Science: Chemistry
Sample Lesson Plan: Introduction to the Periodic Table of Elements
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Content Objectives: To learn what an element is and the factors by which they are arranged on the Periodic Table.

Class opener/Do Now: Students will have 90 seconds to write down as many “elements” as they can think of. Then, as a class, students will share their lists, and a list of elements will be formulated on the board.

Mini-lesson: Begin with visual aides; explain how elements make up objects in every day life; exist in different phases (solid [Au and Ag jewelry], liquid [Hg in thermometer], gas [He in balloon]).

Introduce the Periodic Table:

- What is an element?
  - The simplest form of matter; cannot be decomposed into simpler substances; matter
  - composed of one kind of atom, each atom has same properties; atoms all have the same atomic number
- Break down into name and atomic symbol
  - Ex: Carbon
  - Review subatomic particles from previous unit (electrons, protons, neutrons)
  - Atomic number (Z): number of protons in atomic nucleus
- Atomic weight: average atomic mass for naturally occurring element (amu’s)

- Atomic mass units (amu): mass unit equal to exactly 1/12 mass of carbon-12 atom

Examples in W|A:
Carbon is a chemical element. Its properties are as follows:

- **Abbreviation**: C
- **Atomic Number**: 6
- **Electron Configuration**: [He]2s22p2
- **Block**: p
- **Group**: 14
- **Period**: 2
- **Atomic Weight**: 12.0107
Organization of the PT (rows, columns, classification of element, mass, properties)
  - Row (period)
  - Column (group)

Student Exercise: Students will be broken up into pairs to complete the worksheet of questions using Wolfram|Alpha that can be answered based on the lesson material. Worksheet will be handed in upon completion of the activity. (Worksheet is on the next page)

Ticket to Leave (5 min): Students have to complete a periodic table puzzle. They will be dismissed once they have raised their hands and asked for my approval.

Demonstrations:
  - http://demonstrations.wolfram.com/BuildThePeriodicTable/
  - http://demonstrations.wolfram.com/PeriodicTableIn3D/
  - http://demonstrations.wolfram.com/PropertiesOfTheElements/
PICK AN ELEMENT, ANY ELEMENT

Name: __________________________________________

Choose an element on the periodic table and answer the questions that follow. Some research may be required to complete the assignment, so utilize any resources necessary (Wolfram|Alpha, textbook, etc).

1.) What is the name of the element?

2.) What is the atomic symbol of the element?

3.) What is the atomic number?

4.) What is the atomic weight (including units)?

5.) What period and what group is this element found?
   a. Period:
   b. Group:

6.) Name two facts/properties that you learned about this element?
   a.
   b.

7.) What is this element used for? Applications?

8.) Compare your 2 favorite elements. What did you learn?