

**Matter Homework #1**

Read the MATTER BASICS. Use it to help you answer these. NAME: \_\_\_\_\_

1. Define these terms in your own words, use examples to expand your definitions.

Element, mixture, substance, homogeneous, heterogeneous, matter, compound.

2. What elements are Hg and W? Why are these symbols used and not "M" or "T"? What language are these symbols from?

| 3. Fill in this table | Chemical Symbol | Is this an element, compound, or mixture? | What phase would this be at room temp. 298 K |
|-----------------------|-----------------|---|--|
| gold                  |                 |   |  |
| gasoline              | $C_8H_{18}$     |   |  |
| carbon dioxide        |                 |   |  |
| argon                 |                 |   |  |
| Raisin Bran cereal    | x               |   |  |
| mercury               |                 |   |  |
| carbon                |                 |   |  |
| aluminum              |                 |   |  |
| bromine               |                 |   |  |
| iron                  |                 |   |  |
| salty water           | $NaCl_{(AQ)}$   |   |  |
| sodium chloride       |                 |   |  |
| helium                |                 |   |  |

4. List three substances that you have experienced in at least 2 physical states.

Try for at least one that you have experienced in all three states of matter.

**Matter HW #2** Read the MATTER BASICS. Use it to help you answer these. NAME: \_\_\_\_\_

Memorize this chart, you will not be able to move ahead in chem unless you understand all of the vocabulary and remember how these properties exist.

| Important Properties of the States of Matter |             |             |            |
|--|-------------|-------------|------------|
| Property                                     | SOLIDS      | LIQUIDS     | GASES      |
| volume                                       | Definite    | Definite    | Indefinite |
| shape  | Definite    | Indefinite  | Indefinite |
| compressibility                              | Very Little | Very Little | Easily     |
| heat expansion                               | Slightly    | Slightly    | Greatly    |

1. Determine the phase of each of these substances at 25°C: (Use  $K = C + 273$  and/or table S).

| substance formula | phase at 25°C |
|-------------------|---------------|
| Co                |               |
| H <sub>2</sub> O  |               |
| Mg                |               |
| He                |               |
| Br <sub>2</sub>   |               |
| CO <sub>2</sub>   |               |
| Ag                |               |
| Xe                |               |
| Hg                |               |
| NH <sub>3</sub>   |               |

| List SYMBOLS (some have more than one correct answer)           |         |
|---|---------|
| which of the 9 substances has...                                | symbols |
| Which has the highest BP  |         |
| Which are most easily compressed?                               |         |
| Which expand the most when heated?                              |         |
| Which are least likely to be compressed?                        |         |
| Which might fit into the bottom of any container you put it in? |         |
| Which could fill any container you put it in?                   |         |
| Which would hold it's shape all the time?                       |         |

BELOW: How many atoms are in each of these compounds?

|                                    |  |  |
|------------------------------------|--|--|
| H <sub>2</sub> SO <sub>4</sub>     | MgSO <sub>3</sub>  | Al(C <sub>2</sub> H <sub>3</sub> O <sub>2</sub> ) <sub>3</sub> |
| CH <sub>4</sub>                    | C <sub>10</sub> H <sub>22</sub>                                | KCl  |
| CH <sub>4</sub>                    | H <sub>3</sub> PO <sub>4</sub>                                 | NaOH   |
| Sn(MnO <sub>4</sub> ) <sub>2</sub> | (NH <sub>4</sub> ) <sub>2</sub> Cr <sub>2</sub> O <sub>7</sub> | C <sub>6</sub> H <sub>12</sub> O <sub>6</sub>                  |
| NaBr                               | C <sub>5</sub> H <sub>10</sub> O <sub>5</sub>                  | MgO  |