

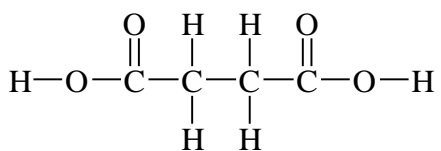
Chemistry 105, Chapter 2 Exercises

- Radon is a radioactive gas that can cause lung cancer. It has been detected in the basements of some homes. How many protons and neutrons are there in a Rn-220 atom?
- Selenium is widely sold as a dietary supplement. Write the nuclear symbol for naturally occurring selenium which has 34 protons and 46 neutrons.
- How do the isotopes N-14 and N-15 differ from each other? How are they similar? Write nuclear symbols or both.
- For Uranium-235 indicate the following:
 - the number of protons in the nucleus.
 - the number of neutrons in the nucleus.
 - the number of electrons in the atom.
 - the number of neutrons, protons, and electrons in the U^{2+} ion formed from this isotope.
- For Selenium-75 indicate the following:
 - the number of protons in the nucleus.
 - the number of neutrons in the nucleus.
 - the number of electrons in the atom.
 - the number of neutrons, protons, and electrons in the Se^{2-} ion formed from this isotope.
- Complete the following table:

Nuclear Symbol	Charge	Atomic Number	Mass Number	Number of Protons	Number of Electrons	Number of Neutrons
${}^7\text{Li}$						
				26	23	30
	-3	7	14			
${}^{25}\text{Mg}^{2+}$						
${}^{64}_{30}\text{Zn}$						
	+4			14		14
	-2	16	32			

- How many nonmetals are in the following periods?
 - period 2
 - period 4
 - period 6
- Which period of the periodic table
 - has no metals?
 - has no nonmetals?
 - has no metals or metalloids?
- Which group in the periodic table
 - has one metalloid and no nonmetals?
 - has no nonmetals or transition metals?
 - has no metals or metalloids?

10. Write the molecular and empirical formulas for the following organic compound.



Chapter 2, Answers to Exercises

1. 86 protons, 134 neutrons

2. $^{80}_{34}\text{Se}$

3. N-14 has 7 neutrons whereas N-15 has 8 neutrons. They have the same number of protons and electrons. Their symbols are $^{14}_7\text{N}$ and $^{15}_7\text{N}$.

4.a. 92 b. 143 c. 92 d. 143 neutrons, 92 protons, 90 electrons

5.a. 34 b. 41 c. 34 d. 41 neutrons, 34 protons, 36 electrons

6.

Nuclear Symbol	Charge	Atomic Number	Mass Number	Number of Protons	Number of Electrons	Number of Neutrons
^7Li	0	3	7	3	3	4
$^{56}_{26}\text{Fe}^{3+}$	+3	26	56	26	23	30
$^{14}_7\text{N}^{3-}$	-3	7	14	7	10	7
$^{25}\text{Mg}^{2+}$	+2	12	25	12	10	13
$^{64}_{30}\text{Zn}$	0	30	64	30	30	34
$^{28}_{14}\text{Si}$	+4	14	28	14	10	14
$^{32}_{16}\text{S}$	-2	16	32	16	18	16

7.a. 5 b. 3 c. 2

8.a. 1 b. 7 c. 1

9.a. 3 b. 2 c. 7 and 8

10. molecular, $\text{C}_4\text{H}_6\text{O}_4$; empirical, $\text{C}_2\text{H}_3\text{O}_2$