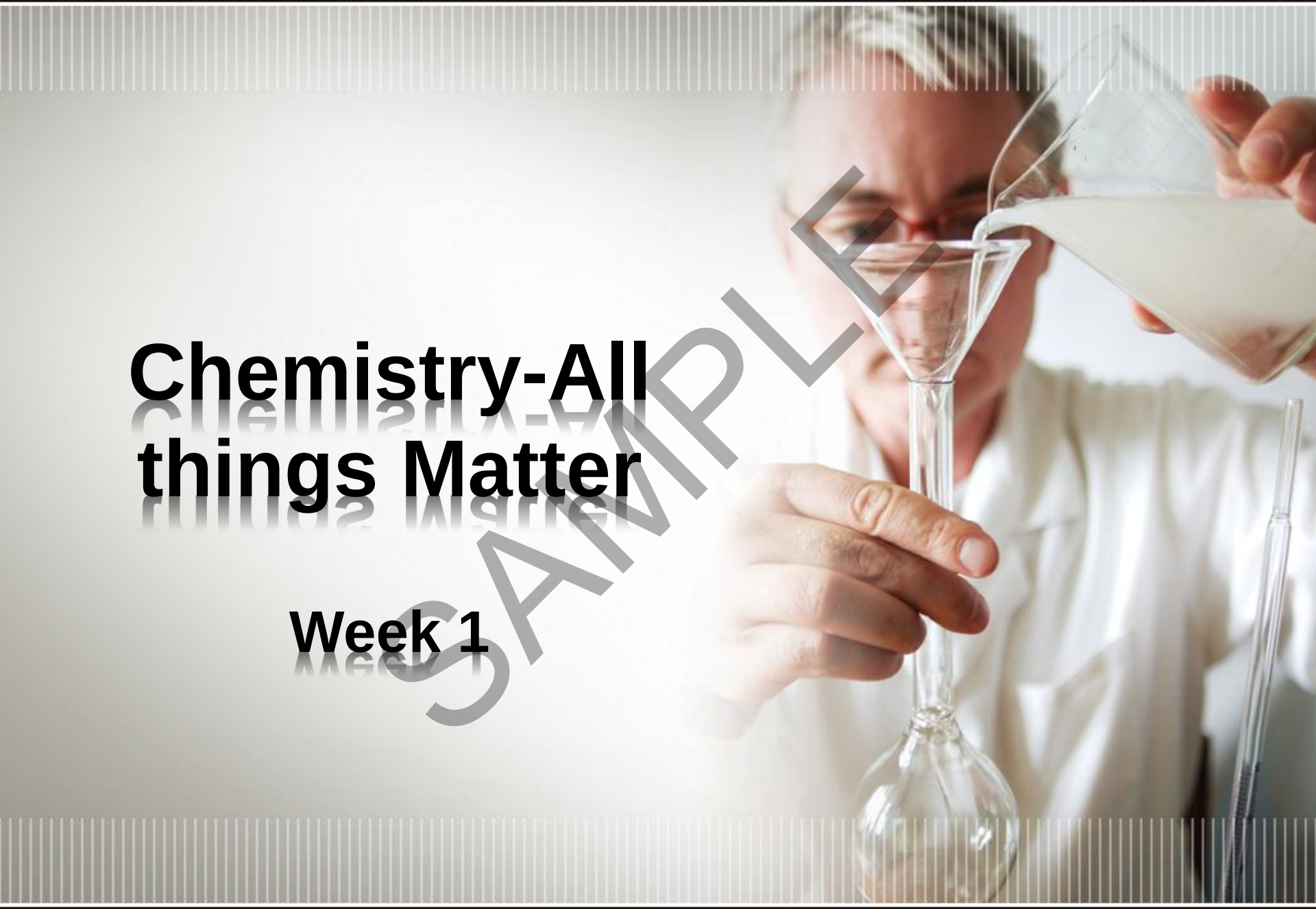
Chemistry-All things Matter

Week 1



Go through this at your pace!

Every week will have:

- Vocabulary- homework/projects
- Hands on activities
- Videos/PPT/Reading notes

http://www.youtube.com/watch?v=vDZhUkp30tE&feature=share&list=PL5191959DAFDC2AF5
http://www.youtube.com/watch?v=uJOGy0dgmUU&feature=share&list=PL5191959DAFDC2AF5

SchoolhouseTeachers.com note: Parents should closely monitor children's use of YouTube and Wikipedia if you navigate away from the videos and articles cited in these lessons. We also recommend viewing the videos on a full screen setting in order to minimize your students' exposure to potentially offensive ads.

- Parents: answer keys will be last page

Check out more resources for all subjects.

