**Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Period\_\_\_\_\_Date\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

Physical Science Chapter 2 Guided Notes

Matter

1. What is Matter

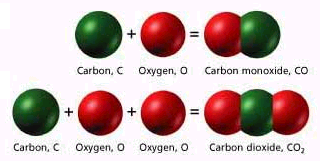
* Matter: Anything that has \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and takes up \_\_\_\_\_\_\_\_\_\_\_\_\_

1. Kinetic Molecular Theory

* Particles of matter are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* The \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_(speed) of these particles \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ as \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ increases

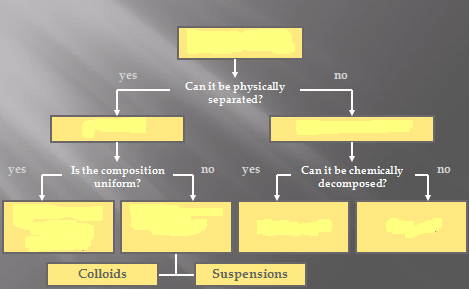
1. Pure substances

* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_: composed of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ atoms
  + An atom is the \_\_\_\_\_\_\_\_\_\_\_\_\_\_ unit of an element that maintains the \_\_\_\_\_\_\_\_\_\_\_\_ of the element
  + Ex:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_: composed of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ in a \_\_\_\_\_\_\_\_\_\_\_\_ ratio
  + Properties \_\_\_\_\_\_\_\_\_\_\_\_\_\_ from those of individual elements
    - Ex:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
  + Every compound is \_\_\_\_\_\_\_\_\_\_\_\_\_\_ from the elements it contains
  + \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ can join together to make \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Chemical Formulas
  + Shows how many \_\_\_\_\_\_\_\_\_\_\_ of each \_\_\_\_\_\_\_\_\_ are in a unit of a substance
  + The \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (little numbers to the right) tell you how many atoms of each are present
  + Ex: C6H12O6 has \_\_\_\_ Carbon atoms, \_\_\_\_hydrogen atoms, and \_\_\_\_\_ oxygen atoms
* Law of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
  + A given \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ always contains the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ ratio of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Law of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
  + Elements can \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ in \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ to form \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ compounds
* For example: Two different compounds below, each has a definite composition.



1. Mixtures

* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ combination of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Two different types: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Homogeneous:
  + very \_\_\_\_\_\_\_\_\_\_\_\_\_\_ particles
  + particles \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ settle
  + Ex: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Heterogeneous:
  + Substances are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ distributed or uniform
  + Particles \_\_\_\_\_\_\_\_\_\_\_ settle
  + Ex:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Matter Flow Chart



* Examples:
  + Graphite \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
  + Pepper \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
  + Sugar \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
  + Paint\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
  + Soda \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Liquids can either be \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Miscible
  + \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
  + Only looks like \_\_\_\_\_\_\_\_ liquid when combined
  + Ex. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Immiscible
  + \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
  + Liquids \_\_\_\_\_\_\_\_\_\_\_\_ mix and they form \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
  + Ex. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. Properties and Changes in Matter
2. Density

* A measure of \_\_\_\_\_\_\_\_\_ per unit of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, remains \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ for \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* How much \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is contained in a certain \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* The \_\_\_\_\_\_\_\_\_\_\_\_ the object’s density, the \_\_\_\_\_\_\_\_\_\_\_\_ its mass per volume
* This is what decides if something \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* SI Unit: kg/m3
* Common units in problems: g/mL & g/cm3



* Problem Solving steps:
  + 1. Analyze
    2. Plan
    3. Compute
    4. Evaluate
* Problem #1 Example: An object has a volume of 825 cm3 and a density of 13.6 g/cm3. Find its mass.

**Given:**

V=

D=

M=

**Work:**

M=

M=

M=

* Problem #2 Example: A liquid has a density of 0.87 g/mL. What volume is occupied by 25 g of the liquid?

**Given:**

V=

D=

M=

**Work:**

M=

M=

M=

* 1. Physical Vs. Chemical Properties
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Property : can be observed or measured \_\_\_\_\_\_\_\_\_\_\_\_ changing the \_\_\_\_\_\_\_\_\_\_\_\_\_ of the substance
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Property: describes the ability of a substance to go through \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ in identity
* Examples

Melting Point\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Flammable\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Density\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Magnetic\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Tarnishes in air\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Reactivity\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

* More examples of Physical Properties

|  |  |  |  |
| --- | --- | --- | --- |
| Melting point | Boiling point | Freezing point | Density |
| Buoyancy | Color | Texture | Changes in physical state  (solid, liquid, gas) |

* More examples of Chemical Properties

|  |  |  |  |
| --- | --- | --- | --- |
| Reactivity | Fermentation | Flammability | Oxidation |
| pH | Toxicity | electronegativity |  |

1. Physical Vs. Chemical Changes

* Physical Change:
  + Changes the form of a substance \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ changing its identity
  + Properties \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Chemical Change:
  + \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of a substance
  + \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ have different properties
* Signs of a Chemical change
  + \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
  + \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
  + \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
  + \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Examples:

Rusting iron\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Dissolving in water\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Burning a log\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Melting ice\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Grinding spices\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

* Quick Summary
  + \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ changes are changes in the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ properties of a substance that do \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ the identity of a substance
  + Physical changes are often easily \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
  + \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ changes form \_\_\_\_\_\_ substances that have \_\_\_\_\_\_\_\_ properties.
  + They can only be reversed through \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
  + They often cause changes in color, smell, or produce sound, light, odor, or heat