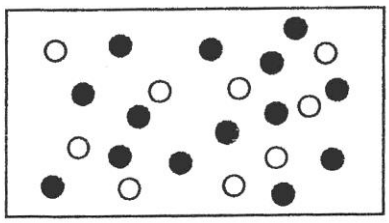

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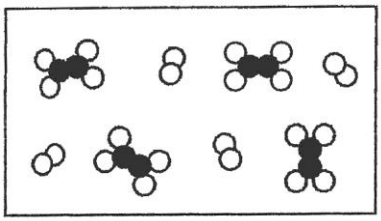

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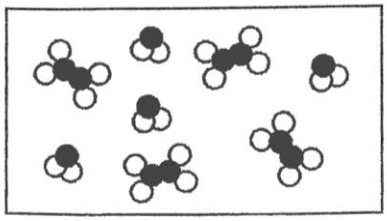

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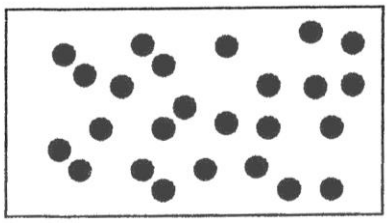

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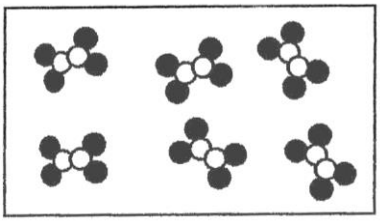

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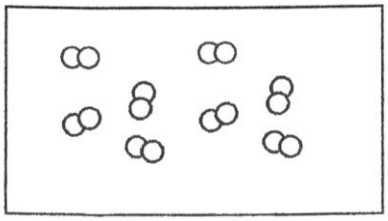

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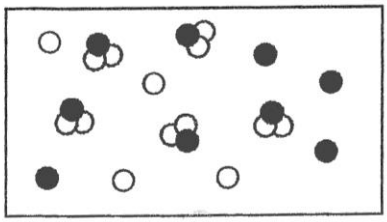

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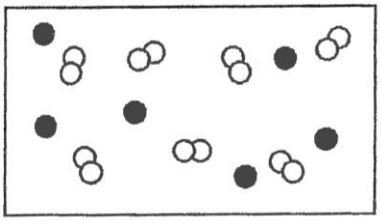

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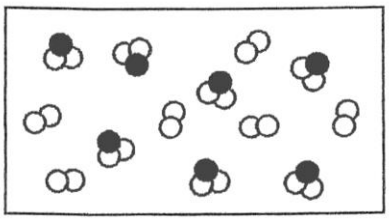

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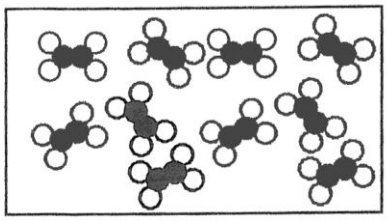

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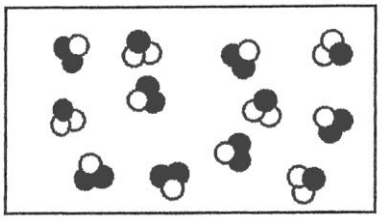

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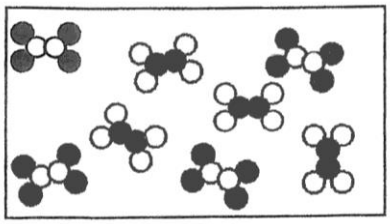

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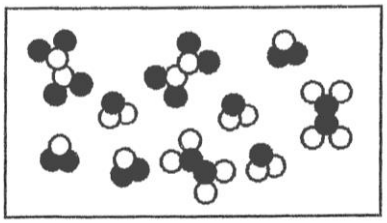

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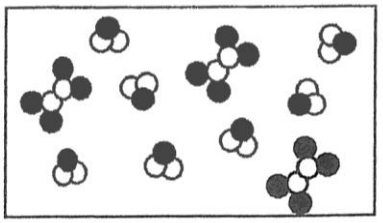

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Name _____ Period _____ Date _____

## Elements, Compounds & Mixtures Worksheet

**Part 1:** Read the following information on elements, compounds and mixtures. Fill in the blanks where necessary.

**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.

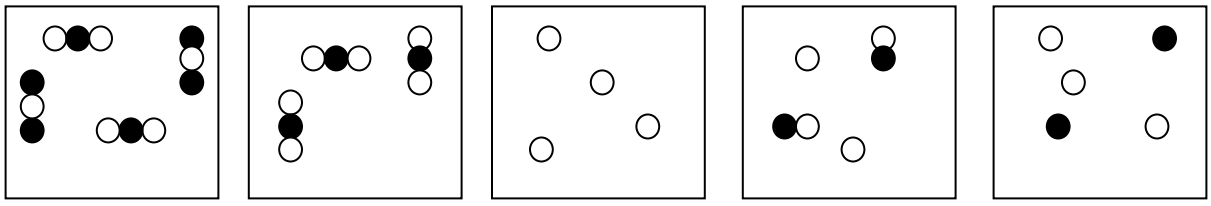
**Mixtures:**

- 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). Write the letter X if it is none of these.

_**E**_Diamond (C) _**C**_Sugar ($C_6H_{12}O_6$) _**M**_Milk _**E**_Iron (Fe)
_**M**_Air _**C**_Sulfuric Acid ($H_2SO_4$) _**M**_Gasoline _**X**_Electricity
_**E**_Krypton (K) _**E**_Bismuth (Bi) _**E**_Uranium (U) _**M**_Popcorn
_**C**_Water ($H_2O$) _**C**_Alcohol ($CH_3OH$) _**M**_Pail of Garbage _**M**_A dog
_**C**_Ammonia ($NH_3$) _**C**_Salt (NaCl) _**X**_Energy _**E**_Gold (Au)
_**M**_Wood _**M**_Bronze _**M**_Ink _**M**_Pizza
_**C**_Dry Ice ($CO_2$) _**C**_Baking Soda ($NaHCO_3$) _**E**_Titanium (Ti) _**M**_Concrete

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



**A** **B** **C** **D** **E**

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_**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:** Column A lists a substance. In Column B, list whether the substance is an element (E), a compound (C), a Heterogeneous Mixture (HM), or a Solution (S). (Remember a solution is a homogeneous mixture.) In Column C, list TWO physical properties of the substance.

| Column A | Column B | Column C |
|---|---|---|
| 1. Summer Sausage | **HM** | **Chunky, Brown** |
| 2. Steam | **C** | **Gas, Hot** |
| 3. Salt Water | **S** | **Liquid, Clear** |
| 4. Pencil lead (Pb) | **E** | **Grey, Solid** |
| 5. Dirt | **HM** | **Brown, Solid** |
| 6. Pepsi | **HM** | **Brown, Liquid** |
| 7. Silver (Ag) | **E** | **Silver, Solid** |
| 8. Toothpaste ($Na_2HPO_4$) | **C** | **White, Thick** |
| 9. A burrito | **HM** | **Multi-colored, Solid** |
| 10. Italian Dressing | **HM** | **Liquid, Greasy** |
| 11. Chicken Soup | **HM** | **Liquid/Solid, Brown** |
| 12. Lemonade | **S** | **Yellow, Liquid** |