

## Molecular Shapes

| Steric Number, SN | # of bonded atoms | # of lone pairs | Molecular Geometry | Bond Angle (°) | Schematic  | Examples   | Hybridization                  |
|-------------------|-------------------|-----------------|--------------------|----------------|--|--|--------------------------------|
| 2                 | 2                 | 0               | linear             | 180            |    | BeCl <sub>2</sub><br>CO <sub>2</sub>             | sp                             |
| 3                 | 3                 | 0               | trigonal planar    | 120            |    | BF <sub>3</sub><br>NO <sub>3</sub> <sup>-</sup>  | sp <sup>2</sup>                |
| 3                 | 2                 | 1               | bent               | <120           |    | GeF <sub>2</sub><br>SO <sub>2</sub>              | sp <sup>2</sup>                |
| 4                 | 4                 | 0               | tetrahedral        | 109.5          |    | CH <sub>4</sub><br>ClO <sub>4</sub> <sup>-</sup> | sp <sup>3</sup>                |
| 4                 | 3                 | 1               | trigonal pyramid   | < 109.5        |    | NH <sub>3</sub><br>ClO <sub>3</sub> <sup>-</sup> | sp <sup>3</sup>                |
| 4                 | 2                 | 2               | bent               | < 109.5        |    | H <sub>2</sub> O<br>SCl <sub>2</sub>             | sp <sup>3</sup>                |
| 5                 | 5                 | 0               | trigonal bipyramid | 90, 120        |   | PCl <sub>5</sub>                                 | dsp <sup>3</sup>               |
| 5                 | 4                 | 1               | See-saw            | > 180<br>< 120 |  | SF <sub>4</sub>                                  | dsp <sup>3</sup>               |
| 5                 | 3                 | 2               | T-shaped           | < 90           |  | ClF <sub>3</sub>                                 | dsp <sup>3</sup>               |
| 5                 | 2                 | 3               | linear             | 180            |  | XeF <sub>2</sub><br>I <sub>3</sub> <sup>-</sup>  | dsp <sup>3</sup>               |
| 6                 | 6                 | 0               | octahedral         | 90             |  | SF <sub>6</sub>                                  | d <sup>2</sup> sp <sup>3</sup> |
| 6                 | 5                 | 1               | square pyramid     | 90<br>< 90     |  | BrF <sub>5</sub>                                 | d <sup>2</sup> sp <sup>3</sup> |
| 6                 | 4                 | 2               | square planar      | 90             |  | XeF <sub>4</sub>                                 | d <sup>2</sup> sp <sup>3</sup> |