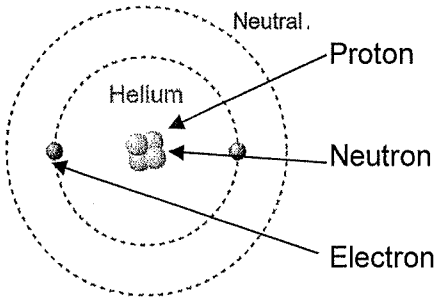
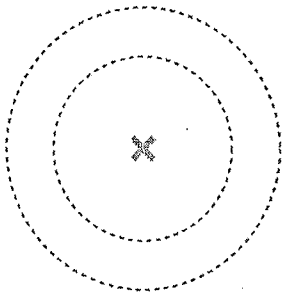
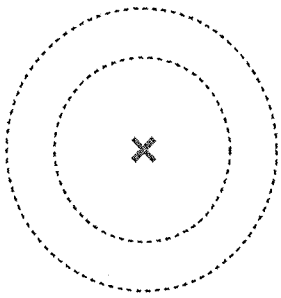
Mr. V. Chan Name: _____

Phet Simulator – Build an Atom

You will be using the 'Phet' website to see what happens when one changes the number of protons, neutrons or electrons to an atom

1. Google 'Phet Simulation' and click on the first link (New Sims – PhET Simulations)
2. Once you enter the site, click on 'Chemistry' on the left hand side.
3. Look for 'Build an Atom' and press '▶' to start the simulation
4. Select 'Atom' and use the tools to build any two different types of atoms and fill in the information about them below (the first one is done for you)

Element #1: Helium	**Element #2: _____**	**Element #3: _____**
# Protons: 2	# Protons: _____	# Protons: _____
# Neutrons: 2	# Neutrons: _____	# Neutrons: _____
# Electrons: 2	# Electrons: _____	# Electrons: _____
Bohr Model Sketch	Bohr Model Sketch	Bohr Model Sketch
		
Atomic #: 2	Atomic #: _____	Atomic #: _____
Atomic Mass: 4	Atomic Mass: _____	Atomic Mass: _____
Symbol: He	Symbol: _____	Symbol: _____

5. Which subatomic particle is the ***boss*** of the atom? What **evidence** does the simulator give you for this?

_____

_____

6. Create a Hydrogen (H) atom (1 proton and 1 electron). Follow the directions, observe what happens and complete the table below. **(You need to RESET back to your original Hydrogen (H) atom (1 proton and 1 electron) after you make each change!)**

	Add a Neutron (to original atom)	**Add an Electron** (to original atom)	**Add a Proton** (to original atom)
Observe and record ALL changes to the original Hydrogen (H) atom when each subatomic particle is added!	**How does it change the:** Overall charge: _____ Mass: _____ Atomic Number: _____ Atom or Ion: _____	**How does it change the:** Overall charge: _____ Mass: _____ Atomic Number: _____ Atom or Ion: _____	**How does it change the:** Overall charge: _____ Mass: _____ Atomic Number: _____ Atom or Ion: _____

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7. Based on what you've observed, **which two particles appear to determine the mass of the overall atom?** Which particle ***doesn't*** seem to have a measurable impact on the mass? Explain why you think this is!

_____

_____

8. Based on what you've observed, ***summarize the relationship*** between how protons, neutrons and electrons affect the overall charge of an atom.

_____

_____

9. If you've been paying attention, you should have noticed that the term **Ion** appears from time to time. Experiment with the simulator and list the two ways you can create a positive ion and a negative ion:
   a) Two ways to create a ***positive*** ion:

_____

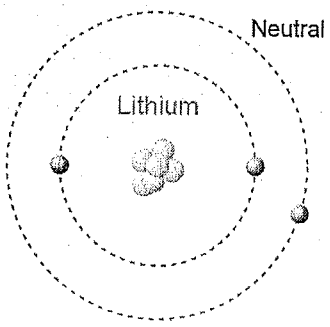
   b) Two ways to create a ***negative*** ion:

_____

   c) What do you think the term ion means?

_____

10. Click **Symbol** at the very bottom of the simulator window. Pick two (2), ***new*** atoms to create. Display a sketch of the atom as well as how it would appear on the Periodic Table: (the first one is done for you)

Element: _____	**Element:** _____	**Element:** _____
Model Sketch of the Atom	Model Sketch of the Atom	Model Sketch of the Atom
		
How it would appear on the periodic table	How it would appear on the periodic table	How it would appear on the periodic table