## Méthode VSEPR













| Nb de<br>liaisons<br>(X) | Nb de paires non liantes (E) | Arrangement     | Géométrie de la<br>molécule  | Angle                  | Dénomination               |
|--------------------------|------------------------------|-----------------|--|------------------------|----------------------------|
| 2                        | 0                            | $\mathbf{AX}_2$ | AX <sub>2</sub> Linear  Examples: CS <sub>2</sub> HCN, BeF <sub>2</sub>  | $\alpha = 180^{\circ}$ | Linéaire                   |
| 3                        | 0                            | AX <sub>3</sub> | AX <sub>3</sub>  | $\alpha=120^{\circ}$   | Triangulaire               |
| 2                        | 1                            | $AX_2E_1$       | Examples: SO <sub>2</sub> , BF <sub>3</sub> , NO <sub>3</sub> -, CO <sub>2</sub> -  AX <sub>2</sub> E  Bent (V shaped)  Examples: SO <sub>2</sub> , O <sub>3</sub> , PbCl <sub>2</sub> SnBr <sub>2</sub> | α < 120°               | Coudée<br>ou<br>Forme en V |
| 4                        | 0                            | AX <sub>4</sub> | Tetrahedral  Examples: CH <sub>6</sub> , SiCl <sub>6</sub> , SO <sub>4</sub> 2-, ClO <sub>4</sub> -  | α = 109,5°             | Tétraédrique               |
| 3                        | 1                            | $AX_3E_1$       | AX <sub>3</sub> E  Trigonal pyramidal  Examples: NH <sub>3</sub> , PF <sub>3</sub> , ClO <sub>2</sub> , H <sub>2</sub> O*  | α < 109.5°             | Pyramide<br>trigonale      |
| 2                        | 2                            | $AX_2E_2$       | Bent (V shaped)  Examples: H <sub>2</sub> O,OF <sub>2</sub> , SCI <sub>2</sub>   | α < 109,5°             | Coudée<br>ou<br>Forme en V |

| 5 | 0 | AX <sub>5</sub> | AX <sub>8</sub> Trigonal bipyramidal   | $\alpha = 120^{\circ}$ $\beta = 90^{\circ}$ | Bipyramide<br>trigonale |
|---|---|-----------------|--|---|-------------------------|
| 4 | 1 | $AX_4E_1$       | Examples: PF <sub>g</sub> , AsF <sub>g</sub> , SOF <sub>4</sub> AX <sub>4</sub> E  Seesaw  Examples: SF <sub>4</sub> , XeO <sub>2</sub> F <sub>2</sub> , IF <sub>4</sub> *, IO <sub>2</sub> F <sub>2</sub> . | $lpha < 120^{\circ} \ eta < 90^{\circ}$     | Croix-V                 |
| 3 | 2 | $AX_3E_2$       | AX <sub>3</sub> E <sub>2</sub> T-shaped Examples: CIF <sub>3</sub> BirF <sub>3</sub>   | α < 90°                                     | Forme en T              |
| 2 | 3 | $AX_2E_3$       | AX <sub>2</sub> E <sub>3</sub> Linear  Examples: XeF <sub>2</sub> I <sub>3</sub> -, I <sub>F2</sub> -  | α =180°                                     | Linéaire                |
| 6 | 0 | AX <sub>6</sub> | AX <sub>4</sub> Cotalwadral  Examples: SF <sub>W</sub> NF <sub>5</sub>   | $\alpha = 90^{\circ}$ $\beta = 90^{\circ}$  | Octaèdre                |
| 5 | 1 | $AX_5E_I$       | Square pyramidal  Examples: Bif <sub>y</sub> TeF <sub>E</sub> , XeOF <sub>E</sub>  | α < 90°<br>β < 90°                          | Pyramide carrée         |
| 4 | 2 | $AX_4E_2$       | Square planar  Examples: XeF <sub>0</sub> (Cig-  | <i>α</i> = 90°                              | Plan carré              |