

Warm-UP:

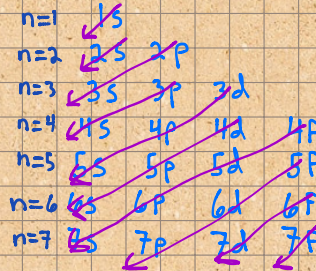
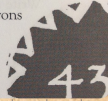
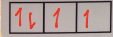
1ps: Chemistry

Electron Segregation

There are certain areas inside of every atom where electrons may be found. These areas, called orbitals, obey an idea called the *Pauli exclusion principle*. This principle says the only way two electrons can be in the same orbital is if they have opposite spins. Spin refers to the actual motion of the electron, which is not unlike the rotation of the earth on its axis. A box represents a single orbital, and arrows placed in the box represent the spin of the electron. Two electrons in an s orbital box would be represented as below.



What would the p orbital shown here look like with four electrons in it?



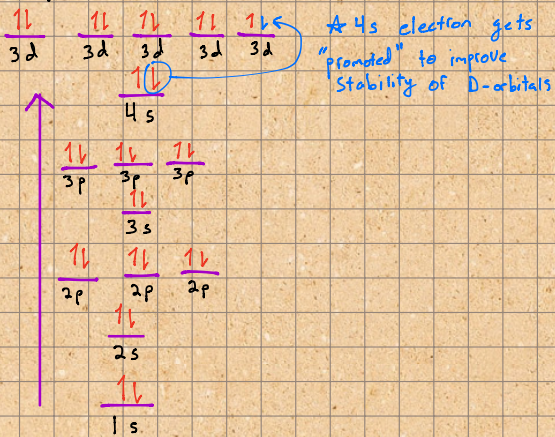
Electron Configuration for Cu [Copper]:

→ Expected: $1s^2 2s^2 2p^6 3s^2 3p^6 4s^2 3d^9$

→ Actual: $1s^2 2s^2 2p^6 3s^2 3p^6 4s^1 3d^{10}$

Violations to Aufbau:

Copper:



Electron Configuration Practice Worksheet

In the space below, write the unabbreviated electron configurations of the following elements:

- 1) sodium _____
- 2) iron _____
- 3) bromine _____
- 4) barium _____
- 5) neptunium _____

In the space below, write the abbreviated electron configurations of the following elements:

- 6) cobalt _____
- 7) silver _____
- 8) tellurium _____
- 9) radium _____
- 10) lawrencium _____

Determine what elements are denoted by the following electron configurations:

- 11) $1s^2 2s^2 2p^6 3s^2 3p^4$ _____
- 12) $1s^2 2s^2 2p^6 3s^2 3p^6 4s^2 3d^{10} 4p^6 5s^1$ _____
- 13) $[\text{Kr}] 5s^2 4d^{10} 5p^3$ _____
- 14) $[\text{Xe}] 6s^2 4f^{14} 5d^6$ _____
- 15) $[\text{Rn}] 7s^2 5f^{11}$ _____

Determine which of the following electron configurations are not valid:

- 16) $1s^2 2s^2 2p^6 3s^2 3p^6 4s^2 4d^{10} 4p^5$ _____
- 17) $1s^2 2s^2 2p^6 3s^3 3d^5$ _____
- 18) $[\text{Ra}] 7s^2 5f^6$ _____
- 19) $[\text{Kr}] 5s^2 4d^{10} 5p^5$ _____
- 20) $[\text{Xe}]$ _____

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