

Chemistry Chapter 3, 4 and 6.1-6.3 Review Name: _____ Per _____

Here is a list of Topics to know and concepts to study. You may NOT use notes on the assessment. The hope is that you have internalized the concepts throughout the hands-on activities, the analysis of each concept, and the building of models for the behavior of particles in solid, liquid and gas phases at different temperatures.

NGSS Standards Addressed:

You should make sure you have the answers filled out for each lesson activity from Chapter 3, 4 and 6 (6.1-6.3). If you do not have them filled out, you may not be prepared for the assessment. Study your activity notes and answers and models to prepare for the assessment. Across from each activity are some key concepts or questions you should be able to answer. Use this guide to help you with what to review and what to know. Add to it as you go through your notes. There are also slideshow slides and animations that may help you with understanding the concepts. Review those as well.

Chemistry Week 3

Day 1: Chapter 3 Lesson 1 What is Density? [Watch the animation on how to find volume, mass, and density](#)

<p>Day 1: Chapter 3 Lesson 1 What is Density? Watch the animation on how to find volume, mass, and density</p>	<p>Main concepts to know from this activity:</p> <p>What is the formula for Density?</p> $D = \frac{M}{V}$ <p>How does density affect an object's ability to float in a liquid?</p> <p>less dense = float more dense = sink</p>
<p>See Ch 3 Lesson 1 "What is Density" problems packet</p>	<p>Given objects of the same volume, how does mass affect density?</p> <p>more mass = more dense</p> <p>What affects the density of a substance? (#8)</p> <p>mass \uparrow = density \uparrow</p>
<p>See Density Calculation Practice</p>	<p>Know how to calculate density given the mass and volume.</p> $D = \frac{M}{V}$ <p>What are some of the possible units of density?</p> <p>g/cm³ g/mL</p>
<p>See Chapter 4, Lesson 1 Protons, Neutrons, and Electrons Link to videos to watch for 4.1</p>	<p>Know that positive and negative charges are attracted, and like charges <u>repel</u>.</p> <p>How can we pass a charge from one object to another, like a balloon?</p> <p>rubbing them together</p>

Ch 4 Lesson 1: View balloon and charges page	Why does water bend when you have a balloon with a negative charge next to it? <i>the Positive charge on the Hydrogen in the H₂O is attracted to the negative charge of the balloon</i>																
Ch 4 Lesson 2 The Periodic Table	<p>Link to Game #1 and Game #2 Periodic Table</p> <p>Go through the game #1 linked above or in the class slideshow to recognize elements in the periodic table.</p> <p><i>Atomic # = # Protons, # of electrons</i></p> <p>Know how to find the following using a periodic table: <i># of neutrons = Atomic mass - Atomic #</i> atomic number and what it means Atomic mass Chemical symbol Element name</p> <p><i>I sotope = same element different # of neutrons</i></p>																
From the Periodic Table Elements 1-20 chart made in class	<p>Be able to calculate the number of protons, electrons and neutrons for an element given a copy of the periodic table.</p> <p>How do you calculate the number of neutrons? <i>Atomic mass - Atomic #</i></p> <p>How many protons, neutrons and electrons in each of these atoms?</p> <table><tr><td></td><td>Boron</td><td>Chlorine</td><td>Sodium</td></tr><tr><td>Protons</td><td>5</td><td></td><td></td></tr><tr><td>Electrons</td><td>5</td><td></td><td></td></tr><tr><td>Neutrons</td><td>5.81</td><td></td><td></td></tr></table>		Boron	Chlorine	Sodium	Protons	5			Electrons	5			Neutrons	5.81		
	Boron	Chlorine	Sodium														
Protons	5																
Electrons	5																
Neutrons	5.81																
Ch 4 Lesson 3: The Periodic Table and Energy Level Models Know how to draw a Bohr model with energy levels and correct electron arrangement in each level.	<p>Link to Game #2 Periodic Table</p> <p>Be able to explain the arrangement of protons and neutrons and electrons in the various energy levels of an atom of a particular element.</p> <p>What is in the nucleus? <i>Protons</i> <i>neutrons</i></p>																

Be able to fill out each energy level with dots for electrons in the Energy Levels Elements 1-20 image above. What pattern do you notice in the columns?



