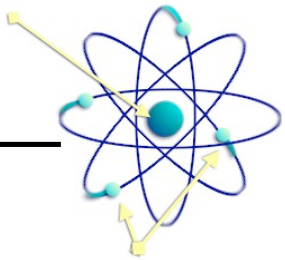
Name: _____ Period: _____

Final Due Date: **Friday, March 2, 2007**

Atomic Structure



objectives:

STUDENTS WILL BE ABLE TO:

A. Distinguish among symbols for atoms, ions, molecules, and equations for chemical reactions.
B. Name and write chemical formulas using symbols and subscripts.
C. Identify three subatomic particles of an atom by location, charge, and relative mass.
D. Determine the number of protons, neutrons, and electrons of elements by using the atomic number and atomic mass from the periodic table.
E. Describe the results of loss/gain of electrons on charges of atoms.
F. Identify the number of valence electrons of the first 20 elements based on their positions in the periodic table.
G. Classify elements as metals or nonmetals based on their positions in the periodic table.
H. Using selected elements from atomic number 1 to 20, draw Bohr models.
I. Name and write the formulas for simple ionic and covalent compounds.
J. Name and predict the bond type formed between selected elements based on their locations in the periodic table.
K. Diagram or construct models of simple hydrocarbons (four or fewer carbons) with single, double or triple bonds.

lectures:

Tuesday, 2/13/07: Atomic Structure (4.1)
Wednesday, 2/14/07: A Guided Tour of the Periodic Table (4.2)
Thursday, 2/15/07: Families of Elements (4.3)
Friday, 2/16/07: Using Moles to Count Atoms (4.4)
Thursday, 2/22/07: Chapter 4 Review & Activity Day
Friday, 2/23/07: Compounds and Molecules (5.1)
Monday, 2/26/07: Ion and Covalent Bonding (5.2)
Tuesday, 2/27/07: Compound Names and Formulas (5.3)
Wednesday, 2/28/07: Organic and Biochemical Compounds (5.4)
Thursday, 3/1/07: Chapter 5 Review & Activity Day
Friday, 3/2/07: Unit 3 Review and UNIT 3 TEST!

c layer activities:

Students must earn at least 245 points to receive a "C" grade for this unit. You must complete 245 points of C-Layer activities to advance to B-Layer activities. You MUST complete activities with a "*".

Points possible	Points earned	Assignment description	Date Due	Teacher initial
Chapter 4: (135 points minimum)				
*10		Read section 4.1 & outline notes. Turn in your notes **OR** Listen to lecture, participate & take notes on 2/13/07. Turn in your notes	2/13/07	
*10		Answer section 4.1 section review questions, practice problems and math skills **OR** Concept Review Worksheet: "Atomic Structure"	2/14/07	
*10		Read section 4.2 & outline notes. Turn in your notes **OR** Listen to lecture, participate & take notes on 2/14/07. Turn in your notes	2/14/07	
*10		Answer section 4.2 section review questions, practice problems and math skills **OR** Concept Review Worksheet: "A Guided Tour of the Periodic Table"	2/15/07	
*10		Read section 4.3 & outline notes. Turn in your notes **OR** Listen to lecture, participate & take notes on 2/15/07. Turn in your notes	2/15/07	
*10		Answer section 4.3 section review questions, practice problems and math skills **OR** Concept Review Worksheet: "Families of Elements"	2/16/07	
*10		Read section 4.4 & outline notes. Turn in your notes **OR** Listen to lecture, participate & take notes on 2/16/07. Turn in your notes	2/16/07	
*10		Answer section 4.4 section review questions, practice problems and math skills **OR** Concept Review Worksheet: "Using Moles to Count Atoms"	2/22/07	
*5		Math Skills Worksheet: 'Conversion Factors"	2/22/07	
*5		Math Skills Worksheet: "Converting Mass to Amount"	2/22/07	
*5		Math Skills Worksheet: "Converting Amount to Mass"	2/22/07	
*15		Skills Practice Lab: "Drawing Atomic Models"	2/16/07	
*10		Chapter 4 Review (p.136-137) #1-28 **OR** Chapter Test A Worksheet: Chapter 4, "Atoms and the Periodic Table"	2/23/07	

5		Create flashcards or a flipbook for the key terms for Chapter 3	2/23/07	
5		Quick Activity p.122, "Elements in your food"	2/23/07	
5		Concept Map p. 139, #46	2/23/07	
8		Design your own lighted neon sign, and find out which substances you could use to produce the colors you want your sign to be. (hint: research the element neon)	2/23/07	
8		Design flashcards or a flipbook for the elements in the periodic table.	2/23/07	
10		Draw Bohr diagrams for the first 20 elements on the periodic table. (Use information from the periodic table to identify valence electrons in the diagrams)	2/23/07	
Chapter 5: (110 points minimum)				
*10		Read section 5.1 & outline notes. Turn in your notes **OR** Listen to lecture, participate & take notes on 2/23/07. Turn in your notes	2/23/07	
*10		Answer section 5.1 section review questions, practice problems and math skills **OR** Concept Review Worksheet: "Compounds and Molecules"	2/26/07	
*10		Read section 5.2 & outline notes. Turn in your notes **OR** Listen to lecture, participate & take notes on 2/26/07. Turn in your notes	2/26/07	
*10		Answer section 5.2 section review questions, practice problems and math skills **OR** Concept Review Worksheet: "Ion and Covalent Bonding"	2/27/07	
*10		Read section 5.3 & outline notes. Turn in your notes **OR** Listen to lecture, participate & take notes on 2/27/07. Turn in your notes	2/27/07	
*10		Answer section 5.3 section review questions, practice problems and math skills **OR** Concept Review Worksheet: "Compound Names and Formulas"	2/28/07	
*10		Read section 5.4 & outline notes. Turn in your notes **OR** Listen to lecture, participate & take notes on 2/28/07. Turn in your notes	2/28/07	
*10		Answer section 5.4 section review questions, practice problems and math skills **OR** Concept Review Worksheet: "Organic and Biochemical Compounds"	3/1/07	
*5		Math Skills Worksheet: "Writing Ionic Formulas"	2/28/07	

