**FPS – Atoms Chapter 4-5 - Unit 9 Review**

Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Period\_\_\_\_\_\_\_\_\_\_

1. ***History of Atomic Theory***
2. Summarize the following people’s discoveries and ideas. Dates/drawings will not be required on the test.
	1. Democritus f. Rutherford
	2. *Atomos* g. Gold-foil experiment
	3. Dalton h. Bohr’s model
	4. Thomson i. Electron-cloud model
	5. Plum-pudding model
3. What were some differences between Dalton and Democritus’s ideas?

1. Who described the Billiard ball model? Why was it called such?
2. Rutherford, who was Thomson’s student, refuted the plum-pudding model. Describe how his experiment did this.
3. How is Bohr’s model different than previous models?
4. How is the electron-cloud model different than previous models?
5. What were Dalton’s three parts of his Atomic Theory of matter?
6. According to Bohr’s model of the atom, where are the electrons? What can happen for them to change location?
7. ***The Periodic Table & Atomic Structure***
8. How is the modern periodic table of element arranged?
9. Assuming the atom is neutral, what does the atomic number tell you?
10. Label the following periodic table square for argon.

11. What is a period? What does a period on the periodic table indicate about an element?
12. What is a group/family? What does a group/family on the periodic table indicate about an element?
13. What do valence electrons indicate about an element?
14. What is an ion? What do we call a positive and negative ion?
15. What is the octet rule? What are the exceptions?
16. What does the mass number tell you? What are isotopes?
17. In nuclear notation, write the isotopes magnesium-24, magnesium-25, and magnesium-26.
18. ***Element Categories***
19. Describe properties of the alkali metals and give an example.
20. Describe properties of the alkaline-earth metals and give an example.
21. Describe properties of the transition metals and give an example.
22. Describe properties of the metalloids and give an example.
23. Describe properties of the halogens and give an example.
24. Describe properties of the noble gases and give an example.
25. What happens to metallic properties as you move from left to right on the periodic table?
26. What happens to reactivity as you down a group on the periodic table?
27. WHY do the alkali metals become more reactive down the group?
28. WHY do the halogens become more reactive up the group?
29. Give the trends of each of the following: *metallic character, ionization energy, electronegativity, reactivity, atomic radius.*
30. ***Electron Configurations***
31. What are the 4 types of orbitals? How many electrons can each of them hold?
32. Write the complete electron configuration for the following elements:
	1. Potassium \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	2. Lithium \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	3. Aluminum \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	4. Carbon \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	5. Nitrogen \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	6. Argon \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
33. Write the electron configurations for the following ***ions.*** Remember, if an ion is positive, it has lost electrons. If an ion is negative, it has gained electrons.
	1. Be2+ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	2. B3+ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	3. Cl1= \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	4. O2= \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
34. Identify the errors in the following electron configurations. If there is no error, write “none”.
	1. 1s22s32p2 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	2. 1s22s22p63s24s1 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	3. 1s22s22p83s1 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
35. Write the electron configuration for the following orbital diagrams. Then, identify the element.
	1. 
	2. 
	3. 

Use your periodic table and the images and formulas below as reference.

  