

***Unit 5: Physical and Chemical Changes in Matter Study Guide***

What is matter?	Anything that has mass and takes up space
Mass is.....	The amount of matter in an object. Measured in grams, kilograms
Volume is....	The amount of space an object takes up. Measured in milliliters and liters
How would you find the volume of an irregular object, such as a rock, using only a graduated cylinder and water? Describe the process.	Read and record the volume of the water. Drop the rock into the water. Read and record the volume of the rock and the water, then subtract the volume of the water from it.
Describe how particles of matter are arranged in a SOLID. Draw a picture showing this arrangement.	Particles are tightly packed together. They can vibrate, but cannot move out of position.
Describe how particles of matter are arranged in a LIQUID. Draw a picture showing this arrangement.	Particles are further apart, and can flow past one another.
Describe how particles of matter are arranged in a GAS. Draw a picture showing this arrangement.	Particles are much farther apart, rarely coming in contact with one another.
What is density? Use this definition to explain why some object can float and some sink. (textbook p 163)	The amount of mass per unit of volume. If an object is denser than the fluid it is in, it will sink. If it is less dense, it will float.

What are physical properties? What are examples of physical properties?	Properties that can be observed using your senses. Color, shape, size, texture, function, density, state of matter.
What are chemical properties? When are you able to observe them?	Properties that describe how matter changes into new types of matter. You are only able to observe them during a chemical change.
What happens to matter in a physical change?	Matter changes physically, but nothing new is created. It is still the same type of matter.
What are some examples of physical changes?	Tearing paper, slicing carrots, water changing to water vapor, etc.
What happens to the particles of matter when thermal energy is <u>added</u> to it?	The particles speed up and start moving faster. Sometimes a phase change can occur.
What happens to the particles of matter when thermal energy is <u>taken away</u> from it?	The particles slow down and move more slowly. Sometimes a phase change can occur.
Describe the phase change during: Melting: Boiling: Condensing: Freezing:	Solid to liquid Liquid to gas Gas to liquid Liquid to solid
In which phase of matter are particles moving fastest? Slowest? Why?	Particles move fastest in gases. They move slowest in solids. Gases have the most thermal energy and solids have the least.

What is a mixture? Give some examples of mixtures.	A mixture is made up of two or more types matter that are combined physically, 1. Party mix 2. sand and water 3. Air
What is a solution? Give an example of a solution.	A type of mixture in which substances are thoroughly dissolved and do not separate with gravity. An example is sea water.
How are mixtures and solutions alike? How are they different?	Mixtures and solutions are made of matter that is physically, not chemically combined. In solutions, you cannot see the individual particles because they are dissolved in the substance.
What happens to the particles of matter during a chemical change?	In a chemical change, the particles of matter break apart and form new types of matter with different properties.
Give some examples of chemical changes.	1. wood burning 2. fireworks exploding 3. metal rusting 4. cake baking
What are clues, or evidence, that a chemical reaction has taken place?	Evidence that energy was used or given off, the properties of the new substance are different than the original substances, and the change cannot be easily reversed.
How is a physical change different from a chemical change?	In a physical change, the matter changes form, but nothing new is created. In a chemical change, new substances were formed with different properties.
<i><u>To prepare for your test, make sure to:</u></i> 1. Re-read chapters 4 and 5 in the Science book	2. Study through all of your notes. 3. Check Ms. Robinson's website for helpful science links. 4. Have someone quiz you over the study guide questions.