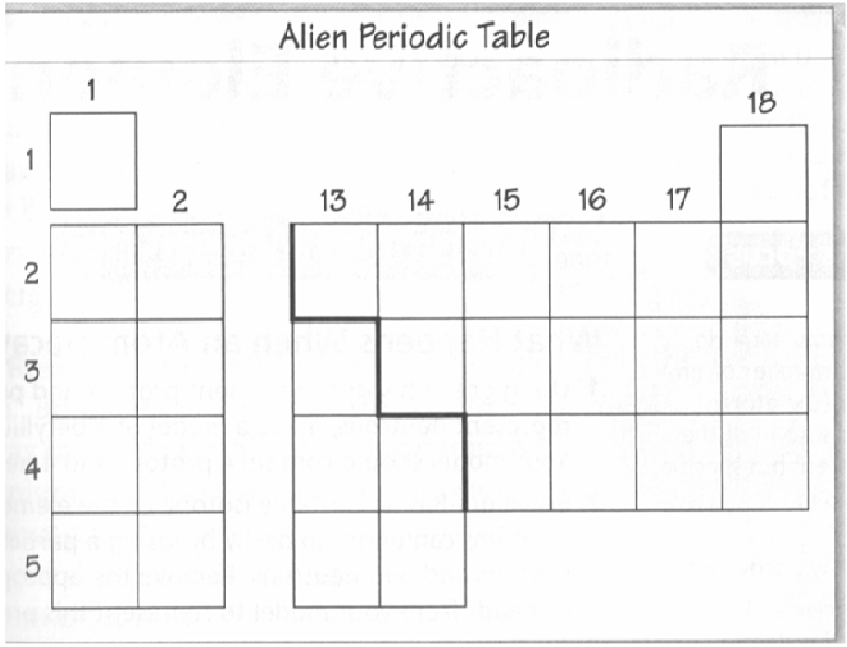
Problem: Imagine that inhabitants of another planet send a message to Earth that contains information about 30 elements. However, the message contains different names and symbols for these elements than those used on Earth. Which elements on the periodic table do these "alien" names represent?

Procedure:

1. Copy the blank periodic table onto your own piece of notebook paper.
2. Listed on the Alien Artifact are data on the chemical and physical properties of the 30 elements. Place the elements in their proper position in your blank periodic table.



Analyze and Conclude:

1. List the Earth names for the 30 elements in order for atomic number.
2. Were you able to place some elements within the periodic table with just a single clue? Explain using examples.
3. Why did you need two or more clues to place other elements? Explain using examples from this activity.
4. Why could you use clues about atomic mass to place elements, even though the table is now based on atomic numbers?
5. Write a paragraph describing which groups of elements are not included in the alien periodic table. Explain whether or not you think it is likely that an alien planet would lack these elements.

More to Explore

Notice that Period 5 is incomplete on the alien periodic table. Create names and symbols for each of the missing elements. Then, compose a series of clues that would allow another student to identify these elements. Make your clues as precise as possible.

Alien Periodic Table

Alien Elements

The inert gases are **bombal** (Bo), **wobble** (Wo), **jeptum** (J), and **logon** (L). Among these gases, wobble has the greatest atomic mass and bombal the least. Logon is lighter than jeptum.

The most reactive group of metals are **xtalt** (X), **byyou** (By), **chow** (Ch), and **quackzil** (Q). Of these metals, chow has the lowest atomic mass. Quackzil is in the same period as wobble.

Apstrom (A), **vulcania** (V), and **kratt** (Kt) are nonmetals whose atoms typically gain or share one electron. Vulcania is in the same period as quackzil and wobble.

The semimetals are **ernst** (E), **highho** (Hi), **terriblum** (T), and **sississ** (Ss). Sississ is the semimetal with the greatest atomic mass. Ernst is the semimetal with the lowest atomic mass. Highho and terriblum are in Group 14. Terriblum has more protons than highho. **Yazzer** (Yz) touches the zigzag line, but it's a metal, not a semimetal.

The lightest element of all is called **pfsst** (Pf). The heaviest element in the group of 30 elements is **eldorado** (El). The most chemically active nonmetal is apstrom. Kratt reacts with byyou to form table salt.

The element **doggone** (D) has only 4 protons in its atoms.

Floxxit (Fx) is important in the chemistry of life. It forms compounds made of long chains of atoms. **Rhaatrap** (R) and **doadeer** (Do) are metals in the fourth period, but rhaatrap is less reactive than doadeer.

Magnificon (M), **goldy** (G), and sississ are all members of Group 15. Goldy has fewer electrons than magnificon.

Urrp (Up), **oz** (Oz), and **nuutye** (Nu) all gain 2 electrons when they react. Nuutye is found as a diatomic molecule and has the same properties as a gas found in Earth's atmosphere. Oz has a lower atomic number than urrp.

The element **anatom** (An) has atoms with a total of 49 electrons. **Zapper** (Z) and **pie** (Pi) lose two electrons when they react. Zapper is used to make lightweight alloys.