CONCEPT: BONDING PREFERENCES

- We can predict the number of bonds and *nonbonding electrons* in a molecular compound.
  - □ **Nonbonding Electrons**: Electrons that _____ participate in bonding with other elements.
    - **Lone Pair:** A pair of _____ electrons.

Common Bonding Preferences

Groups	1A	2A	3A	4A	5A (exception: P)	6A (exception: S)	7A
Atoms	H	Be	B	C	N	O	X (X = F, Cl, Br, I)
Bonding Preference	—H (Never a central atom)	—Be—	—B—	—C—C— (Bonds to other C)	—N—	—O—	—X: (As surrounding atom)
Bonds	___	___	___	___	___	___	___
Lone Pairs	___	___	___	___	___	___	___

- □ **Rule 1: Group 1A - 4A**: number of bonds = _____ number.
- □ **Rule 2: Group 5A - 7A**: number of bonds = number of _____ needed for stable electron arrangement.

EXAMPLE: How many bonds and lone pairs are typically found around Oxygen atom?

a) 6, 0 b) 2, 2 c) 3, 1 d) 1, 3

PRACTICE: How many bonds and nonbonding electrons can be found around Si atoms?

a) 4, 4 b) 2, 4 c) 3, 2 d) 4, 0

PRACTICE: How many bonds and lone pairs can be found around Mg atoms?

a) 2, 1 b) 2, 0 c) 3, 1 d) 3, 0