



## THE ALIEN PERIODIC TABLE CHALLENGE



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 (and all planets...). 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. (...perhaps they might even vote for President.....)

### YOUR TASK:

Use your knowledge of the Earth's periodic table to help arrange the alien elements onto a blank periodic table. Be sure to complete 1-4 below....Good Luck!!!

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. List the evidence you used to justify placement of each element.
3. Label the names of groups 1, 17, & 18.
4. Color-code each of the family groups for the alien periodic table and include a key.





## ALIEN ELEMENT DATA STATEMENTS

(13 total)

1. Strangely but luckily, there are no "transition metals" or "rare earth elements" on the alien planet 2-4-D. Add the correct Roman numerals to the group numbers.
2. The "noble gases" are Bombal (Bo), Wobble (Wo), Jeptum (J) and Logon (L).
  - Bombal (Bo) is a noble gas but does not have 8 outer electrons.
  - The outside energy level of Logon (L) is its second energy level.
  - Of these inert gases, Wobble (Wo) has the greatest atomic mass.
3. The "alkali metals" are Xtalt (X), Byyou (By), Chow (Ch), and Quackzil (Q).
  - Of these alkali metals, Chow (Ch) has the lowest atomic mass.
  - Quackzil (Q) is in the same period as Wobble (Wo).
4. The "halogens" are Apstrom (A), Vulcania (V), and Kratt (Kt).
  - Vulcania (V) is in the same period as Quackzil (Q) and Wobble (Wo).
5. The element called Doggone (D) has only 4 protons in its nucleus.
6. The "metalloids" are Ernst (E), Highho (Hi), Terriblum (T), and Sississ (Ss).
  - Sississ (Ss) is the metalloid with the highest atomic mass.
  - Ernst (E) is the metalloid with the lowest atomic mass.
  - Highho (Hi) and Terriblum (T) are in Group 14.
  - T has more protons than Hi.
  - The element called Yazzer (Yz) is a metalloid by location but has properties that suggest it is more like a light metal.
7. The most metallic element on the planet is called Xtalt (X).  
One of the most chemically active nonmetals on the planet is called Apstrom (A).
8. The lightest element on the planet is called Pfsst (Pf).
  - The heaviest element on the planet is Elrado (El), and is highly radioactive.

## ALIEN DATA STATEMENTS Cont'

9. The chemical makeup of the alien planet's oceans seems to be about the same as Earth's oceans. (NOTE: Earthly salt is the compound NaCl)
- When sea water is distilled, the liquid that is boiled off and then condensed has been shown to have molecules consisting of two atoms of Pfsst (Pf) and one atom of Nuutye (Nu).
  - The solid left behind after the distillation consists mainly of a crystal made up of the elements Byyou (By) and Kratt (Kt). ((By)-Cation, (K+)-anion))
10. Floxxit (Fx) is a black crystal and has 4 electrons in its outermost energy level.
- Both Rhaatrap (R) and Doodeer (Do) have atoms with 4 energy levels.
  - But Rhaatrap is less metallic than Doodeer.
11. Magnificon (M), Goldy (G) and Sississ (Ss) are all members of Group 15.
- Goldy has fewer total electrons than Magnificon.
12. Urrp (Up), Oz (Oz) and Nuutye (Nu) all gain 2 electrons. When bonding with nonmetals.
- Oz has a lower atomic number than Urrp.
13. The element Anatom (An) tends to lose 3 electrons. When bonding with nonmetals.
- The elements Zapper (Z) and Pie (Pi) both lose 2 electrons.
  - Pie loses them from its fifth energy level, while Zapper loses them from its third.

(Use the space below for any notes to help you keep track of what you know so far...)



Name: \_\_\_\_\_

Date: \_\_\_\_\_

### THE ALIEN PERIODIC TABLE

	1							18
1		2	13	14	15	16	17	
2			☆					
3			☆	☆				
4				☆	☆			
5								