Atom Building Activity

NAME: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Period: \_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_

We have discussed mixture, compounds, and elements. Now let’s examine the structure of the atom itself. You will use a simulation activity from the University of Colorado’s PhET Simulation Labs to examine atom building. You will start this activity in school and you can complete it at home. If you do not have internet access at home you may download the program and complete the activity in your laptop after school.

1. Read the instructions and the questions for each simulation.
2. The simulations run on html
3. Go to the web site: <http://phet.colorado.edu/en/simulations/category/chemistry/general>
4. Scroll down and click on the ***Build An Atom*** simulation. If you are working at school, select the <run now> button to run the simulation on the web site. If you are working at home, you may either select <run now> button or you may download the app to your computer.
5. Start with the ***Build Atom*** icon.
6. Make sure that all of the <+> boxes on the right of the screen are open.
7. Add protons and neutrons to the nucleus and watch what happens to the Periodic Table, Atomic Symbol, the Mass Number and the Net Charge.
8. Add electrons and watch the Net Charge.
9. Try a variety of different combinations of protons, neutrons, and electrons.
10. Complete the table on the backside for the first 10 elements.
    1. You want to have a **stable nucleus** and a **ZERO net charge**.
    2. Start with 1 proton and 1 electron. This is hydrogen. Record the numbers in the table.
    3. Add a second proton and the add neutrons until the nucleus is stable. Add electrons so that you have a zero net charge. Record the values.
    4. Continue through to Atomic Number 10.
11. Answer the questions below based on your observations.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **DATA** | | | | | | |
| Symbol | Name | Atomic Number | Mass Number | Number of Protons | Number of Neutrons | Number of Electrons |
| H |  |  |  |  |  |  |
| He |  |  |  |  |  |  |
| Li |  |  |  |  |  |  |
| Be |  |  |  |  |  |  |
| B |  |  |  |  |  |  |
| C |  |  |  |  |  |  |
| N |  |  |  |  |  |  |
| O |  |  |  |  |  |  |
| F |  |  |  |  |  |  |
| Ne |  |  |  |  |  |  |

Questions:

1. Which particles contribute to the **mass number** and which do not? Why?
2. Which particle contribute to the **atomic number** and why?
3. Which particles contribute to the **net charge** and how does each change the net charge?