Fill out the table below to show how many electrons can maximize each level in elements 1-20 (only for first 20 elements)

Energy Level	Max number of electrons
1st	2
2nd	8
3rd	8
4th	8

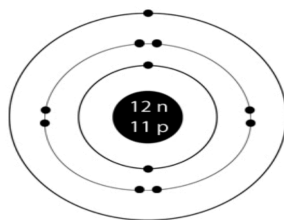
Element Research

[Element Research Links](#) to learn about the elements.

Given a periodic table, be able to fill in the information from this template, **except for common uses**. Bohr models look like the models in Lesson 3, except they have numbers of protons and neutrons labeled in the nucleus. (example for sodium pictured below)

Sodium

²³₁₁Na



Chapter 4, Lesson 4 Energy Levels, Electrons, and Covalent Bonding ([link to animations for Lesson 4](#))

How is a covalent bond formed?

electrons shared between elements

<p>Look at a periodic table to help determine valence electrons.</p>	<p>Link to 16 second video to set up water electrolysis</p> <p>Use a periodic table or the diagrams.</p> <p>Identify how many electrons are in the outside energy levels for different elements. These are called <u>Valence</u> electrons, and help determine what atoms will bond together.</p> <p>How many <u>valence electrons</u> are in the following elements:</p> <p>Hydrogen <u>1</u></p> <p>Oxygen <u>6</u></p> <p>Carbon <u>4</u></p> <p>Argon <u> </u></p>
<p>Chapter 4 Lesson 5 Energy Levels, Electrons, and Ionic Bonding (Link to Lesson 5 videos and animations)</p>	<p>Explain how an ionic bond is formed:</p> <p>How many valence electrons does Calcium have? <u> </u></p> <p>How many electrons does Calcium “want?”</p>
<p>Chapter 6 Lesson 1: What is a Chemical Reaction?</p> <p>Review the visual space models for molecules to count atoms</p>	<p>Chapter 6 Lesson 1 Link to videos and interactives</p> <p>Know how to count atoms from a chemical formula or a molecule model.</p>
<p>Ch 6 - Review the candle demonstration page</p>	<p>What is a chemical equation? Give an example:</p> <p>What are reactants?</p> <p>What are products?</p>

<p>Ch 6 Lesson 1 - Review the “Explain it with Atoms and Molecules” page for how to count atoms on both sides of a chemical equation.</p>	<p>Know how to count atoms on the reactant and product side of a chemical equation to see if it is balanced.</p> <p>Law of Conservation of mass:</p> <p>_____ are neither created nor destroyed. The amount of atoms is equal on both the reactant and product side. Mass is conserved.</p>
<p>Chapter 6 Lesson 2: Controlling the Amount of Products in a Chemical Reaction (Link to Lesson 2 simulations and images)</p>	<p>Identify reactants and products and be able to count the atoms on both sides of an equation, rather than a picture.</p> <p>Make sure you know how to fill out each table for a chemical equation.</p>
<p>Ch 6 Lesson 2 continued - “Explain it with Atoms and Molecules”</p> <p>Ch 6 Lesson 3 - Forming a precipitate</p>	<p>Know that there is a limit to how much of one reactant you can add to a reaction to make more products.</p> <p>Why is this?</p> <p>How do you know when there is a chemical change in a reaction?</p> <p>What is a precipitate?</p>
<p>Ch 6 Lesson 3 - Forming a precipitate</p>	<p>Explain why a precipitate forming indicates that a chemical change has occurred.</p> <p>How many reactants are there in this chemical equation for this lab?</p> <p>How many products are there in this chemical equation for this lab?</p>