

1. What is the maximum number of electrons that occupy the first 4 energy levels?
2. Complete the following table.

sublevel	s	p	d	f
electrons				

3. How many sublevels are there in the third energy level?
4. How many electrons can occupy any single orbital?
5. Complete the following table for the sublevels represented by the following quantum numbers.

n	2	3	4	5	6
sublevels					
orbitals					
electrons					

6. How many sublevels are in the 5th energy level?
7. How many orbitals in a 5th sublevel?
8. Which of the following show the correct order of filling?
 - a. 1s2s2p
 - b. 1s2s2p3s3p
 - c. 1s2s3s
 - d. 1s2s2p3s3p4s
 - e. 1s2s2p3p3d4s
 - f. 1s2s2p3s3p4s4p
9. Write the names of the element represented by each of the following configurations
 - a. $1s^2 2s^2 2p^5$
 - b. $1s^2 2s^2 2p^6 3s^2$
 - c. $1s^2 2s^2 2p^6 3s^2 3p^6 4s^2 3d^{10} 4p^1$
 - d. $1s^2 2s^2 2p^6 3s^2 3p^4$
10. Write electron configuration for each of the following elements using the order of energy levels. Remember that Z = atomic number
 - a. aluminum (Z = 13)
 - b. iron (Z = 26)
 - c. cadmium (Z = 48)
 - d. carbon (Z = 6)
 - e. barium (Z = 56)
 - f. hafnium (Z = 72)
11. Predict electron configurations for atoms of the following elements.
 - a. Li
 - b. N
 - c. Be
 - d. O
 - e. B
 - f. F
 - g. C
 - h. Ne
12. Draw orbital filling diagrams for the elements listed in problem 11.
13. Name the scientist who stated that electrons in the same sublevel will fill the orbitals with 1 electron each before pairing up.
14. How many sublevels in the 4th energy level?
15. How many electrons in a full s sublevel?
16. How many orbitals are contained in the p sublevel?
17. How many orbitals are contained in the d sublevel?
18. How many electrons can be in one orbital?
19. What is the maximum number of electrons that can be in the p sublevel?
20. What is the maximum number of electrons that can be in the f sublevel?
21. What is the maximum number of electrons that can be in a d sublevel?
22. What names are used for the three p orbitals?
23. What is the name of the scientist who stated that a maximum of 2 electrons can be in an orbital, with opposite spins?
24. What is the name of the scientist who pointed out that electrons fill or occupy the cloud in order from low to high energy location?
25. What is the name of the scientists who treated the electron mathematically as a wave?