Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Pd: \_\_\_\_\_ Ast: \_\_\_\_\_

**Physical Science Honors:**

**Electron Configuration Study Guide**

1. Explain what valence electrons are and why they are important.
2. Describe the pattern of valence electrons on the periodic table.
3. How do we know how many total electrons an atom of a specific element will have (*assuming it’s neutral*)?
4. List the different types of orbitals and how many electrons can fit in each.
5. What do the “blocks” on the periodic table represent?
6. Why do the orbitals fill up in a strange order (ex: “4s” comes before “3d”)?
7. The electron configuration for manganese is 1s22s22p63s23p64s23d5. Explain what this means in terms of the location of electrons in the atom. How does this influence its position on the periodic table?
8. Write the electron configuration for gallium.
9. Write the electron configuration for einsteinium.
10. Explain the purpose of a Bohr diagram.
11. Explain how you will know how many energy levels (“*shells”*) to draw on a Bohr diagram.
12. Draw a Bohr diagram for fluorine.
13. Draw a Bohr diagram for sulfur.
14. Explain the purpose of an electron dot diagram (“*Lewis dot diagram”*).
15. Explain the trick to determining the number of valence electrons an element has.
16. How many valence electrons will a neutral atom of aluminum have? How do you know?
17. Describe the octet rule.
18. Why is helium located in group 18 even though it only has 2 valence electrons instead of 8 like the rest of group 18 (*why is it an exception to the octet rule*)?
19. Draw an electron dot diagram for iodine.
20. Draw an electron dot diagram for germanium.
21. What does the location of the dots in an electron dot diagram represent (*Why do the first two go on the right and the others on the remaining three sides*)?