**Elements from Outer Space Name:**

### Materials:

* A copy of the periodic table of elements
* The set of clues included in the lab report sheet
* A keen sense of reasoning

### Investigation:

1. Make a prediction in the space provided in your lab report.
2. Use the clues provided, the periodic table of elements, and your knowledge of the properties of the elements, to fill in the 30 spaces on the alien periodic table with the alien atomic symbols for the elements.
3. Answer the set of summary questions in your lab report, and turn in the completed lab to your instructor.

### Alien Periodic Table

### Question:

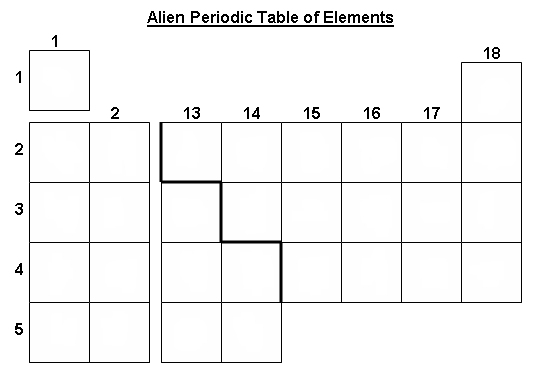
**Do you think you can identify all of the elements if you only know a few of their characteristics?**

### Prediction:

**Make a prediction based on the question above. Be sure to give an explanation of why you made this prediction. (4 points)**

### Clues:

1. The noble gases are **sondal** (So), **nobble** (N), **leptum** (L), and **drogon** (Dr). Among these gases, nobble has the greatest atomic mass and sondal the least. Drogon is lighter than leptum.
2. The metal elements in the most reactive group are **bruan** (Bn), **byzmium** (By), **wondit** (Wo), and **xakbill** (X). Among these metals, wondit has the lowest atomic mass. Xakbill is in the same period as nobble.
3. **Tapstrom** (Tp), **romulon** (Ro), and **kritt** (Kt) are nonmetals whose atoms typically gain or share one electron. Romulon is in the same period as xakbill and nobble.
4. The metalloids are **effsit** (E), **hioo** (Hi), **terrabim** (Tm), and **syssyss** (Ss). Among these metalloids, syssyss has the greatest atomic mass and effsit the least. Hioo and terrabim are in Group 14. Terrabim has more protons than hioo. **Yahtza** (Yz) touches the zigzag line, but it's a metal, not a metalloid.
5. The lightest element is **iostrom** (Io). The heaviest element in the group of 30 elements is **elephantum** (El). The most chemically active nonmetal is tapstrom. Kritt reacts with byzmium to form table salt.
6. **Begone** (Bg) has only four protons.
7. **Flixmit** (Fx) is important in the chemistry of life. It forms compounds made of long chains of atoms. **Rix** (Rx) and **dortador** (Do) are metals in the fourth period, and rix is less reactive than dortador.
8. **Moonstype** (M), **golby** (G), and syssyss are in Group 15. Golby has fewer electrons than moonstype.
9. **Upra** (Up), **oziim** (Oz), and **nuotey** (Nu) gain two electrons each when they react. Nuotey has two electron shells and has the same properties as a gas found in Earth’s atmosphere. Oziim has a lower atomic number than upra.
10. **Faltuum** (Fa) has 49 electrons. **Zippr** (Z) and **picon** (Pi) lose two electrons each when they react. Zippr is used to make lightweight alloys.



### Summary:

**Answer the following questions based on your observations and data.**

1. How difficult was it to fill in the alien periodic table? How much information about each element did you need? (4 points)

2. What was the easiest type of clue to use in identifying an element? What was the hardest? Give examples. (4 points)

3. Is the alien periodic table complete? If not, which elements or groups of elements from our periodic table are missing? Do you think an alien civilization would lack these elements? Explain. (4 points)

4. What is it about the properties of elements and the structure of the periodic table that allows you to identify elements given so little information? (4 points)

5. Do you think it makes sense for aliens to have a system like the periodic table to organize elements? Would their system necessarily look like our periodic table? Explain. (5 points)