# Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

# Teacher \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

# Class \_\_\_\_\_\_\_\_ Block \_\_\_

Date \_\_\_\_\_\_\_\_

**Ch. 3, 4, and 5 Review WS**

1. Color and label the columns of your periodic table with the family names.
   1. Alkali metals-1—Do not include hydrogen
   2. Alkaline earth metals-2
   3. Transition metals-3 through 12
   4. Lanthanides-4f block
   5. Actinides-5f block
   6. Metalloids-B, Si, Ge, As, Sb, Te, and Po
   7. Halogens-column 17
   8. Diatomic molecules-H, N, O, F, Cl, Br, and I
   9. Noble gases-18
2. Who is Mendeleev?
3. Who is Moseley?
4. What are allotropes?
5. Give the 3 allotropes of carbon.
6. List the electromagnetic spectrum in order from least energy to most energy.
7. Draw the shapes of the s, p, and d orbitals in Schrodinger’s wave mechanical model.
8. What is the Pauli exclusion principal?
9. What is the Aufbau principal?
10. What is Hund’s rule?
11. Where are valence electrons located? What columns? What blocks?
12. Where are core electrons located? What energy level(s)?
13. What are the main group elements? What columns? What blocks?
14. How many sublevels are in energy levels 1? 2? 3? And 4?
15. When gases give off the emission spectrum, does the gas have to be hot or cold?
16. Does the gas have to be dense or thin?
17. Draw and explain the Bohr Model of the atom.
18. What replaced the Bohr Model of the Atom?
19. What is the Heisenberg uncertainty principle?
20. The Bohr model states that the energy levels in an atom are quantized. What does that mean?
21. What is the photoelectric effect?
22. Describe E = hv. h = 6.626 x 10-34 J ● s
23. What are the quantum numbers?
24. n =
25. l =
26. m =
27. spin quantum number =
28. Every element in column 1 ends with s1. Explain why each of these atoms gets a charge of 1+ when they become ions. Describe the connection to noble gases.
29. Every element in column 17 has s2 p5 somewhere in its electron configuration. Explain why each of these atoms gets a charge of 1- when they become ions. Describe the connection to noble gases.
30. Review the More Electron Orbital Practice WS and the Nuclear Symbol WS.
31. The transition metals and the lanthanides and actinides do not lie in the main group element columns. What do you think the charge for these elements could be?
32. Explain, considering they are right after the s block.
33. Give 3 sources for names of chemical elements. For each source, give an example of an element.
34. What is the law of conservation of mass?
35. What is the law of definite proportions?
36. What is the law of multiple proportions?
37. What has changed in Dalton’s original Atomic Theory? See pg. 70.
38. What did Thomson discover? How?
39. What did Rutherford discover? How?
40. What did Chadwick discover?
41. What is an isotope?
42. How does the mass of the proton compare to the neutron?
43. How does the mass of the proton compare to the electron?
44. Give the nuclear symbol for polonium-207.
45. How many electrons does it have?
46. Protons?
47. Neutrons?
48. What is its mass number?
49. What is its atomic number?
50. What is the atomic mass for polonium on the periodic table?
51. What is the unit for atomic mass? Unified atomic mass unit (u) is also called the dalton (Da).
52. What is the molar mass for polonium?
53. What is the unit for molar mass?
54. What is a mole?
55. What is Avogadro’s number?
56. Convert 4.5 g of Cu into atoms.
57. Convert 4.5 x 1045 atoms of Cu into g.
58. Convert 4.5 mol Cu into g.
59. Convert 4.5 mol Cu into atoms.
60. Give 4 physical properties of metals.
61. Fill out this table.

**Why Does the Periodic Table Have Trends?**

|  |  |  |
| --- | --- | --- |
| **Property** | **Trend** | **Why?** |
| Atomic Radii | Periodic → decreases | There are more \_\_\_\_\_\_\_\_ in the nucleus, so they pull harder on the \_\_\_\_\_\_\_\_. |
| Group ↓ increases | Each energy level \_\_\_\_\_\_\_\_ another layer to the outside edge of the \_\_\_\_\_\_\_\_. The pulling strength \_\_\_\_\_\_\_\_ as you move farther away. |
| Ionization Energy | Periodic → increases | It’s easier to pull away \_\_\_\_\_\_\_\_ or \_\_\_\_\_\_\_\_ electrons than it is to \_\_\_\_\_\_\_\_ away six or seven electrons. |
| Group ↓ decreases | The \_\_\_\_\_\_\_\_ that are farther away are not held as \_\_\_\_\_\_\_\_ as the ones in \_\_\_\_\_\_\_\_ energy levels. |
| Electron Affinity | Periodic → more negative | These want \_\_\_\_\_\_\_\_ to achieve the noble gas \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. |
| Group ↓ less negative | As the \_\_\_\_\_\_\_\_ of the atom grows due to extra \_\_\_\_\_\_\_\_ levels, the ability to draw \_\_\_\_\_\_\_\_ decreases. |
| Ionic Radii | Periodic → decreases, then increases | Left: giving up \_\_\_\_\_\_\_\_  Right: taking \_\_\_\_\_\_\_\_ |
| Group ↓ increases | More \_\_\_\_\_\_\_\_ levels. |
| Electronegativity | Periodic → increase | Affinity (wanting \_\_\_\_\_\_\_\_ ) is large on the \_\_\_\_\_\_\_\_ (Gr. 16 and 17)  The left (Gr. \_\_\_ and \_\_\_) want to give up \_\_\_\_\_\_\_\_ |
| Group ↓ decreases or stays the same | Electron \_\_\_\_\_\_\_\_ stays the same (Gr. 17 wants 1 \_\_\_\_\_\_\_\_)  Large atoms are too \_\_\_\_\_\_\_\_ to pull \_\_\_\_\_\_\_\_ toward the nucleus. |