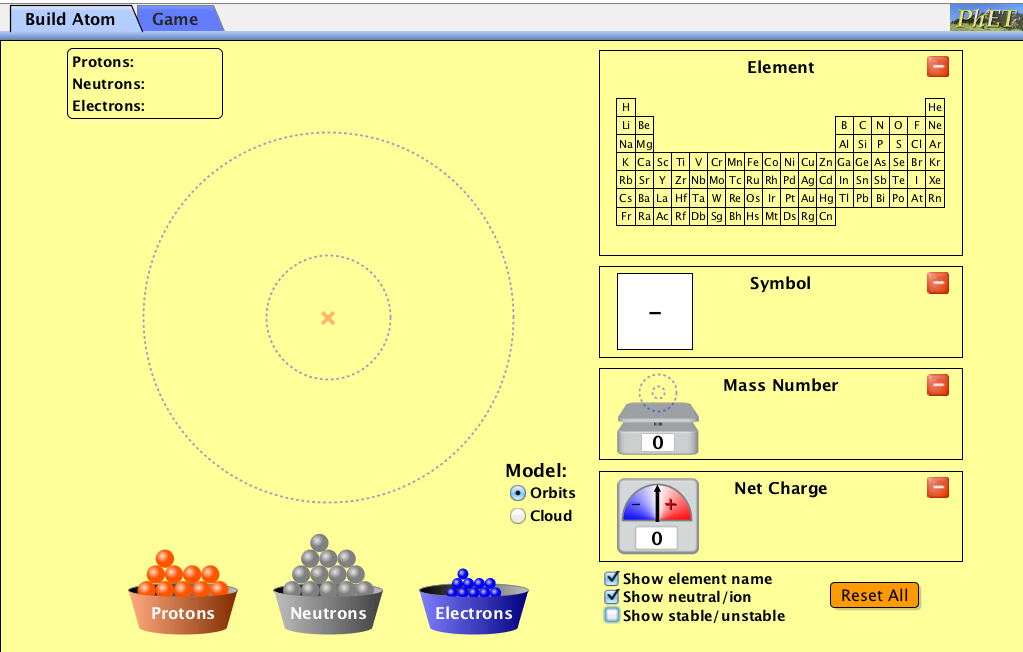
**Building an Atom**

Make sure your screen looks like this:



4

3

2

1

1) Maximize the symbol chart.

2) Maximize the mass number chart.

3) Maximize the net charge chart.

4) Uncheck the "show stable/unstable" option.

5) Make the following and draw the diagram under the symbol chart (periodic table box). State the mass number and net charge for each example.

|  |  |
| --- | --- |
| 5 protons |  |
| 6 neutrons |
| 5 electrons |
| Mass number: |
| Net charge: |
| 2 protons |  |
| 2 neutrons |
| 2 electrons |
| Mass number: |
| Net charge: |
| 6 protons |  |
| 6 neutrons |
| 6 electrons |
| Mass number: |
| Net charge: |
| 1 protons |  |
| 0 neutrons |
| 0 electrons |
| Mass number: |
| Net charge: |
| 7 protons |  |
| 7 neutrons |
| 10 electrons |
| Mass number: |
| Net charge: |

6) When drawing a Bohr model for a positive or negative ion, how do you modify the number of electrons you add?

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

7) Draw the Bohr model for the below. You may use PhET to help you.

a) Be2+ b) F-

|  |  |
| --- | --- |
|  |  |

8) Draw the Bohr models for O2- and Al3+. What do you notice?

|  |  |
| --- | --- |
|  |  |

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

9) Check the "show stable/unstable" option.

10) Make the Hydrogen atom on PhET (1 proton, 1 electron).

11) Add 1 neutron. What do you notice?

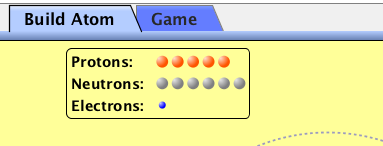
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12) Add 1 more neutron (2 neutrons total), then add a third neutron. What do you notice?

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

13) What questions may you have at this point?

14) Google "hydrogen unstable nucleus" (you can use your own keywords instead). Scan through a few sites and record any findings that are interesting to you.



**Bonus Challenge!**

15) On the tab located at the top of your PhET simulation window, select the "Game" tab.

Play each level a few times and record your fastest time **for perfect scores only (10/10)**. Don't forget to turn on the time tracker at the beginning of the game. Players with the top 3 fastest times for each level gains bonus points for this assignment. Points are stackable for the 4 levels. Ties are friendly. Save a screen shot of your fastest time for each level and e-mail them to msli.learning@gmail.com before 11:59pm on Sun Feb 22, 2015 for your time to count. *\*Condition: you must have completed the rest of this handout before attempting this\** **Individual records only.**

**Records**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Level 1 | Level 2 | Level 3 | Level 4 |
| Time |  |  |  |  |