Electron Configuration Practice Worksheet

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

1. sodium____________________________________________________________
2. magnesium_________________________________________________________
3. iron_______________________________________________________________
4. potassium__________________________________________________________
5. selenium___________________________________________________________

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. 1s²2s²2p⁶3s²3p⁴ _________________________
12. 1s²2s²2p⁶3s²3p⁶4s²3d¹⁰4p⁶5s¹ _________________________
13. [Kr] 5s²4d¹⁰5p³ _________________________
14. [Xe] 6s²4f¹⁴5d⁶ _________________________
15. [Rn] 7s²5f¹¹ _________________________

Explain what is wrong with the following electron configurations:

16. 1s²2s²2p⁶3s²3p⁶4s²4d¹⁰4p⁶
17. 1s²2s²2p⁶3s³3d⁵
Use the following electron configurations and your periodic table to identify the element:

1. \(1s^2\ 2s^2\ 2p^6\ 3s^2\ 3p^5\)
2. \(1s^2\ 2s^2\ 2p^6\ 3s^2\ 3p^6\ 4s^2\)
3. \(1s^2\ 2s^2\ 2p^6\ 3s^2\ 3p^6\ 4s^2\ 3d^{10}\ 4p^1\)

4. Describe the method that you used to solve problems 1 - 3. Be specific.

Use the following clues to identify the element. Show any figuring in the space below.

5. This element has a 3p sublevel that contains 3 electrons.

6. This element has a 4s sublevel with 2 electrons for its outermost electrons.

7. This element has 1 electron in its 3d sublevel.

8. This element has 5 electrons in its 5p sublevel.

9. This element has a completely filled 3p sublevel for its outermost electrons.

10. This element has 2 electrons in its 6p sublevel.
Solutions to Electron Configurations Practice Worksheet

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

1. sodium 1s\(^2\)2s\(^2\)2p\(^6\)3s\(^1\)
2. magnesium 1s\(^2\)2s\(^2\)2p\(^6\)3s\(^2\)
3. iron 1s\(^2\)2s\(^2\)2p\(^6\)3s\(^2\)3p\(^6\)4s\(^2\)3d\(^6\)
4. potassium 1s\(^2\)2s\(^2\)2p\(^6\)3s\(^2\)3p\(^6\)4s\(^1\)
5. selenium 1s\(^2\)2s\(^2\)2p\(^6\)3s\(^2\)3p\(^6\)4s\(^2\)3d\(^10\)4p\(^4\)

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

6. cobalt [Ar] 4s\(^2\)3d\(^7\)
7. silver [Kr] 5s\(^2\)4d\(^9\)
8. tellurium [Kr] 5s\(^2\)4d\(^10\)5p\(^4\)
9. radium [Rn] 7s\(^2\)
10. lawrencium [Rn] 7s\(^5\)5f\(^{14}\)6d\(^1\)

Determine what elements are denoted by the following electron configurations:

11. 1s\(^2\)2s\(^2\)2p\(^6\)3s\(^2\)3p\(^4\) Sulfur
12. 1s\(^2\)2s\(^2\)2p\(^6\)3s\(^2\)3p\(^4\)4s\(^2\)3d\(^{10}\)4p\(^6\)5s\(^1\) rubidium
13. [Kr] 5s\(^2\)4d\(^{10}\)5p\(^3\) antimony
14. [Xe] 6s\(^2\)4f\(^{14}\)5d\(^6\) osmium
15. [Rn] 7s\(^5\)5f\(^{11}\) einsteinium

Explain what is wrong with the following electron configurations:

16. 1s\(^2\)2s\(^2\)2p\(^6\)3s\(^2\)3p\(^4\)4s\(^2\)4d\(^{10}\)4p\(^6\) The 3d level should come after the 4s level.
17. 1s\(^2\)2s\(^2\)2p\(^6\)3s\(^2\)3d\(^3\) The 3s level cannot hold 3 electrons.
Solutions to "Electron Configurations"

1. chlorine  
2. calcium  
3. gallium

4. I used the principal quantum number on the outermost electrons to determine the row on the periodic table where the element is located. I then counted the electrons, starting from the left side of that row until I reached the number of electrons that was indicated in the configuration.

5. phosphorus  
6. calcium  
7. scandium

8. iodine  
9. argon  
10. lead