**Study Guide-KEY**

**Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**WHATS A MATTA U**

**TEST I**

***You must include each of the vocabulary terms in your answers to the 3 questions below. You may use a term more than once, but you are only required to use each vocabulary term one time!*** *atoms, matter, element, mass, volume, solid, liquid, gas, vibrate.*

*When writing your essays, please do the following!*

*\_\_\_\_ Begin with a capital letter, end with a period!*

*\_\_\_\_ Write in complete sentences!*

*\_\_\_\_ PLEASE UNDERLINE THE REQUIRED TERMS USED IN YOUR ANSWERS!*

1. **Matter can be classified into different states or phases. Give two different examples of matter each in a different phase. Now explain why your examples are matter.**

**Matter is anything that has mass and takes up space and can be classified into 4 different states. These states are solids, liquids, gases and plasmas. Two examples of solids are ice cubes and desks. These are solids because they have a definite shape and volume. Their particles are packed more tightly and they move by vibrating.**

**Two examples of liquids are water and lemonade. These are liquids because they have definite volume but not a definite shape. They will take the shape of the container. The particles have a little more freedom to move.**

**Two examples of a gas are oxygen and air. These are gases because they have no definite shape or volume. This is because the particles are farthest apart and have the most freedom to move.**

**Two examples of a plasma are stars and lightning. The particles in a plasma have the most freedom to move like in a gas but they are at extremely high temperatures.**

1. **Compare and contrast an element and an atom.**

**Atoms and elements are similar in that neither of them can be broken down. They both have subatomic particles or protons, neutrons and electrons. Atoms make up elements and are the building blocks of all matter.**

1. **Ice, water, water vapor are all different states of matter yet each has exactly the same chemical makeup. Please explain the differences between a solid, liquid, and gas on the molecular level.**

**The difference between a solid, liquid and gas particles is their distance apart and the freedom they have to move. In a solid, the molecules vibrate past each other because they don’t have as much freedom to move and are packed tightly together. Since a liquid has no definite shape, the molecules are further apart and have more freedom to move and can therefore move faster. In addition, a gas has no definite shape or volume giving the molecules the most freedom to move. These molecules get excited and can move the fastest.**

**Know the following vocabulary.**

**C Vocabulary B Vocabulary A Vocabulary**

Matter- anything that takes up space and has mass

Nucleus- center of an atom made up of protons and neutrons

Protons- positively charged subatomic particles in the nucleus of an atom

Atoms - smallest particle from which all elements are made

Weight- pull of gravity on an object’s mass

Neutrons- subatomic particles found in the nucleus of an atom with no charge

Element- a pure substance that cannot be broken down

Molecules- a particle composed of 2 or more atoms

Electrons- negatively charged subatomic particles that orbit the nucleus of an atom

Mass- amount of matter or stuff in something

Compounds- a substance made of 2 or more elements chemically combined

Volume- amount of space occupied by an object

Plasma- a gas that has been heated to very high temps

Solid- molecules vibrate - definite shape and volume

Physical Properties- something that can be broken down physically- ripping, crushing, bending, melting, phase or state changes

Liquid - takes the shape of the container- more freedom to move- no definite shape, definite volume

Chemical properties- something that can only be broken down chemically- burning, flammability, rotting

Gas- no definite shape or volume- particles have most freedom to move

Vibrate- bumping past each other