

## Chapter 14: Extra Practice

What is an isotope? An atom with a mass that is higher or lower than the atomic mass on the periodic table. Isotopes have more or less neutrons which make them heavier or lighter than the most abundant version of the atom.

For each of the following isotopes, write the number of protons, neutrons, and electrons, and symbol with the top left and bottom left corners filled in. Star (\*) the most abundant version.

	★ Carbon-12 Most Abundant	Carbon-16 Isotope
# of protons	6	6
# of neutrons	6	10
# of electrons	6	6
Symbol w/ corners	${}^12_6\text{C}^0$	${}^{16}_6\text{C}^0$

	Chromium-58 Isotope	Chromium-52 M.A. ★
# of protons	24	24
# of neutrons	34	28
# of electrons	24	24
Symbol w/ corners	${}^{58}_{24}\text{Cr}^0$	${}^{52}_{24}\text{Cr}^0$

Name	Manganese-58 Isotope	Manganese-55 ★ M.A.
# of protons	25	25
# of neutrons	33	30
# of electrons	25	25
Symbol w/ corners	${}^{58}_{25}\text{Mn}^0$	${}^{55}_{25}\text{Mn}^0$

Name	Germanium-65 Isotope	Germanium-73 ★ M.A.
# of protons	32	32
# of neutrons	33	41
# of electrons	32	32
Symbol w/ corners	${}^{65}_{32}\text{Ge}^0$	${}^{73}_{32}\text{Ge}^0$

Assume the atoms below have no charge (are neutral) and fill in the blank information.

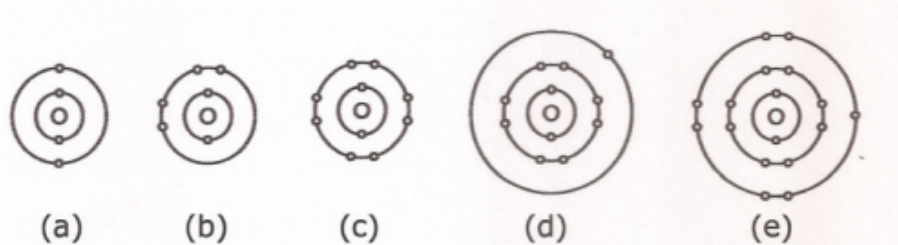
Atom Name	Symbol Notation (with #'s)	Atomic #	Atomic Mass	Mass #	Protons p <sup>+</sup>	Neutrons n <sup>o</sup>	Electrons e <sup>-</sup>	Most Abundant or Isotope?
C-12	${}^{12}_6\text{C}^0$	6	12.0107	12	6	6	6	M.A.
C-14	${}^{14}_6\text{C}^0$	6	12.0107	14	6	8	6	Isotope
S-30	${}^{30}_{16}\text{S}^0$	16	32.065	30	16	14	16	Isotope
S-32	${}^{32}_{16}\text{S}^0$	16	32.065	32	16	16	16	M.A.
Co-59	${}^{59}_{27}\text{Co}^0$	27	58.93	59	27	32	27	M.A.

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Co-60	${}^{60}_{27}\text{Co}^0$	27	58.93	60	27	33	27	Isotope
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Name the element who belongs to each Bohr model. Assume they are all **neutrally charged**.

- Berelium (Be)
- Carbon (C)
- Neon (Ne)
- Sodium (Na)
- Chlorine (Cl)



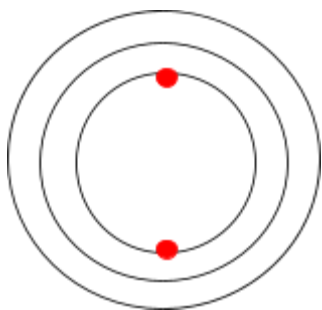
What is an ion? An atom with a charge that is not neutral (0) due to having different numbers of protons and electrons.

Draw in the electrons for the neutral version of the atoms below. Then tell how many valence electrons they have and draw their Lewis dot (electron dot) structures.

<p>Silicon</p> <p># of Valence: 4</p> <p>Lewis Dot</p> <p>Charge of ion it makes: <math>\text{Si}^{-4}</math> or <math>\text{Si}^{+4}</math></p>	<p>Sulfur</p> <p># of Valence: 6</p> <p>Lewis Dot</p> <p>Charge of ion it makes: <math>\text{S}^{-2}</math></p>
<p>Nitrogen</p> <p># of Valence: 5</p> <p>Lewis Dot</p> <p>Charge of ion it makes: <math>\text{N}^{-3}</math></p>	<p>Beryllium</p> <p># of Valence: 2</p> <p>Lewis Dot</p> <p>Charge of ion it makes: <math>\text{Be}^{+2}</math></p>

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Helium



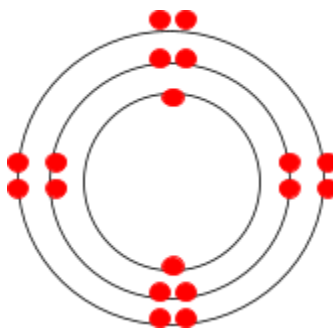
# of Valence: **2**

Lewis Dot



Charge of ion it makes: **He<sup>0</sup>**

Argon



# of Valence: **8**

Lewis Dot



Charge of ion it makes: **Ar<sup>0</sup>**