

## The Organization of the Periodic Table

### Directions

Using your computer, tablet or mobile device, navigate to the website: [www.ptable.com](http://www.ptable.com)  
You will interact with this periodic table to find the answers to the questions below.

\*Make sure the "Wikipedia" tab is selected in order to answer the following questions:

1. The vertical columns on the periodic table are called *groups*, how many groups are there on the periodic table?
2. The horizontal rows on the periodic table are called *periods*, how many periods are there on the periodic table?
3. Using the group and period numbers, identify the elements that are located in each of the following location.
  - a. The element in group 10 and period 5 =
  - b. The element in group 15 and period 4 =
  - c. The element in group 2 and period 3 =
  - d. The element in group 18 and period 6 =
  - e. The element in group 1 and period 7 =
4. Are most of the elements on the periodic table classified as a metal or a non-metal?
5. Are the non-metal elements located on the left or right side of the periodic table?

\*Elements can also be classified by *family*, use the color coding at the top of the page to help identify the family names and their element members.

6. How many elements belong to the Alkali Metal family? List the member elements by their symbol.
7. Click on the group number for the Alkali Metals family at the top of the table. Answer the following about the Alkali metals:
  - a. What are 3 similar properties of these elements?
  - b. Where are these found naturally?
  - c. What is a common substance that alkali metals react vigorously with?

8. What type of element does the neon green color indicate? List the element symbols for the elements that are designated with neon green below.
9. How many elements belong to the Halogen family? List the member elements by their symbol.
10. Click on the group number for the Halogen family at the top of the table. Answer the following about the Halogen elements:
  - a. What does the name "halogen" mean?
  - b. What type of molecule is formed when a halogen combines with hydrogen?
11. Group 2 on the periodic table corresponds to what family of elements?
12. What family of elements does arsenic (As) belong?
13. What elements are designated as family members of Arsenic? Click on the name of this group located in the color coded key at the top of the page, what is the common property of the elements in this family?
14. Tungsten (W), Copper (Cu), and Iron (Fe) all belong to the same family, whose members are generally used as conductors of electricity. What family is this?
15. In the top right hand corner of your screen check (✓) the box next to "Wide." This will display the periodic table including the Lanthanoid and Actinoid families. Do the Lanthanoid and Actinoid families have specific group numbers?
16. Click on the word *Lanthanoid*, what is another common name for this group of elements?
17. Click on the word *Actinoid*, this family of elements are known to be radioactive. What important example, shown in the picture, is given regarding a real-life connection to these elements?

18. Complete the following table, by finding the atomic numbers and atomic masses for each element:

Symbol	Be	O	Al	Ar	K	Ca	Te	I	Xe
Atomic number									
Atomic Mass									

a. Using the data in the table above, is the periodic table is organized by increasing atomic mass? Explain.

b. What property is the periodic table organized by?

\*In the top right hand corner of your screen check (✓) the box next to "Electrons." This will make the electron count for each element appear to the right of its symbol in the periodic table.

19. What electron pattern do you notice for all of the elements belonging to the Alkali Metal family?

20. Considering your answer above, though we know Hydrogen is a non-metal, why do you think it is placed on top of the alkali metals?

21. What electron pattern can be observed with the Noble Gases? The Halogens?

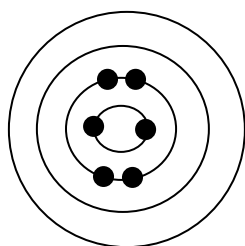
*\*Bohr Models can be used to show, roughly, how electrons are arranged in an atom. Recall that the number of electrons is equal to the number of protons in a neutral atom, which is also the same as the atomic number for the element.*

### Bohr Models:

- The first ring can contain up to 2 electrons
- The second ring can contain up to 8 electrons
- The third ring can contain up to 8 electrons
- The fourth ring can contain up to 2 electrons
- The Bohr model is completed for a given atom by filling the inner most ring to its capacity and moving outward to each subsequent ring, filling each to its capacity before moving on.
- Electrons on the outer most ring are known as VALENCE ELECTRONS. These are the electrons that participate in chemical bonding.
- Each dot represents one electron.

22. Identify the elements shown in the Bohr models below and give the number of valence electrons in each atom:

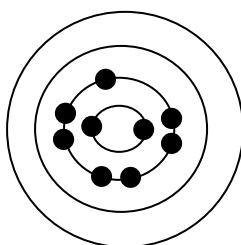
a.



Element=

Valence  
Electrons =

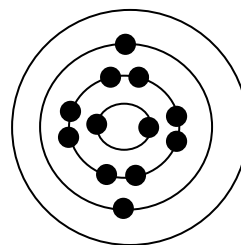
b.



Element=

Valence  
Electrons =

c.



Element=

Valence  
Electrons =

23. Draw Bohr models for the elements listed below and state the number of valence electrons in each.

a. Nitrogen (N)

b. Chlorine (Cl)

c. Calcium

\*At the top of your screen check select the to "properties" tab. Next check (✓) the box in the center next to "Valence," this will show the valence electron count for each element appear in the bottom left of its symbol on the periodic table.

24. The transition metal family is very large, which group numbers are included as part of this family? Can you see a pattern for their electron numbers?