



Alien Periodic Table

Introduction

Earth's scientists have announced that they have finally made radio contact with intelligent life on a distant planet dubbed 2-4-D. One of this alien planet's languages is being translated, and scientific information has begun to be exchanged!

Planet 2-4-D seems to be composed of many of the **same elements** as Earth. However, the scientists from planet 2-4-D have different names and symbols for them. The alien scientists do not know **our** names for the elements, or how to classify them, but they have radioed data on the known properties of their elements.

As a scientist who has been studying about chemistry, you have been asked to help sort out what is known about the alien elements and to arrange them onto a blank periodic table. Once this table is organized, scientists on both planets will understand each other better and will be able to work to share scientific information and make new discoveries.

Objective

To draw conclusions about the Earth names of the alien elements based on atomic number.

To classify elements based on their properties.

To infer the position of the elements on the periodic table.

Procedure

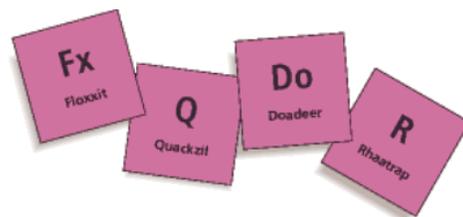
Using your knowledge of Earth's periodic table, you will arrange the alien elements onto a blank periodic table. Be sure to complete 1-4 below.

1. Each alien element symbol should be located in the **same position** that Earth's corresponding element symbol would be located. (*Note: The symbol is given in parentheses after the element's name.*)
2. Label the blank periodic table with each element's name and symbol.
3. Label the names of each of the groups.
4. Color code each of the family groups for the alien periodic table and include a key.

Alien Element Data Statements

1. The noble 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.
2. 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.
3. Apstrom (A), vulcania (V), and kratt (Kt) are nonmetals whose atoms have 7 valence electrons, meaning they typically gain or share 1 electron. Vulcania is in the same period as quackzil and wobble.

Analyze and Conclude



1. List the alien names for the 30 Earth elements next to the corresponding Earth elements in the data table.

Earth Element	Alien Element	Earth Element	Alien Element
Hydrogen		Sulfur	
Helium		Chlorine	
Lithium		Argon	
Beryllium		Potassium	
Boron		Calcium	
Carbon		Gallium	
Nitrogen		Germanium	
Oxygen		Arsenic	
Fluorine		Selenium	
Neon		Bromine	
Sodium		Krypton	
Magnesium		Rubidium	
Aluminum		Strontium	
Silicon		Indium	
Phosphorus		Tin	

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.
4. Why could you use closes about atomic mass to place elements, even though the table is now based on atomic numbers.
5. 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.