Week 1 Vocabulary

Using the Vocabulary sheet choose your choice to learn these terms. There are many ways to learn vocabulary, but some ways may work better for you; try a few different things before you repeat to give you variety and allow you to find out which method works best for your learning style.

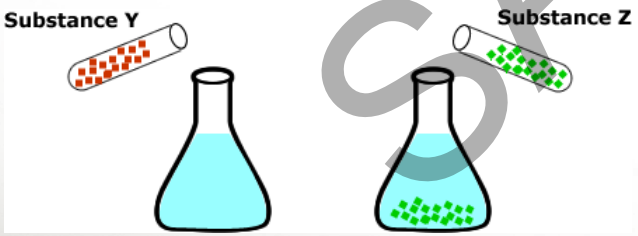
My kids require to do all choices on the choice sheet once before they repeat any options. This helps them use creativity and find out which is easiest for them to learn the terms.

Week 1 Introduction to Matter

This week you need to use the power point slides to take notes from. As you take notes, draw pictures or representations of all your questions, reflections or anything that allows you to remember key points; especially if you see vocabulary terms in there, those are important areas, so highlight, reread, rewrite these areas!

Big ?- What are physical properties of matter? Answer in your own words.

One hundred grams of Substance Y and 100 grams of Substance Z were added to equal amounts of water. After several minutes, Substance Y could not be seen in its flask, while most of Substance Z could be seen at the bottom of its flask.



Which of the following explains this difference?
A. Substance Z is more soluble in water than Substance Y.
B. Substance Y is more soluble in water than substance Z.

Week 1 Experimentations

Use this week to classify matter!

Go throughout your home & write down all the things that are matter! Extend by putting into categories: living vs. nonliving. Do you get it? What is matter?

Week 1 Answer Key

Big Questions will vary since kids are learning, so the biggest thing to look for are they able to articulate an answer? If not encourage them to risk and think.

Which of the following explains this difference?
B. Substance Y is more soluble in water than substance Z.

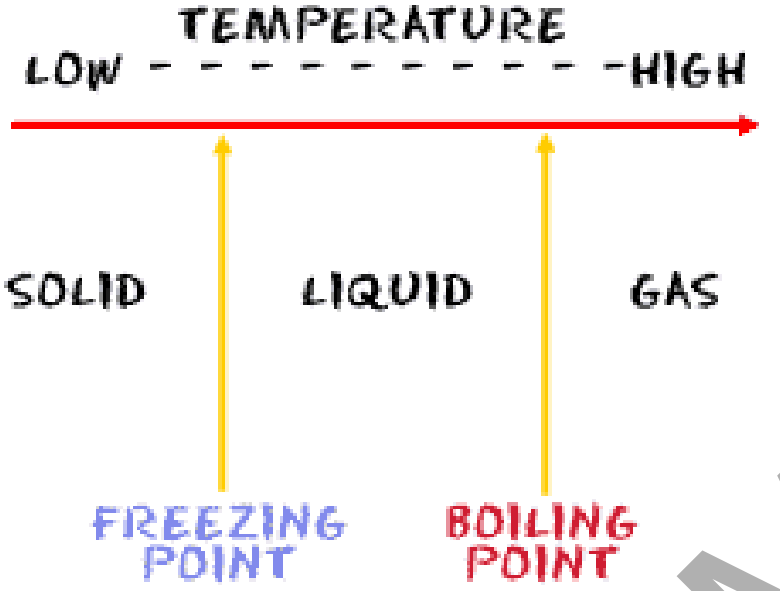
This shows that solubility is when it is dissolved into water. This will be learned later, but this is a good way to practice thinking.

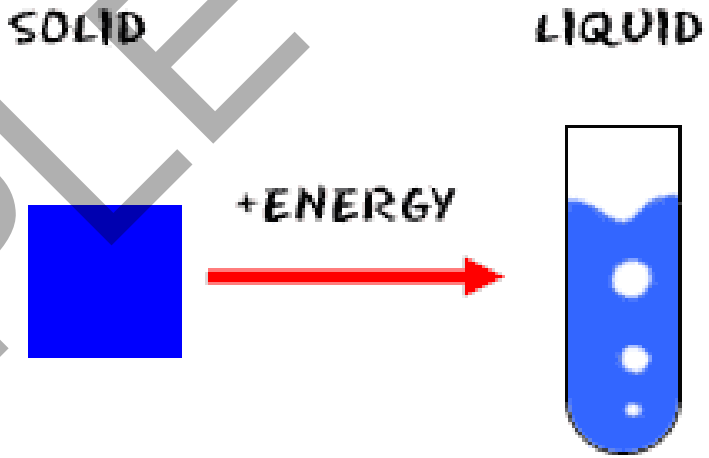
Everything is matter! Anything that has volume and mass is matter!!!!

