**Skill 21.01 Problem 1**

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| (a) Draw the Lewis electron-dot structure for each of the following | | |
| NO2 | NO2 | NO2+ |
| (b) List the species in order of increasing N-O-N bond angle. Justify your answer. | | |

**Table 1. Geometry of simple molecules**

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| Bonding atoms | Lone pairs | Geometry | Bond angles | Examples |
| 2 | 0 | Linear | HgCl2 | 180o |
| 3 | 0 | Trigonal planar | BF3 | 120o |
| 4 | 0 | Tetrahedral | CCl4 | 109.5o |
| 5 | 0 | Trigonal bipyramidal | PCl5 | 90o & 120o |
| 6 | 0 | Octahedral | SF6 | 90o |
| 2 | 1 | Bent | SO2 | <120o |
| 3 | 1 | Trigonal pyramidal | NI3 | <109.5o |
| 2 | 2 | Bent | H2S | <109.5o |
| 4 | 1 | seesaw | XeO2F2 | >90o, <120o |
| 3 | 2 | T-shaped | ClF3 | 90o, 180o |
| 2 | 3 | Linear | I3- | 180o |
| 5 | 1 | Square pyramidal | XeOF4 | <90o |
| 4 | 2 | Square planar | XeF4 | 90o |

**Skill 21.02 Problem 1**

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| Draw the Lewis structures for the following molecules. For each molecule, use table 1 to determine geometry. |
| * 1. CH4 |
| * 1. CO2 |
| * 1. H2O |
| * 1. NH3 |
| * 1. BeH2 |
| * 1. SF4 |
| * 1. SF6 |
| * 1. BH3 |
| * 1. XeF4 |