

Atoms and Ions Practice

1. Identify each part of an atom, its charge, and its location in the atom.

Particle	Charge	Location
<i>proton</i>	+	<i>nucleus</i>
<i>neutron</i>	0	<i>nucleus</i>
<i>electron</i>	-	<i>surrounding nucleus</i>

2. Why does an atom have no charge?

It has the same number of protons and electrons.

3. What is an ion?

An atom that has lost or gained electrons.

4. What are valence electrons?

The electrons in the outermost shell of the atom.

5. What is an anion? How does an anion form?

A negative ion. The atom gains electrons.

6. What is a cation? How does a cation form?

A positive ion. The atom has lost electrons

7. Beryllium has an atomic number of 4.

(a) How many valence electrons does beryllium have? 2

(b) Draw an electron dot diagram for beryllium.



(c) What is the charge of a beryllium ion? 2+

9. Complete the following table.

Symbol	Name	Atomic number	# of valence electrons	Lose or gain electrons	Charge	Ionic symbol
N	Nitrogen	7	5	gain	3-	N^{3-}
C	<i>Carbon</i>	<i>6</i>	<i>4</i>	<i>gain</i>	<i>4-</i>	<i>C⁴⁻</i>
<i>Na</i>	<i>Sodium</i>	11	<i>1</i>	<i>lose</i>	<i>1+</i>	<i>Na⁺</i>
He	<i>Helium</i>	2	2	--	0	<i>He</i>
S	Sulfur	<i>16</i>	<i>6</i>	<i>gain</i>	<i>2-</i>	<i>S²⁻</i>
<i>Al</i>	<i>Aluminum</i>	13	3	<i>lose</i>	3+	<i>Al³⁺</i>
K	<i>Potassium</i>	<i>19</i>	<i>1</i>	<i>lose</i>	<i>1+</i>	<i>K⁺</i>
<i>Ba</i>	<i>Barium</i>	56	2	<i>lose</i>	2+	<i>Ba²⁺</i>
<i>Ar</i>	<i>Argon</i>	18	8	--	0	<i>Ar</i>
Li	<i>Lithium</i>	3	<i>1</i>	<i>lose</i>	<i>1+</i>	<i>Li⁺</i>
O	Oxygen	8	<i>6</i>	<i>gain</i>	<i>2-</i>	<i>O²⁻</i>
B	<i>Boron</i>	5	3	<i>lose</i>	3+	<i>B³⁺</i>
Mg	<i>Magnesium</i>	<i>12</i>	2	<i>lose</i>	2+	<i>Mg²⁺</i>
<i>F</i>	Fluorine	<i>9</i>	7	<i>gain</i>	<i>1-</i>	<i>F⁻</i>
P	<i>Phosphorus</i>	<i>15</i>	5	<i>gain</i>	<i>3-</i>	<i>P³⁻</i>