**NOTES 1.2: Investigating Matter**

**Matter** is anything that has \_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_.

 Mass is: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 Volume is: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**The Kinetic Molecular Theory (KMT)**



1. Matter is made of small particles.
2. There are spaces between the particles.
3. Particles are always moving.
4. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Changes of State**

Matter exists in different forms. These are different states of matter.

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**Pure Substances**

Matter that is made of the same \_\_\_\_\_\_\_\_\_\_\_ and has the same \_\_\_\_\_\_\_\_\_\_\_\_ throughout it.

Element - a pure substance made of one type of atom

* Name 3 elements

Compound - a pure substance composed of at least two elements

* Name 3 compounds

**QUESTIONS – Pure (P) or Not Pure (N)?**

1. Air
2. Dirt
3. Vinegar
4. Sugar
5. Soup

**DO the BAG OF CHANGE LAB**

**Making Observations**

**Qualitative vs. Quantitative Observations Checklist**

***Qualitative Observations***

[ ] The observation describes the look and feel of what is happening

[ ] The observation does not involve measuring what is being observed

Examples:

* The chemical is smelly and green.
* The object is soft and bright.
* The 60 W bulb was brighter than the 40 W bulb.

***Quantitative Observations***

[ ] The observation describes a measurement made for what is happening

[ ] The observation involves measuring what is being observed

Examples:

* 31 grams of the Chemical B was produced.
* The object is has a density of 2.56 g/mL.
* The flight lasted nine minutes.

**QUESTIONS – Qualitative (QUAL) or Quantitative (QUANT)?**

1. The bowling ball is heavier than the basketball.
2. The red ball weighs 5 g more than the blue ball.
3. The colour changed from blue to green.
4. The second bulb was the brightest.

**Chemical and Physical Changes Checklist**

***Chemical Change***

[ ] A new substance is created – MUST BE CHEMICAL (no need to check others)

[ ] The change is not reversible – MUST BE CHEMICAL

[ ] There is a change in colour

[ ] Gas bubbles are present

[ ] Heat, light or smoke are released

[ ] There is a change in odour

***The more you checked off*** the above, the more likely the substances you are observing have gone through a CHEMICAL CHANGE.

***Physical Change***

[ ] No new substance was created – MUST BE PHYSICAL (no need to check others)

[ ] The change can be reversed – MUST BE PHYSICAL

[ ] The substances underwent a change of state (eg. solid, liquid, gas)

[ ] The change is ONLY in appearance or form of the material

[ ] There is ONLY a change in physical properties like texture, shape, or size

The more you checked off the above, the more likely the substances you are observing have gone through a PHYSICAL CHANGE.

**QUESTIONS – Physical or Chemical Change?**

1. A window is broken when a baseball hits it.
2. Water is boiled.
3. Bread rises as it is baked in the oven.
4. An iron nail rusts as it sits on the ground outside.