Lesson Title	The Mystery of the Periodic Table
Length of Lesson	1 hour (1 class period)
Created By	Lucas Pounders
Subject	Physical Science
Grade Level	9-12th
State Standards	Physical Science 4C, 4D,
DOK Level	2
DOK Application	Construct, Organize, Classify, Distinguish
National Standards	9-12:Inquiry
Graduate Research Element	Periodic Table

Student Learning Goal:

To learn about and understand the periodic table and how to obtain correct information from it.

State Standards:

c. Research the history of the periodic table of the elements and summarize the contributions which led to the atomic theory. (DOK 2)

- Contributions of scientists (e.g., John Dalton, J.J. Thomson, Ernest Rutherford, Newton, Einstein, Neils, Bohr, Louis de Broglie, Erwin Schrödinger, etc.)
- Technology (e.g., x-rays, cathode-ray tubes, spectroscopes)
- Experiments (e.g., gold-foil, cathode-ray, etc.)

d. Utilize the periodic table to predict and explain patterns and draw conclusions about the structure, properties, and organization of matter. (DOK 2)

- Atomic composition and valence electron configuration (e.g., atomic number, mass number of protons, neutrons, electrons, isotopes, and ions)
- Periodic trends using the periodic table (e.g., valence, reactivity, atomic radius)
- Average atomic mass from isotopic abundance
- Solids, liquids, and gases
- Periodic properties of elements (e.g., metal/nonmetal/metalloid behavior, electrical/heat conductivity, electronegativity, electron affinity, ionization energy, atomic/covalent/ionic radius) and how they relate to position in the periodic table

National Standards:

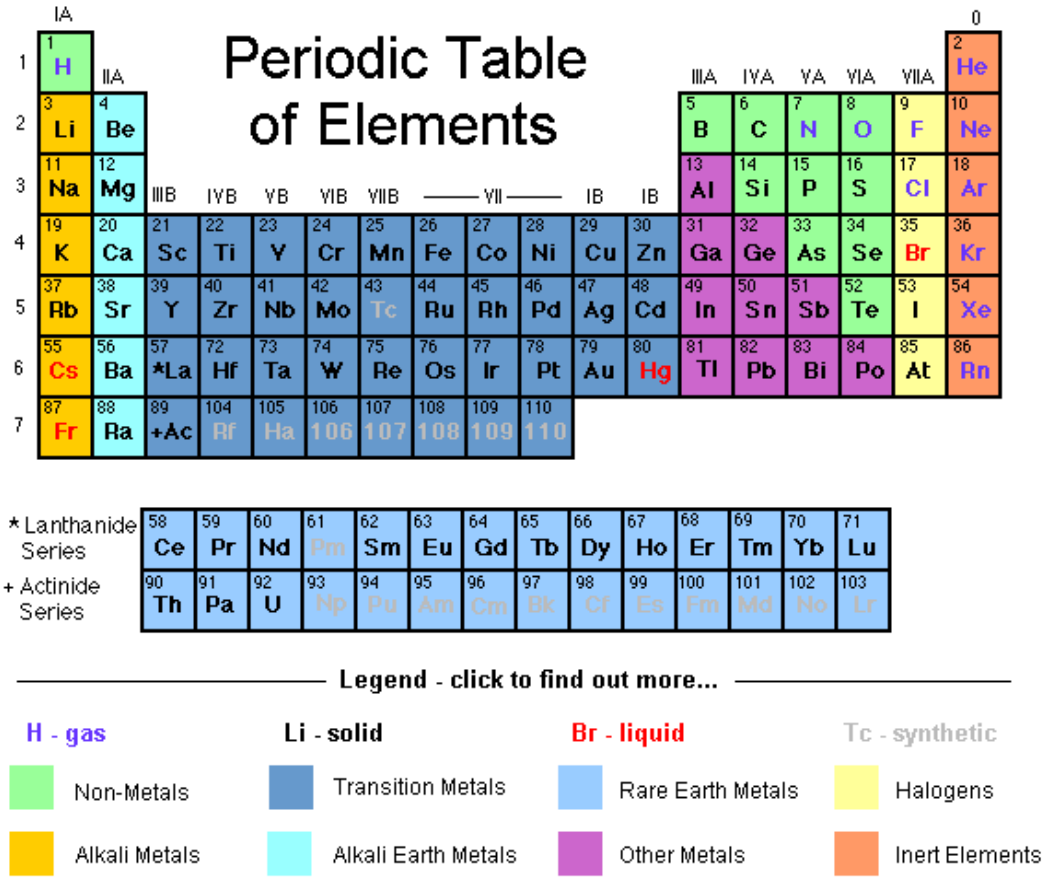
9-12: Science as Inquiry: Abilities necessary to do scientific inquiry.

*An understanding of the periodic table is necessary to further a students understanding in various scientific fields.

*The periodic table identifies materials in their various forms and labels them appropriately for better understanding.

Materials Needed (supplies, hand-outs, resources):

Hand-outs of the periodic table along with a large visual aid at the front of the classroom.



Lesson Performance Task/Assessment:
The students should be able to take various objects and identify what they are made of. They should also be able to correctly label the periodic table and which elements fall into each category. The periodic table will be divided into various sections. The students will be divided in groups and asked to use their hand-out of the periodic table to place the sections and elements in the correct position according their position on the periodic table.

Lesson Relevance to Performance Task and Students:
This will cause the students to use the period table to decide which elements belong in what categories and where that category is on the periodic table. This will help the students to become more familiar with the periodic table and more comfortable in the use of it.

Anticipatory Set/Capture Interest:

In the groups have the students each pick out an object in their backpack and get them to try to pick out on the periodic table what it is composed of.

Guided Practice:
The students will have their hand out of the periodic table and will be instructed to label the various parts of the periodic table. The students will then take the pieces of the divided periodic table and use their handout to place the pieces in the correct position. While the students are trying to decide what element the objects are made of the instructor will be going around the room giving hints and helping the students make their decision.

Independent Practice:
At the beginning of the day when the students come into the classroom, give the students a list of 5 elements and give the students 5 minutes to come up with something made of that element.

Remediation and/or Enrichment:
Remediation: Since we will be using groups throughout the lesson, partner help will already be in use for those needing further remediation.
Enrichment: Students who have a good grasp on the information can further their understanding by taking home a list of elements and find objects in their home made of those elements.
http://www.privatehand.com/flash/elements.html - Period Table Song
Follow student's IEP.

Check(s) for Understanding:
To check for understanding of the lesson, the students will be given a quiz on the periodic table at the end of class.
What are 5 elements that fall under the transition metals category?
What are 2 elements that fall under the non-metals category?

Closure:
Have group discussion towards the end of class sharing their findings.

Possible Alternate Subject Integrations:
Earth Sciences – This lesson can be used in earth sciences because the students need to know the various materials found in the soil, rocks, etc. These materials can be found on the periodic table.
Math – By using the atomic numbers found on the periodic table the teacher can create various chemical and mathematic equations.

Teacher Notes:

It can be modified for many different uses and the length can be modified to make into multiple lessons.