Atomic Dating Game

**Directions:** Atoms are lonely hearts that are constantly in search of partners to bring stability to their lives. Your job is to play matchmaker and make each atom stable by determining how many valence electrons each element needs and finding a partner that will complete the valence energy level.

**Part 1:** Let’s meet our first bachelor, Mr. Sodium. Mr. Sodium is very lustrous but has an explosive personality when he gets near water or oxygen. He is quite a lonely metal that, like all metals, is looking to lose a few electrons! Since he is highly reactive… so be careful with whom you pick to be his date!

**In the circle below, create a Bohr diagram of Mr. Sodium.**

Let’s meet our eligible candidates:
- Lithium is a highly reactive metal looking to lose electrons.
- Calcium is a reactive metal looking to lose electrons.
- Fluorine is a nonmetal looking to gain electrons.

Mr. Sodium should date ______________________, because ____________________________________________
_____________________________________________________________________________________

Assignments
Let’s meet our next available bachelorette, Ms. Oxygen. Ms. Oxygen is a lonely non-metal who, like all non-metals, is looking to gain a few electrons! While she is needed by many living things, she is having a hard time finding love.

In the circle below, create a Bohr diagram of Ms. Oxygen.

Let’s meet our eligible candidates:

Hydrogen is a highly reactive nonmetal looking to gain an electron.

Magnesium is a reactive metal looking to lose electrons.

Phosphorus a nonmetal looking to gain electrons.

Ms. Oxygen should date ______________________, because ____________________________________________
Part 2: Meet the final bachelorettes and bachelors. Your job is to use the periodic table to find an atom that will complete the valence energy levels.

Let’s meet our next bachelorette, Ms. Neon. She is an independent young element who does not react well to other elements. See if you can find her a soul mate! See how many valence electrons she has and find an atom that could complete her and find a match from the periodic table.

In the circle below, create an atomic drawing of Ms. Neon.

Ms. Neon should date ____________________, because ____________________________________________  
______________________________________________________________________________________
______________________________________________________________________________________

Let’s meet our final bachelor, Mr. Boron. Although his name may imply it… Mr. Boron is hardly a bore! He has worked hard to find an atom to date… but could use your help!

In the circle below, create an atomic drawing of Mr. Boron.

Mr. Boron should date ____________________, because ____________________________________________  
______________________________________________________________________________________
______________________________________________________________________________________
Reflection Questions:

1) In the space below, explain how and why compounds form. Use the term *valence electrons* in your response, AND provide a specific example.

_________________________________________________________________________
_________________________________________________________________________
_________________________________________________________________________
_________________________________________________________________________
_________________________________________________________________________
_________________________________________________________________________
_________________________________________________________________________

2) Compare and contrast sodium and fluorine.

   Sodium  
   \[ \bigcap \]  
   Fluorine

- Both

3) Compare and contrast oxygen and hydrogen.

   Oxygen  
   \[ \bigcap \]  
   Hydrogen

- Both