

**Earth Science 8**  
**Chemistry Unit Study Guide (Topics to Know)**

1. Know the difference between a physical change and a chemical change. Know the signs of a chemical change.
2. Know about chemical reactions and how chemical equations represent or model chemical reactions. Know the parts of a chemical equation (reactants, products). Understand that a chemical reaction involves the breaking of bonds and creation of new bonds resulting in changes of composition.
3. Know the effect of increasing amount of reactants in a chemical reaction and how it effects the number of products.
4. Understand what it means for a reaction to be exothermic or endothermic.
5. Explain how to tell if a chemical equation is balanced, and the law of conservation of mass. Be able to balance chemical equations and give the reason why we need to balance chemical equations.
6. Be able to identify the number of protons, neutrons, and electrons for an element from the Periodic Table of Elements.
7. Be able to draw Bohr models and Lewis structures.
8. Ionic vs Covalent Bonds: Be able to tell if a bond formed between two elements are ionic or covalent, and explain why. Be able to show or draw ionic bonds and covalent bonds.
9. Be able to write a chemical formula from a bonding diagram.
10. Know the trends that occur as you move across rows and columns of the Periodic Table of Elements.
11. Atomic Structure (nucleus, electron cloud, protons, neutrons, electrons)
12. Charges on atoms and subatomic particles (protons, neutrons, electrons)
13. Given atomic mass, determine the number of subatomic particles.
14. Know what the atomic mass and atomic number of an element mean.
15. Know about isotopes, ions, and new elements.
16. Be able to find the number of neutrons in an isotope of an element, given mass and atomic number.
17. Know about ions, and how the charge on the ion changes when it gains/loses electrons. Know that the charge on an ion is positive if electrons are given up, and is negative if electrons are gained when trying to reach Noble Gas configuration.
18. Single, Double, and Triple Covalent bonds
19. Know that valence electrons are the outermost electron orbital, and are involved in bonding.
20. Know what a catalyst is.
21. Differentiate compounds, mixtures, elements

**Look at your notes, lab handouts, practice worksheets, directed reading from *Matter and Energy* book, and old quizzes!!!**