

Lesson Title: **Overview of the Periodic Table**, September 27, 2016

**Lesson Title: The Periodic Table, an Overview.**

Objective: **Students will be able to locate and identify the major categories of elements of the periodic table and explain the properties of metals, non-metals, metalloids through taking notes, creating a display of the periodic table, and perform an activity where students construct atomic models.**

**Next Generation Science Standard HS-PS1-1:** Use the periodic table as a model to predict the relative properties of elements based on the patterns of electrons in the outermost energy level of atoms.

**Engage:** (10 min.) The lesson begins with a **warm-up** that reviews the classroom rules regarding the appropriate and inappropriate uses of cellphones/smartphones by having the **students write down the rules in their notebooks (10pts)**. A discussion will follow as how this will work in our classroom.

**Review and reinforcement activity** creating atomic models. (15 min.) **Handout: Bohr Model Diagrams in pdf format (5 points per correct drawing, 20 pts total).**

**Success criteria** for atomic model activity: Students will be able to draw models of atoms that depict nuclear particles in the center of the drawing that symbolize the number of protons and neutrons. Students will then add the appropriate number of electrons in their orbital shells using star or asterisk to symbolize electrons orbiting the nucleus. (2 electrons in first orbital closest to the nucleus, 8 electrons in the 2nd orbital and 8 electrons in the third orbital.) Examples of accurate orbital drawings are provided with the activity sheet.

**Explain (25 min):** I will use a power point format to present the major types of elements. Students will take notes using a **graphic organizer** and a periodic table as an interactive visual. (handed out last session). Students will label their periodic table using a key and color pencils/markers to distinguish the major types of elements. (metals, non-metals, metalloids). **(30 pts)**

**Student misconceptions:** In the past students will say that the elements are metals, non-metals, or metalloids because of their position on the Periodic Table (to the left, right, or on the Metalloid Staircase) rather than their properties. I will reinforce this with a group exercise the following day. I will also reinforce the symbolism used in the Periodic Table with a group exercise (see “Decoding the Periodic Table of Elements” pdf)

**Evaluate:** For evaluation for this section students will be given two worksheets that has students master the language and symbolism of the periodic table and how categorize the elements according to their groups, periods and properties (Atomic Structure Worksheet, **30 pts.**, and Periodic Table Worksheet, **36 pts.**, both pdf.) Students will use their color coded Periodic Table they created on the first day. Students will complete these activities on the second day. Student

safety net and class examples will ensure their success in completing these activities with the support of their group.

**Resources:**

- 1) **betterlesson.com. Next Generation Science Standards (NGSS)** with contributed lesson plans from teachers. Activity Sheet: Bohr Model Diagrams. Lesson structure and worksheet for evaluation is sourced from Rachael Meisner, Castle Park Senior High, Chula Vista, CA.
- 2) Power point “Periodic Table”: **Science with Mr. Jones**, Howell Township Middle School South, Howell NJ. Graphic organizer for note taking, “**Periodic Table Outline**” **pdf format.**
- 3) The periodic table will be the same one used on the standardized test, pdf.