

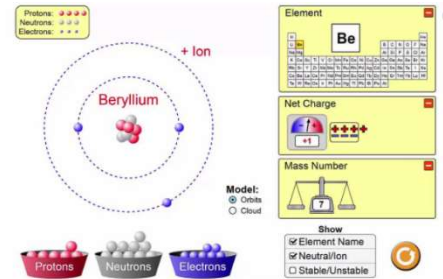
Name: \_\_\_\_\_

Date: \_\_\_\_\_

## Science 8 PhET Atom Simulation

Directions: Using the following website discover which particles affect mass, name, and charge of an atom.

Go to: <https://phet.colorado.edu/en/simulation/build-an-atom> and click PLAY, then select ATOM. Click on the three green plus signs to open all windows (element name, net charge, and mass number).



1. Explore the Build an Atom simulation. When you are comfortable with the format of the activity, begin answering the questions below.
  
2. What particle(s) are found in the center of an atom? \_\_\_\_\_
  
3. What is the name of an atom with 1 electron and 1 proton? \_\_\_\_\_
  - a) Does adding a neutron to this atom change the name of it? \_\_\_\_\_
  - b) Does adding two neutrons to this atom change the name of it? \_\_\_\_\_
  - c) How can you turn the atom you just made into a neutral atom of Helium? What did you have to add? \_\_\_\_\_
  
4. What is the name of an atom with 6 protons and 6 neutrons? \_\_\_\_\_
  - a) How many electrons does this atom have when it is a neutral atom?  
\_\_\_\_\_
  
5. How many protons does oxygen have? \_\_\_\_\_
  - a) How many electrons do you have to add to oxygen to make it a neutral atom? \_\_\_\_\_
  
6. What happens to the charge of an atom when you add a neutron to the atom? Explain why.  
\_\_\_\_\_
  
7. Build each of the atoms below in the simulation. What is the name of each of the following atoms?
  - a) An atom with 3 protons and 4 neutrons \_\_\_\_\_
  - b) An atom with 2 protons and 4 neutrons \_\_\_\_\_

- c) An atom with 4 protons and 4 neutrons \_\_\_\_\_
- d) An atom with 2 protons and 3 neutrons \_\_\_\_\_

8. How do you change the identity or name of an atom (turn beryllium to boron)? (What subatomic particle must change?)

9. Use the tools to build any three different atoms and fill in the information about them below:

<b>Element #1:</b> _____ # of protons: _____ # of neutrons: _____ # of electrons: _____ Sketch:          Atomic #: _____ Atomic mass: _____ Symbol on Periodic Table: _____	<b>Element #2:</b> _____ # of protons: _____ # of neutrons: _____ # of electrons: _____ Sketch:          Atomic #: _____ Atomic mass: _____ Symbol on Periodic Table: _____	<b>Element #3:</b> _____ # of protons: _____ # of neutrons: _____ # of electrons: _____ Sketch:          Atomic #: _____ Atomic mass: _____ Symbol on Periodic Table: _____
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10. Create a Helium atom (2 protons, 2 neutrons, 2 electrons). Follow the directions, observe what happens and complete the table below. You will need to RESET back to your original Helium atom after you make each change.

	<b>Add a Neutron</b> (to original atom)	<b>Add an Electron</b> (to original atom)	<b>Add a Proton</b> (to original atom)
Observe and record ALL changes to the original Helium (He) atom when each subatomic particle is added!	<b>How does it <u>change</u> the:</b> Overall charge: _____ Mass: _____ Atomic Number: _____ Type of Atom: _____	<b>How does it <u>change</u> the:</b> Overall charge: _____ Mass: _____ Atomic Number: _____ Type of Atom: _____	<b>How does it <u>change</u> the:</b> Overall charge: _____ Mass: _____ Atomic Number: _____ Type of Atom: _____