

Steps to Writing Electron Configurations – Electron Configuration

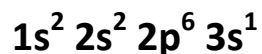
Notation:

1. Find element on the periodic table and figure out number of electrons (same as the atomic number!)
2. Follow the “yellow brick road” and fill in the orbitals in that order, remembering:
 - a. Each s sublevel can hold a max of 2 electrons (but can hold less if needed)
 - b. Each p sublevel can hold a max of 6 electrons (or less)
 - c. Each d sublevel can hold a max of 10 electrons (or less)
 - d. Each f sublevel can hold a max of 14 electrons (or less)
3. All of your orbitals will be full (contain max electrons) except for the very last one, which will only contain the max number of electrons if it is a noble gas.
4. When you add up all the “exponents” they should add up to the number of electrons the atom has.
5. Follow the yellow brick road, using up electrons until each electron in the element’s atom is in an orbital.



energy level, n = 1 s =sublevel (orbital shape) 2 = number of electrons in sublevel

Example #1: Sodium (11 electrons)



Example #2: What is the electron configuration for sulfur?

Steps to Writing Electron Configurations – Orbital Notation:

1. Find element on the periodic table and figure out number of electrons (same as the atomic number!)
2. Follow the “yellow brick road” and fill in the orbitals in that order, remembering:
 - a. Each s sublevel has 1 dash and can hold a max of 2 electrons (one up, one down per dash)
 - b. Each p sublevel has 3 dashes and can hold a max of 6 electrons (one up, one down per dash)
 - c. Each d sublevel has 5 dashes and can hold a max of 10 electrons (one up, one down per dash)
 - d. Each f sublevel has 7 dashes and can hold a max of 14 electrons (one up, one down per dash)
3. Add one electron on each dash until each orbital in the sublevel has an up arrow, then go back and fill in with the down arrows.
4. All of your orbitals will be full (contain max electrons) except for the very last one, which will only contain the max number of electrons if it is a noble gas.
5. Keep going until each electron in the element’s atom is in an orbital.

Example #3: Sodium (11 electrons)

Example #4: What is the orbital notation for silicon?

Steps to Writing Electron Configurations – Noble Gas Notation:

1. Find element on the periodic table and go up a row and all the way to the right to find the noble gas in the row above your element.
2. In brackets, write the symbol for that noble gas.
3. Then write electron configuration for only the outer shell electrons, which is only the electrons on the row that your element is on (note: this also includes any d-block elements).
4. Use the s, p, and d-block patterns of the periodic table to help you!

Example #5: Sodium (11 electrons)

The noble gas in the row above sodium is neon.

[Ne]

There is only one electron in the outer shell and it is on the 3rd energy level (we know this because it is in the third period!)

[Ne] 3s¹

Example #6: What is the noble gas configuration for iron?

**FOLLOW THE YELLOW BRICK ROAD --
START HERE**

