CONCEPT: MO THEORY: HETERONUCLEAR DIATOMIC MOLECULES

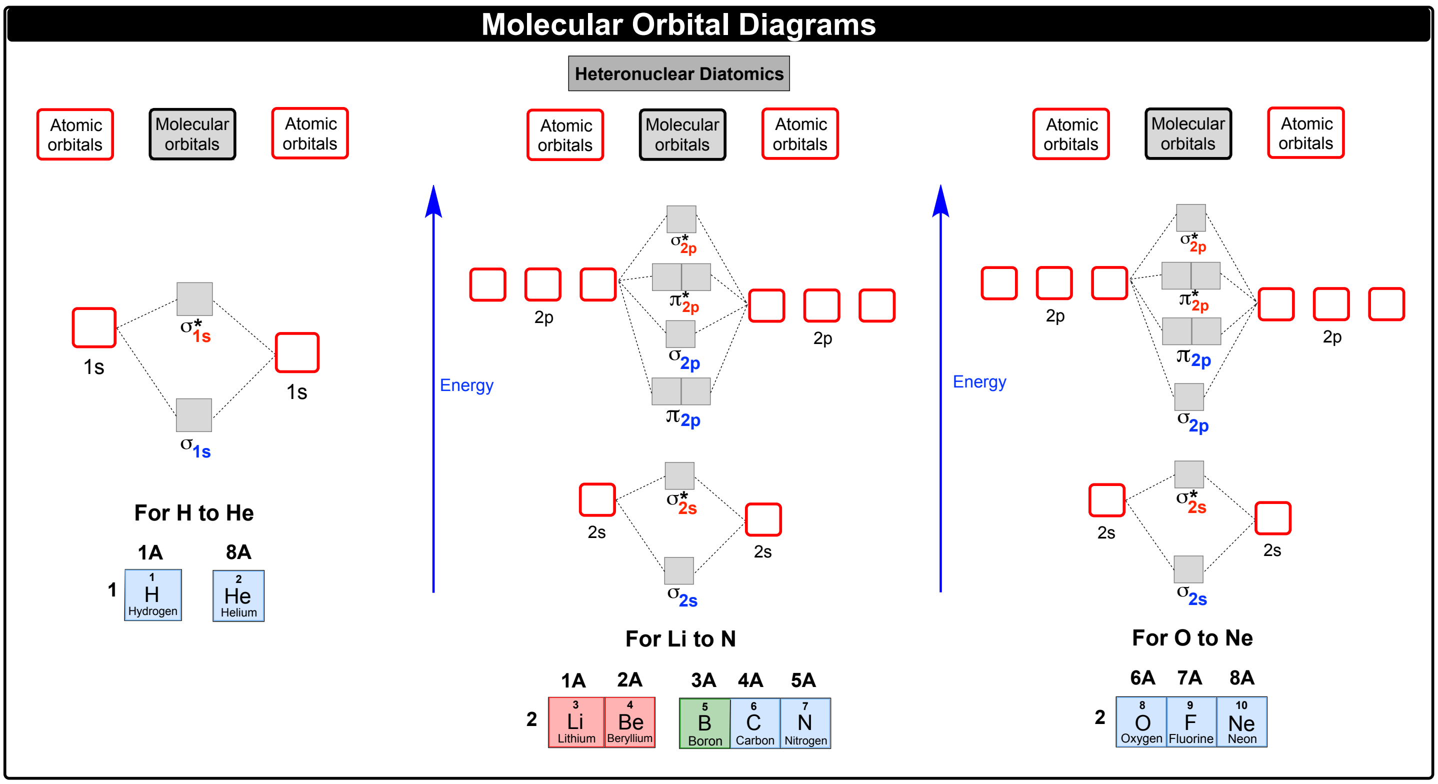
● Recall, a heteronuclear diatomic molecule is composed of two different elements bonded together.

□ The ______ electronegative element determines which MO diagram will be used.

- Recall, electronegativity increases as you move to the _______________ corner of the Periodic Table.

□ The more electronegative element possesses atomic orbitals that are __________ in energy.

- Recall, ____ electronegativity = electrons closer to the nucleus = _____ shell number (n).



EXAMPLE: Construct the Molecular Orbital Diagram for carbon monoxide, CO.

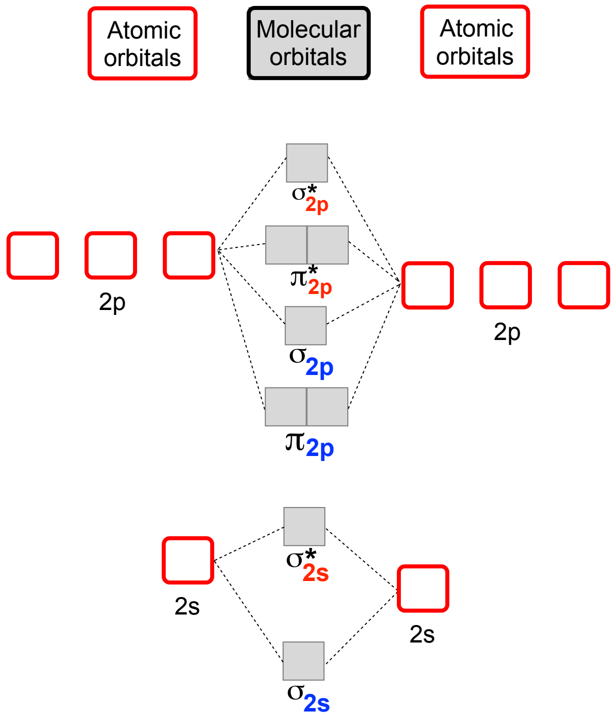
STEP 0: Determine the right MO diagram.

STEPS 1 to 4: Apply the same steps from homonuclear diatomic molecules.

$$(\sigma_{2s})^{\square}(\sigma^*_{2s})^{\square}(\pi_{2p})^{\square}(\sigma_{2p})^{\square}(\pi^*_{2p})^{\square}(\sigma^*_{2p})^{\square}$$

CONCEPT: MO THEORY: HETERONUCLEAR DIATOMIC MOLECULES

PRACTICE: Apply Molecular Orbital Theory to determine the MO orbital diagram for the CF^+ ion.



PRACTICE: Using a MO diagram, write the electron configuration for the BN molecule?

a) $(\sigma_{2s})^2(\sigma^*_{2s})^2(\pi_{2p})^4$

b) $(\sigma_{2s})^2(\sigma^*_{2s})^2(\pi_{2p})^4(\sigma_{2p})^2(\pi^*_{2p})^4$

c) $(\sigma_{2s})^2(\sigma^*_{2s})^2(\pi_{2p})^2(\sigma_{2p})^2$

d) $(\sigma_{2s})^2(\sigma^*_{2s})^2(\pi_{2p})^2(\sigma_{2p})^1(\pi^*_{2p})^2(\sigma^*_{2p})^1$