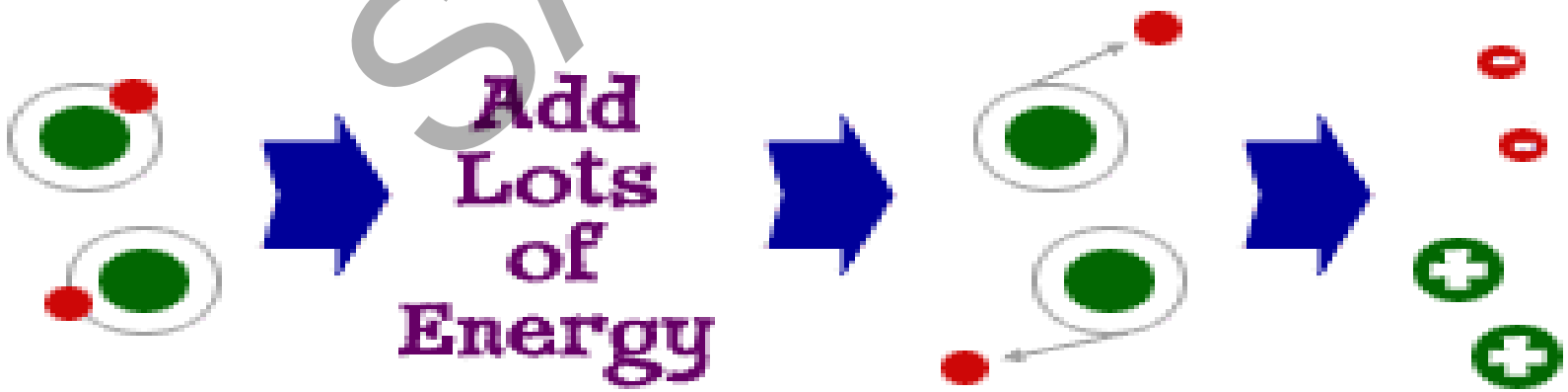
STATES OF MATTER

There are five main states of matter. Solids, liquids, gases, plasmas, and Bose-Einstein condensates are all different states of matter. Each of these states is also known as a phase. Elements and compounds can move from one phase to another phase when special **physical forces** are present. One example of those forces is temperature. The phase or state of matter can change when the temperature changes. Generally, as the temperature rises, matter moves to a more active state.

CHANGING STATES OF MATTER







CHEMICAL vs. PHYSICAL CHANGES

Physical changes are about energy and states of matter. Chemical changes happen on a **molecular** level.

When you step on a can and crush it, you have forced a **physical change**. The shape of the object has changed. It wasn't a change in the state of matter, but something changed. When you melt an ice cube you have also forced a physical change (adding energy). That example caused a change in the state of matter. You can cause **physical changes with forces like motion, temperature, and pressure.**

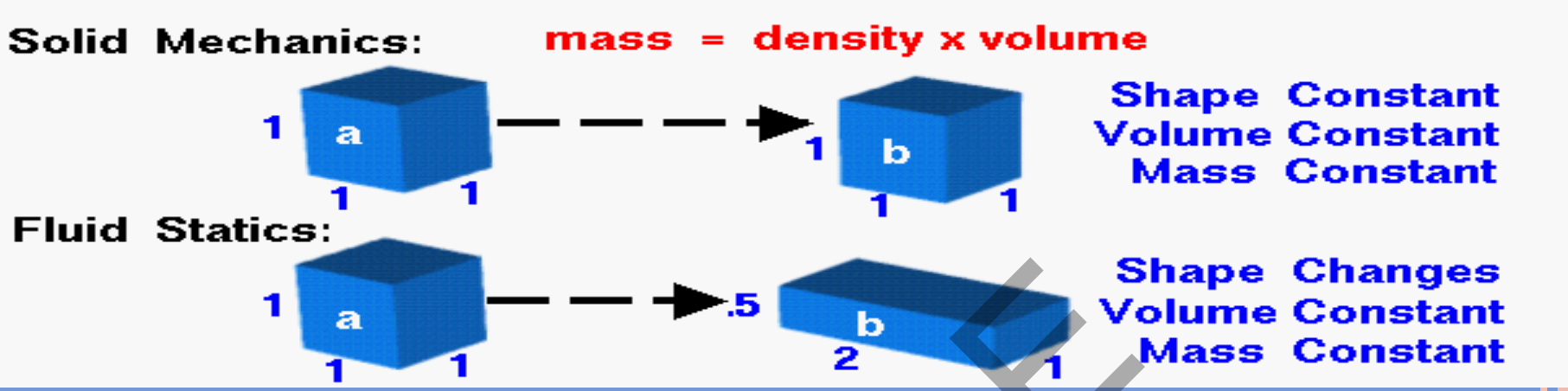
A chemical property is a property that describes how a substance will react and/or combine with another substance.

