

## *An Alien Periodic Table*

In this activity you will place given physical and chemical properties of unknown elements in a blank periodic table.

Materials (per student)

blank periodic table, modified for this activity list of observations on the unknown elements

pencil

### Background Information

Earth's scientists have announced that they have made radio contact with intelligent life on a distant planet. One of this alien planet's languages has been translated, and scientific information has begun to be exchanged. The planet is composed of the same elements as Earth. However, the inhabitants of the planet have different names and symbols for them. Since the alien scientists do not know the names of our elements, they have radioed the following data on the known properties of the elements. Strangely, but luckily, there are no transition or rare earth elements on the alien planet. This means that their periodic table consists only of the "A" groups of elements. The data are as follows:

1. The noble gases are bombal (Bo), wobble (Wo), jeptum (J), and logon (L). Bombal (Bo) is a noble gas but does not have 8 valence electrons. The outside energy level of logon (L) is its second energy level. Of these noble gases, wobble (Wo) has the greatest atomic mass.
2. The alkali metals (group 1) 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).
3. The halogens (group 17) are apstrom (A), vulcania (V), and kratt (Kt). Vulcania (V) is in the same period as quackzil (Q) and wobble (Wo).
4. 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 yizzer (Yz) is a metalloid by location but has properties that suggest it is a light metal.
5. The most metallic element on the planet is called xtalt (X). The most chemically active nonmetal on the planet is called apstrom (A). The lightest element on the planet is called pfsst (Pf). The heaviest element on the planet is elrado (El). It is highly radioactive.
6. The chemical makeup of the alien planet's oceans seems to be about the same as Earth's oceans. 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).
7. The element called doggone (D) has only 4 protons in its atom.
8. Floxxit (Fx) is a black crystal and has 4 electrons in its outermost energy level. Both rhaatrap (R) and doadeer (Do) have atoms with four energy levels. But rhaatrap is less metallic than doadeer.
9. Magnificon (M), goldy (G), and sississ (Ss) are all members of Group 15. Goldy has fewer total electrons than magnificon.
10. Urrp (Up), oz (Oz), and nuutye (Nu) all gain 2 electrons. Nuutye is diatomic. Oz has a lower atomic number than urrp.
11. The element anatom (An) tends to lose 3 electrons. 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.

### Procedure

Fill in the blank periodic table below with the correct alien planet symbol for each element. The symbol is given in parentheses after the element

name in the data statements.

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2		
3		
4		
5		

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13	14	15	16	17		