To Honors Chemistry students, parents and/or guardians:

In order for honors chemistry students to be successful throughout the school year there are several key scientific concepts and skills that need to be reviewed and mastered. These topics include the following:

- State of Matter Structure and Properties
- Classification and property differences among pure substances (elements, compounds) and mixtures
- Periodic table element names/symbols; group names; metal/nonmetal/metalloids
- Characteristics of metals, nonmetals and metalloids

Class time will be minimal with regard to these topics. Students are expected to work on these packets on their own time. There will be after school extra help sessions available the week of September 9th and 16th that students may attend if they have specific questions on material in this packet. The answers to the practice worksheets in the review packet will also be available during these sessions for students to verify their answers.

There will be an assessment on these topics given the week of September 23rd It is imperative that review/practice time be spent on these topics during the summer months. **Past experience** has shown that students who are weak in these skill sets and lack the discipline needed for self-study, struggle with the honors chemistry curriculum and pacing. All honors chemistry students will take this assessment.

I have read and acknowledge the expectations for an honors chemistry student:

Student (print)

Student (signed)

Parent (print)

Parent (signed)

Chemistry Concepts

Learning Targets

Solids, liquids and gases

• Distinguish between observable differences in properties of the states of matter based on particle behavior, (arrangement, attraction between particles and particle movement)

Use differences in observable properties to distinguish between elements, compounds and mixtures.

• Connect the observable properties (macroscopic*) to the particle behavior (microscopic*).

Use particle level representations to model these differences.

Distinguish between a pure substance and a mixture by:

- properties
- separation techniques
- composition (macro- and microscopically)

Describe how one could use differences in characteristic/intensive properties to separate the components of a mixture.

- identify the separation technique (name, equipment)
- identify the property used in the separation

Learn the names and symbols for common elements

- Identify given groups on the periodic table
- Identify location of metals, nonmetals and semimetals (metalloids) on periodic table

*macroscopic means things you can see with the naked eye. Microscopic are things that are too small to see without a microscope or other visual aid.

Matter

Matter: All matter has mass and takes up space. It is made of particles.

Classification of Matter					
 Pure Substance: All particles of the substance are identical. Elements: Simplest type of substance with unique characteristic/intensive properties Compounds: Formed when 2 or more elements chemically combine to form a new substance with new characteristic/int properties. 	 Mixture: Contains two or more types of particles that each retain their characteristic properties. Heterogenous Homogenous 				

Element	Compound	Heterogeneous	Homogeneous
All of the particles are the same atom. These can be found on the periodic table.	Not all of the particles are the same atom. Molecule (made from more than one element on the periodic table)	You can see the different components of the mixture	You cannot see the different components – also called solution or alloy
Ex:	Ex:	Ex:	Ex:
Atoms of an element Molecules of an	Molecules of a compound	Cannot be represented at the particle level	A mixture of an element and compound
			This could be a mixture of elements, compounds or both



How to Represent Particle Movement:



Wooshies

Wooshie: Used to show change in particle position relative to other particles in substance

Particle Representation - States of Matter

Complete the following table:

	Solid	Liquid	Gas
Particle diagram			
Draw a representation of each state of matter for a pure substance: include details regarding density, arrangement, and movement, Use 6 particles for each.			
Describe movement of particles			
Describe particle Arrangement			
Describe attraction between particles			
Shape and Volume			
Density			
Compressibility			

Describing Substances, Elements, Compounds, and Mixtures

Classify each of the pictures below by placing the correct label in the blanks below:

A= Element

- D= Mixture of compounds
- B= Compound
- E= Mixture of elements and compounds
- C= Mixture of elements

Each circle represents a particle of an element and each different color represents a different kind of element. If two circles of a different color are touching then they are a compound.



Preparing Your Periodic Table

- 1. Download and print the periodic table. <u>https://0.tqn.com/z/g/chemistry/od/periodictableelements/I/PeriodicTableBW.pdf</u>
- 2. Write your name at the top.
- 3. Label the groups according to the American Labeling system. (Look online)
- 4. Draw the "staircase" that separates metals and nonmetals.
- 5. Color in the boxes of the groups according to the following instructions:

Color all metals:	Yellow		
Color all non-metals:	Pink		
Color Metalloids:	Purple		
Outline Alkali metals:	Dark blue		
Outline Alkaline earth metals:	Light blue		
Outline Transition metals:	Green		
Outline Halogens:	Orange		
Outline Noble gases:	Red		
Outline Group 3A-5A metals:	Brown		
Outline Lanthanides and Actinides:	Light green		
Put your Periodic Table in a sheet protector. You will be expected to have and use this table on a daily basis!			
Generally speaking 1. Where do the metals occur on the periodic table?			
2. Where do you find the nonmetals?			
3. Characteristic properties of metals include:			
	le:		

5. Characteristic properties of metalloids include:

Element names, symbols and classification

- 1. Memorize all of the following symbols and correctly spelled elements below. There will be a quiz on these.
- 2. Classify each element as metal (M), transition metal (TM), semimetal (SM), or nonmetal (NM).

Name	Symbol	M, TM, SM or NM	Name	Symbol	M, TM, SM or NM
aluminum	Al		lithium	Li	
antimony	Sb		magnesium	Mg	
argon	Ar		manganese	Mn	
arsenic	As		mercury	Hg	
barium	Ва		neon	Ne	
beryllium	Be		nickel	Ni	
boron	В		nitrogen	Ν	
bromine	Br		oxygen	0	
calcium	Са		palladium	Pd	
carbon	С		phosphorus	Р	
cesium	Cs		platinum	Pt	
chlorine	CI		potassium	К	
chromium	Cr		radon	Rn	
cobalt	Со		silicon	Si	
copper	Cu		silver	Ag	
fluorine	F		sodium	Na	
gold	Au		strontium	Sr	
helium	Не		sulfur	S	
hydrogen	Н		tin	Sn	
iodine	I		titanium	Ti	
iron	Fe		uranium	U	
krypton	Kr		xenon	Xe	
lead	Pb		zinc	Zn	

Only the first letter of the symbol is a capital letter. If there is a second letter, it MUST be lowercase, ex. Sn. It can't be a small capital letter, ex. SN

SPELLING COUNTS!

Read/View and Use the following Resources. We will refer to and use these throughout the year. It is expected that you are familiar.

Student Reading Resources:

Student reading on Density by Day and Capri: http://www.visionlearning.com/library/module_viewer.php?mid=37 Student Reading: Absolute Zero http://physics-history.suite101.com/article.cfm/absolute_zero Student Reading: Matter: States of Matter by Day and Capri http://www.visionlearning.com/library/module_viewer.php?mid=120 Student Resource: Heating Cooling Curve http://www.kentchemistry.com/links/Matter/HeatingCurve.htm

Other Resources:

Dalton's Playhouse, laboratory simulations http://web.visionlearning.com/dalton_playhouse/ad_loader.html

Review Eureka! videos 16-21

https://www.youtube.com/watch?v=4TPV3V39PMI&list=PLDkFaBQnjy-FHJETes8dmio_ CCmH0xEuO