

Date:

### Even More Electron Configuration

Answer the following questions about electron configuration.

1. What is the maximum electrons in a p sublevel? 6
2. How many orbitals are in a f sublevel? 7
3. How many sublevels are in the 3rd principle energy level? 3
4. How many total orbitals are in the 3rd principle energy level? 11

Write the FULL electron configuration for the following elements.

5. Fluorine  $1s^2 2s^2 2p^5$
6. Manganese  $1s^2 2s^2 2p^6 3s^2 3p^6 4s^2 3d^5$
7. Bromine  $1s^2 2s^2 2p^6 3s^2 3p^6 4s^2 3d^{10} 4p^5$

Write the NOBLE GAS electron configuration for the following elements. Identify the outer electrons for each.

8. Tin  $[Kr] 5s^2 4d^{10} 5p^2$  4 outer  $e^-$
9. Cesium  $[Xe] 6s^1$  1 outer  $e^-$
10. Iodine  $[Kr] 5s^2 4d^{10} 5p^5$  7 outer  $e^-$

Write the FULL electron configuration and draw the box diagram (be sure to label the energy levels and sublevels for each of the boxes) for each of the following elements.

11. Sulfur  $1s^2 2s^2 2p^6 3s^2 3p^4$   

1s	2s	2p	3s	3p
↑↓	↑↓	↑↓↑↓↑	↑↓	↑↓↑
12. Nitrogen  $1s^2 2s^2 2p^3$   

1s	2s	2p
↑↓	↑↓	↑↑↑
13. Cobalt  $1s^2 2s^2 2p^6 3s^2 3p^6$   

1s	2s	2p	3s	3p
↑↓	↑↓	↑↓↑↓↑	↑↓	↑↓↑↓↑

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Identify the following elements and write the electron configuration for each.

14. The element in group 4 and period 5.  
Zr  $1s^2 2s^2 2p^6 3s^2 3p^6 4s^2 3d^{10} 4p^6 5s^2 4d^2$
15. The halogen in period 3.  
Cl  $1s^2 2s^2 2p^6 3s^2 3p^5$
16. The element with 28 neutrons.  
Cr  $1s^2 2s^2 2p^6 3s^2 3p^6 4s^2 3d^4$

★ Examine the following EXCITED state electron configurations. Determine the element from the excited state electron configuration.

13.  $1s^2 2s^2 4s^1$  B - Boron
14.  $1s^2 2s^2 2p^6 3s^2 3p^6 4s^2 3d^{10} 4p^5 5p^1$  Rb - Rubidium
15.  $1s^2 2s^2 2p^6 3s^2 3p^6 4s^2 3d^9 5p^1$  Cu - Copper

★ Identify the element and write the excited and ground state electron configuration.

16. An element with 13 electrons and its last electron has been excited into the 5p orbital.  
Al ground  $1s^2 2s^2 2p^6 3s^2 3p^1$   
excited  $1s^2 2s^2 2p^6 3s^2 5p^1$
17. An element with 24 electrons and its last electron has been excited into the 4p orbital.  
Cr ground  $1s^2 2s^2 2p^6 3s^2 3p^6 4s^2 3d^4$   
excited  $1s^2 2s^2 2p^6 3s^2 3p^6 4s^2 3d^3 4p^1$
18. An element with 16 neutrons and its last electron has been excited into the 5s orbital.  
P ground  $1s^2 2s^2 2p^6 3s^2 3p^3$   
excited  $1s^2 2s^2 2p^6 3s^2 3p^2 5s^1$
19. An element with 20 neutrons and its last electron has been excited into the 6p orbital.  
K ground  $1s^2 2s^2 2p^6 3s^2 3p^6 4s^1$   
excited  $1s^2 2s^2 2p^6 3s^2 3p^6 4s^1 6p^1$   
Ca ground  $1s^2 2s^2 2p^6 3s^2 3p^6 4s^2$   
excited  $1s^2 2s^2 2p^6 3s^2 3p^6 4s^1 6p^1$