Physical Science Unit 5: The Periodic Table and Chemical Bonding
Chapter 5 and 6

Graduate Learner Outcome: As a Henry County graduate, I will understand and analyze reactions and interactions of matter through scientific processes and practices.

Pretest Score: _____ **Post Test Score:** _____

Unit 5 Goal: Write a goal that you have for this unit.

Standards and Learning Targets:

SPS1. Obtain, evaluate, and communicate information from the Periodic Table to explain the relative properties of elements based on patterns of atomic structure.

b. Analyze and interpret data to determine trends of the following: number of valence electrons, types of ions formed by main group elements, location and properties of metals, nonmetals, and metalloids.
   - I can define and identify characteristic properties of metals, nonmetals, and metalloids.
   - I can identify reactivity of elements on the Periodic Table based on location.
   - I can explain how ions are formed for representative elements based on number of valence electrons.
   - I can analyze and interpret data to determine trends of the number of valence electrons, types of ions formed by main groups of elements, phases at room temperature and location and properties of metals, nonmetals and metalloids.

c. Use the Periodic Table as a model to predict the properties of main group elements.
   - I can find the phase, valence electrons, general properties, and the ionic charge of elements in the Periodic Table.
   - I can describe how the Periodic Table is arranged with respect to properties of main group elements.
   - I can use the Periodic Table as a model to predict properties of main group elements.

SPS2. Obtain, evaluate, and communicate information to explain how atoms bond to form stable compounds.

a. Analyze and interpret data to predict properties of ionic and covalent compounds.
   - I can define ionic and covalent compounds.
   - I can define melting point, boiling point, and conductivity.
   - I can identify common chemical symbols and formulas.
   - I can predict the properties of a compound based on whether it is ionic or covalent.
   - I can distinguish between ionic and covalent bonds by interpreting chemical symbols and formulas.

b. Develop and use models to predict formulas for stable, binary ionic compounds based on balance of charges.

- I can explain what a subscript represents in a chemical formula.
- I can list oxidation numbers for representative group elements to be used when writing chemical formulas for binary ionic compounds.
- I can infer whether a compound is ionic based on its chemical nomenclature.
- I can write formulas for stable, binary ionic compounds based on balance of charges.
- I can write Lewis dot structures to show compound formation based on elements' location on the Periodic Table.

c. Use the International Union of Pure and Applied Chemistry (IUPAC) nomenclature for translating between chemical names and chemical formulas.
   - I can use the International Union of Pure and Applied Chemistry (IUPAC) nomenclature to identify the names of simple chemicals.
   - I can infer whether a compound is ionic or covalent based on its chemical nomenclature.
   - I can use the International Union of Pure and Applied Chemistry (IUPAC) nomenclature for translating between simple binary chemical names and chemical formulas (one to one chemical compounds).

Activities/Quizzes/Resources: (All resources can be found on my school website.)

1. Unit 5 Planning Guide
2. Unit 5 Learning Path
3. Unit 5 Pretest
4. Chapter 5 Powerpoint
5. Chapter 5 Outline
6. Section 5.1 Lesson Video
7. Section 5.2 Lesson Video
8. Section 5.3 Lesson Video
9. Periodic Table Worksheet
10. Chapter 6 Powerpoint
11. Chapter 6 Outline
12. Section 6.1 Lesson Video
13. Section 6.2 Lesson Video
14. Section 6.3 Lesson Video
15. Section 6.4 Lesson Video
16. Bonding Worksheet
17. Chapter 5 Study Guide
18. Chapter 6 Study Guide
19. Review Games
20. Extra Practice Sheets
21. Unit 5 Quiz

Performance Task/Test:

Based on the learning targets from this unit, you will demonstrate your understanding of how atoms bond to form stable compounds.

- Lab 9 – Reactivity of Alkaline Metals Lab
- Lab 10 – Ionic Card Game Lab

Unit 5 Test (You will complete the post test at the end of this unit to show mastery.)

Unit 5 Reflection: Reflect on what you could have done better to master this unit.