*10		Chapter 5 Review (p.174-176), #'s 1-26 **OR** Chapter Test A-Chapter 5, "The Structure of Matter"	3/2/07	
5		Create flashcards or a flipbook for the key terms for Chapter 5	3/2/07	
5		Polar Covalent Bond: Think of a situation that is similar to polar covalent bonding in real life. Write a paragraph explaining your analogy and tell how the situation is similar to polar covalent bonding.	3/2/07	
5		Concept Map p.177 # 41	3/2/07	
8		Using Figures from Chapter 5 (you must do ALL below), illustrate the figure on paper, and explain the figure following the instructions below: Figure 11, p.153: Explain ionic bonding; Figures 9, 14, and 15, p. 151, 155, and 156: Explain nonpolar covalent bonding; Figure 16, p.156: Explain polar covalent bonding; Figure 13, p.154: Explain metallic bonding. BE NEAT.	3/2/07	
8		Create a flipbook for naming compounds. The prefixes should be on the left, and the names of nonmetals with *–ide* following should be on the right side. (See me if you would like to do this, and I can explain.)	3/2/07	
8		Research a sugar substitute (ex: sorbital, asparitame). Why do some people use sugar substitutes? What are health risks associated with excess sugar consumption? Are there any health risks associated with sugar substitutes? What are the differences in chemical make-up and structure between sugar and various sugar substitutes?	3/2/07	
8		Creative Thinking: p.176 # 28: Dodecane and jet fuel.	3/2/07	
10		Create a brochure: choose one alkane to study in more detail. Research practical applications related to the alkane. Use your results to create and design a brochure that illustrates information about your alkane and its uses. Your brochure should include illustrations and text. You can design be hand, or use computer software. (I have software in class, so see me if this interests you.)	3/2/07	

b layer activities:

Students choose 3 ONLY (30 points): You must complete 30 points in order to receive a "B", and to advance to the A-Layer activities.

Points possible	Points earned	Assignment description	Date Due	Teacher initial
10		Quick Lab pg. 124, "Why do some metals cost more than others?"	3/2/07	
10		Connection to Earth Science, p. 139, # 48: Do some research and find out which isotopes to find out which isotopes are used to date rocks and meteorites.	3/2/07	
10		Create a timeline of the theories of the atomic model, as we studied in class. Research each scientist, and give one fact for each theory and scientist on the timeline. BE NEAT.	3/2/07	

10		Lewis Structures: Research to find out about the octet rule and the steps for drawing Lewis structures. Apply your research and draw Lewis structures for 10 simple ionic, and 10 covalent compounds.	3/2/07	
10		Nitrogen Fixation: Research nitrogen fixation, both natural and commercial (Haber-Bosch process) sources. Create a poster illustrating the process you have chosen, and write a one-page paper explaining why nitrogen fixation is so important to plants.	3/2/07	
10		Making Decisions p. 177 #37: Research different salt substitutes, and describe how each one affects your body. Determine which salt substitute you would use if you were on a salt substitute diet. Write a one-page paper explaining your research, and include an illustration.	3/2/07	

a layer activities:

Students choose 1 ONLY (25 points): You must complete 25 points in order to receive an "A".

Students are responsible for conducting these labs. The student should gather all consumable and household supplies. The experiment should be done in class after the daily lecture. If a student would like to conduct a lab at home, that is acceptable. Any lab conducted at home must be written up on the appropriate form *and* signed by a parent/guardian observer. All labs MUST have pre-lab written *before* the student can begin the lab. The post-lab must also be completed and turned in for the points.

Points possible	Points earned	Assignment description	Date Due	Teacher initial
25		Create a three-dimensional model of the atom of your choice. I encourage you to create more than one version, based on the different versions of atomic theory throughout history. Include: which historical theory you are representing in your model, which parts of the theory are no longer accepted today, and any information about the limitations of your model.	3/5/07	
25		Research one of the scientists studied in this unit. Include a one-page (at least) paper about his life and discoveries, and a poster about him, his life, and studies. BE NEAT.	3/5/07	
25		Quick Lab, p.149 "Which melts more easily, sugar or salt" (See me for alterations to this lab, so that you can do this at home). You must turn in a completed lab report.	3/5/07	
25		Growing Salt Crystals: Research how to grow salt crystals (this takes a few days, so start EARLY). Try this website: http://www.saltinstitute.org/15.html. You can add food coloring to the water to make the crystals different colors. You can also make sugar crystals if you would like. You must turn in a completed lab report, and either take a photo of the crystals at the end, or bring them in so that the class can see!	3/5/07	
25		Hydrocarbon Models: Construct a 3-D model of a common hydrocarbon, making sure to differentiate the carbon with a dark color, and hydrogen with a light color. Use the appropriate bonds. Write a one-page paper explaining your model, and give a key.	3/5/07	