



High School Science Virtual Learning

Chemistry

**Electron Configuration and
Valence Electrons**

May 18, 2020



High School Chemistry

Lesson: May 18

Objective/Learning Target:

Students will be able to write the electron configuration for various elements and determine the number of valence electrons.



Let's Get Started:

1. What is an atom?
2. Fill out this chart about subatomic particles.

Particle	Mass	Location	Charge



Let's Get Started: **Answer Key**

1. What is an atom? **Building blocks of matter. The smallest piece of an element that retains that element's properties.**

Let's Get Started: Answer Key

2. Fill out this chart about subatomic particles.

Particle	Size	Location	Charge
Proton (p^+)	~ 1 amu	Nucleus	+1
Electron (e^-)	Negligible	Outside Nucleus	-1
Neutron (n^0)	~ 1 amu	Nucleus	0

Lesson Activity:

Directions:

1. Watch this [video](#) from Melissa Maribel and this [video](#) from Brightstorm.

Questions:

1. What do the letters in the electron configuration mean?
2. What do the numbers in front (coefficients) mean?
3. What do the small numbers after the letter (superscripts) mean?
4. How do you determine the number of valence electrons?

Answers

1. The block of the periodic table that you are counting
2. The row of the periodic table you are counting
3. The number of electrons in that subshell (this is found by counting the elements in that row and block)
4. Looking at the highest coefficient (row number) and adding up the electrons



Practice

Complete the following questions using the information you learned during the lesson activity.



Questions:

1. What is the full electron configuration for fluorine?
2. What is the noble gas electron configuration for iodine?
3. How many valence electrons does calcium have?
4. What is the full electron configuration for arsenic, and how many valence electrons does it have?

Once you have completed the practice questions check with the **answer** key.

1. $1s^2 2s^2 2p^5$
2. $[\text{Kr}] 5s^2 4d^{10} 5p^5$
3. $1s^2 2s^2 2p^6 3s^2 3p^6 4s^2$ (2 valence electrons)
4. $1s^2 2s^2 2p^6 3s^2 3p^6 4s^2 3d^{10} 4p^3$ (5 valence electrons)

More Practice:

Follow the links below to do more practice.

1. This [electron configuration practice](#) has an answer key on the second page.
2. Only do the first page of this [worksheet](#). Do not worry about the orbital notations section.



Additional Practice:

Click on this [link](#) for additional practice. The answer key is on the second page.