How to tell if a change is chemical or physical:

Chemical Change	Physical Change
Irreversible (generally)	Reversible (usually)
New substance forms (gas, solid precipitate, change in color..)	No new substance forms
Energy is visibly given off (change in temperature -- heat, sound , light..)	Energy change may not be noticed
A new compound forms	A change of state or form
Examples:	Examples:
Frying an egg	Making tea or coffee
Toasting bread	Melting Snow
Growing a plant	Adding salt to boiling water when cooking rice

THESE PIPES ARE IN THE MIDDLE OF CHEMICAL CHANGES AS THEY RUST.

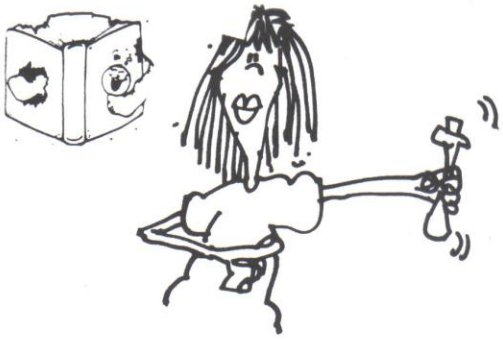
When iron (Fe) rusts you can see it happen over a long period of time. The actual molecules have changed their structure (the iron oxidized). Melting a sugar cube is a physical change because the substance is still sugar. Burning a sugar cube is a chemical change. The energy of the fire has broken down the chemical bonds.



Solid Mechanics

The **conservation of mass** is a fundamental concept of physics. The amount of mass remains constant--**mass is neither created nor destroyed.** The mass of any object can be determined by multiplying the volume of the object by the density of the object. When we move a solid object, as shown at the top of the slide, the object retains its shape, density, and volume. The mass of the object, therefore, remains a constant between state "a" and state "b."

http://youtu.be/7FdzBaB2Yqk



Chemistry Unit Notes

I. Matter

A. Anything that is in a form or PHASE of matter.

1. Solid Phase-Atoms move slowly and are closely packed which restricts movement.
   Ex. ice, tree, you

2. Liquid Phase-Atoms free to move but must touch. This phase will take the shape of a container but will only spread as long as the molecules touch.
   Ex. water, plasma, tears

3. Gas Phase-Atoms are able to move freely and do not have to touch. This phase will fill any container.
   Ex. oxygen, nitrogen, steam (water vapor)

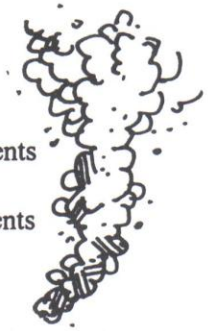
B. Can be living or non-living.

II. Changes of Matter

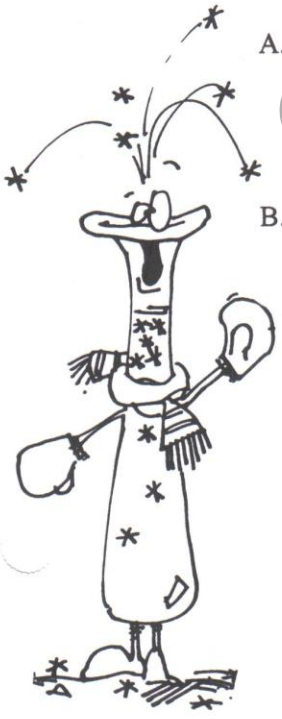
A. Physical-the object will change shape but not the chemical structure.

B. Chemical-the chemical formula of the object changes.

III. The Periodic Table



A. Dmitri Mendeleev (1834-1907) developed a system or chart for the elements that were known in his day. Although his table did not include all of the elements, he predicted their existence and left space where the new elements would fit.



B. He was able to organize the elements due to their characteristics.
   1. If the elements had similar chemical properties he put them in vertical columns which he called FAMILIES.
   2. If elements are in the same family, therefore they will react the same way.
   3. The horizontal lines on the periodic table are known as PERIODS. You will find that the elements will be metal on the left side of the table and will be non-metal on the right side.

