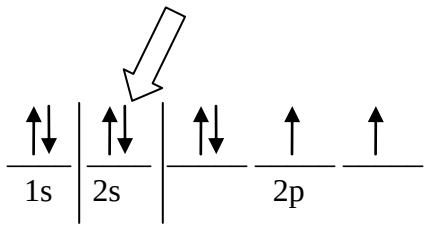
Quantum Numbers Worksheet

Name_____ Period_____

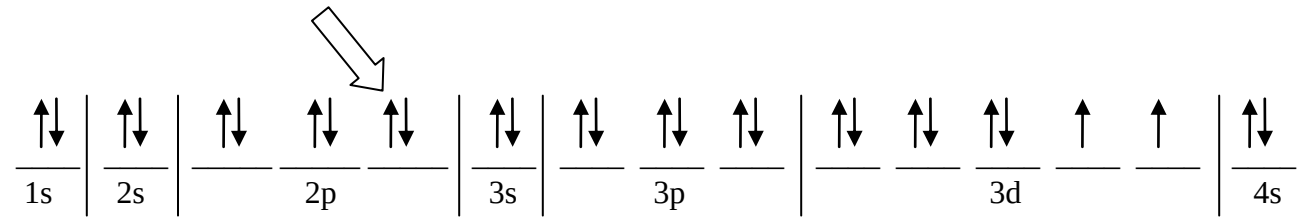
Directions: Each large block arrow is pointing to a specific electron. Use your knowledge of quantum numbers to write the 4 quantum numbers for each electron. Use the spaces provided. Remember to include the sign for both m_ℓ and m_s.

1. O



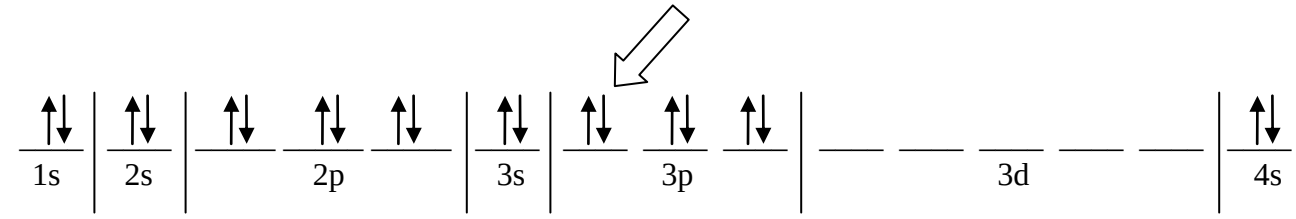
n = _____ ℓ = _____ m_ℓ = _____ m_s = _____

2. Ni



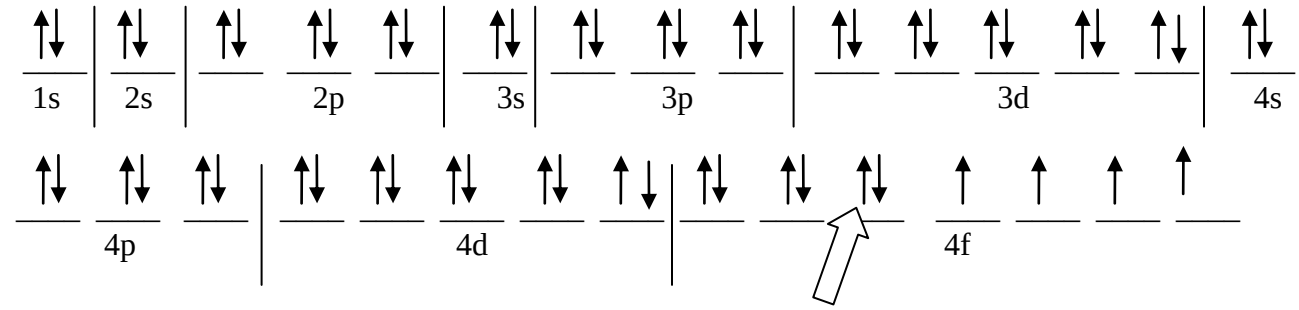
n = _____ ℓ = _____ m_ℓ = _____ m_s = _____

3. Ca



n = _____ ℓ = _____ m_ℓ = _____ m_s = _____

4. Ho



n = _____ ℓ = _____ m_ℓ = _____ m_s = _____

5. For a principle quantum number, n, equal to 6 ,what is largest allowed value of ℓ? _____

6. For the quantum number, ℓ, equal to 8 is an m_ℓ value of -3 permitted(Y or N)? _____

7. What is the ℓ quantum number for an **h** orbital? _____

8. For a principle quantum number, n, equal to 6 ,what is the total electron capacity of that level? _____

9. What is the correct representation for an orbital which has an n value of 9 and an ℓ value of 5? _____

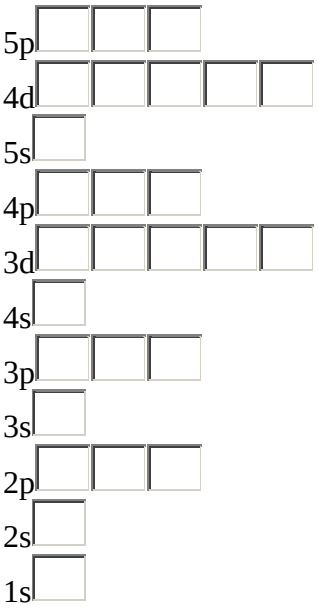
10. Is the **3h** orbital permitted(Y or N)? _____

11. For a principle quantum number, n, equal to 5, what is the total number of orbitals permitted? _____

12. For a principle quantum number, n, equal to 4 ,is it possible for ℓ to be equal to 6(Y or N)? _____

13. What is the spin quantum number for an electron represented as an up arrow? _____

14. Fill in the Aufbau Diagram for an atom of Silver. Use arrows to represent the electrons.



15. Using the Aufbau Diagram above, how many dots should there be in the dot diagram for Silver? _____

16. What is the charge for a Silver ion? _____