

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.

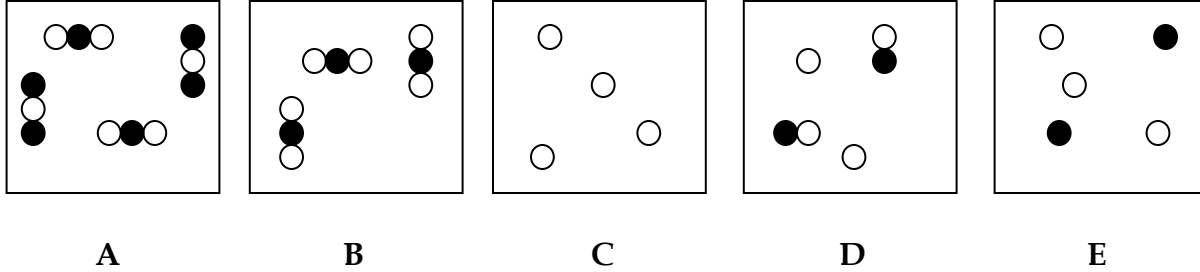
**Mixtures:**

- 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.

|                                     |   |                          |                      |
|-------------------------------------|---|--------------------------|----------------------|
| <u>E</u> Diamond (C)                | <u>C</u> Sugar (C <sub>6</sub> H <sub>12</sub> O <sub>6</sub> ) | <u>M</u> Milk            | <u>E</u> Iron (Fe)   |
| <u>M</u> Air                        | <u>C</u> Sulfuric Acid (H <sub>2</sub> SO <sub>4</sub> )        | <u>M</u> Gasoline        | <u>X</u> Electricity |
| <u>E</u> Krypton (K)                | <u>E</u> Bismuth (Bi)   | <u>E</u> Uranium (U)     | <u>M</u> Popcorn     |
| <u>C</u> Water (H <sub>2</sub> O)   | <u>C</u> Alcohol (CH <sub>3</sub> OH)                           | <u>M</u> Pail of Garbage | <u>M</u> A dog       |
| <u>C</u> Ammonia (NH <sub>3</sub> ) | <u>C</u> Salt (NaCl)  | <u>X</u> Energy          | <u>E</u> Gold (Au)   |
| <u>M</u> Wood                       | <u>M</u> Bronze   | <u>M</u> Ink             | <u>M</u> Pizza       |
| <u>C</u> Dry Ice (CO <sub>2</sub> ) | <u>C</u> Baking Soda (NaHCO <sub>3</sub> )                      | <u>E</u> Titanium (Ti)   | <u>M</u> Concrete    |

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**Part 3:** Match each diagram with its correct description. Diagrams will be used once.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 <sub>2</sub> HPO <sub>4</sub> ) | 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       |