C. The periodic table can provide a great deal of information about an element.
   1. Each element has its own box.
   2. Within the box there is a symbol to represent the element. Some elements have only one letter for their symbol. It is ALWAYS capitalized. In the case of two letters, the second is ALWAYS lowercase while the first is ALWAYS capitalized.
   3. Each elements has an atomic number in the top left corner (some tables may have it in the top right corner).
   4. You will also find a number under the symbol. This is the atomic mass of the atom.

IV. Structures of Matter

A. Atom-smallest part of matter--living or non-living

B. Element-a group of the same type of atoms--each element has special characteristics.

C. Molecule-the smallest part of any substance that can exist independently

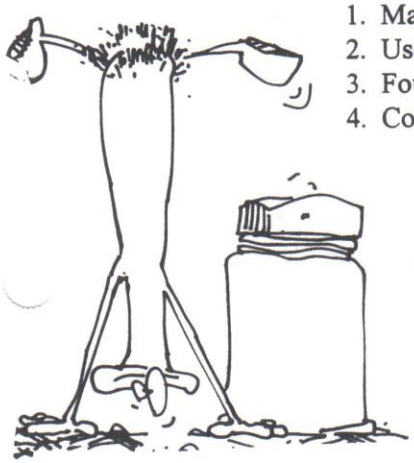
D. Compound-when two or more elements bond to form a substance

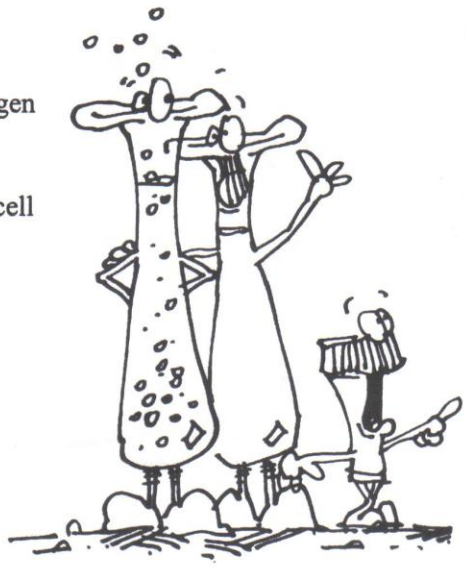
V. Types of Compounds

A. Carbohydrates
   1. Made up of carbon, hydrogen and oxygen--complex are called starches; simple forms are called sugars
   2. Used for production of energy in respiration

B. Fats
   1. Very complex carbohydrates
   2. Used by animals including humans to store energy
   3. Used as a lubricant in the body--your body must have fat to function properly

C. Proteins
   1. Made up of carbon, hydrogen, oxygen and nitrogen
   2. Used by cell for growth and repair
   3. Found in cell membrane and cytoplasm
   4. Constructed by the ribosomes as needed by the cell





Vocabulary Choices

Create a Word search using all vocabulary words must have an answer key	Create a Cross word puzzle using all the vocabulary words Must have an answer key	Create a Poem or Song using all the vocabulary words with definitions
Classify into categories all vocabulary words with their definition	Student choice 	Create a picture for every word to include the definition Put into a flip book or on 3X5 cards
Write a story using all vocabulary words.	Create a cartoon comic strip using all vocabulary words	Create a jigsaw puzzle drawing with all vocabulary words and definitions

Vocabulary 1

Vocabulary options:

1. Choice sheet – choose a new choice each week =100

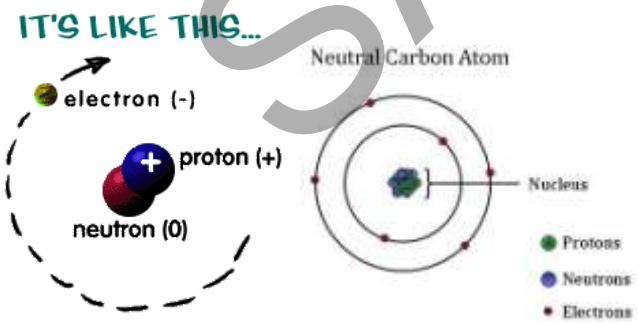
2. 4 square Setup=80

Word (Bug)	**Definition (insect)**
Example of word (Ladybug)	**Picture of word** 

3. Write the word and definition 5x each=75

4. Flash cards word on front definition on back =70

1. Matter-anything that has mass and volume
2. Neutron-particle in the nucleus that has no charge
3. Electron-negatively charged(-) subatomic particle that moves around the nucleus of an atom
4. Nucleus-center of an atom; holds protons and neutrons
5. Proton-particle of the nucleus (+ charge)
6. Atom-smallest particle of an element



7. Molecule-smallest complete unit of a compound