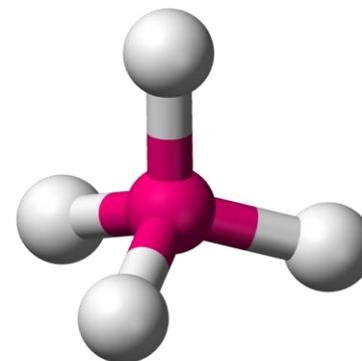
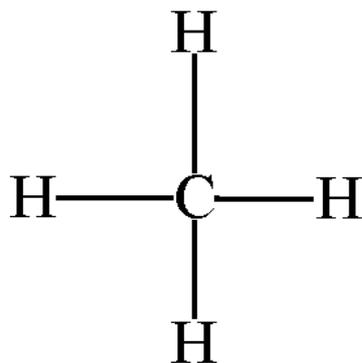
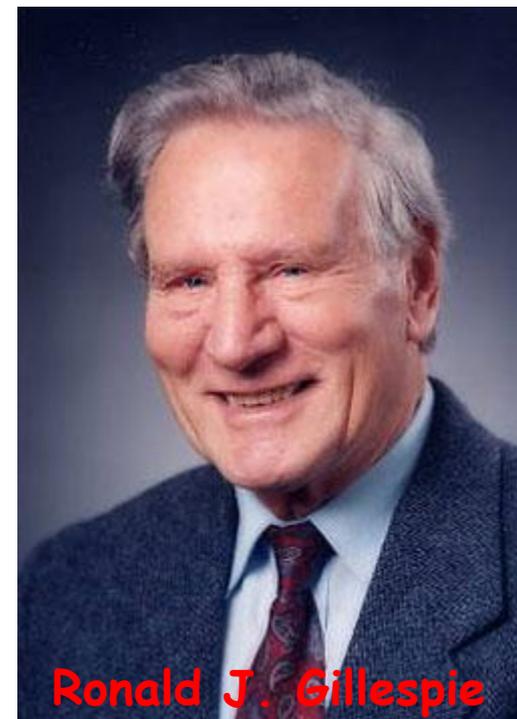
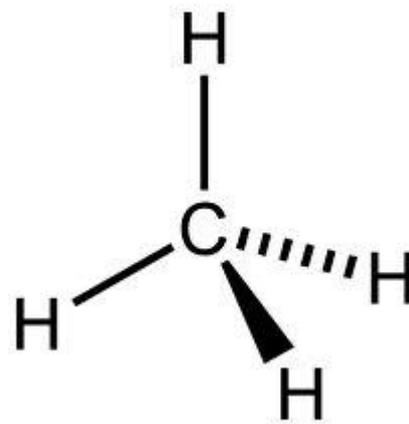
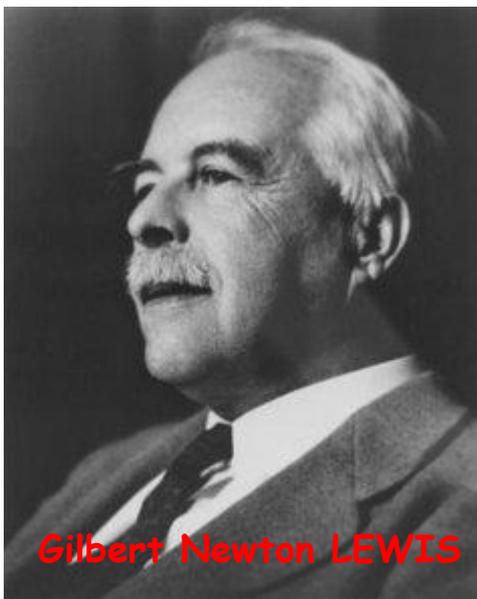
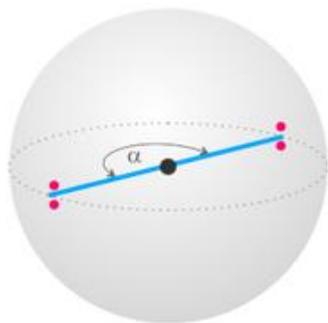


**La systématique VSEPR**  
**"Valence Shell Electron Pairs**  
**Repulsion"**  
**RPECV "Répulsion des Paires**  
**Electroniques de la Couche de**  
**Valence"**

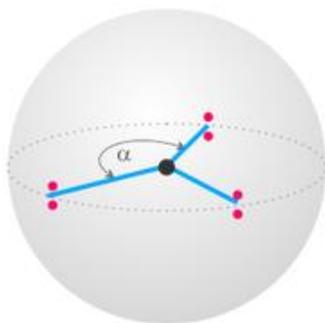
**ou théorie de Gillespie**

**Géométrie moléculaire**

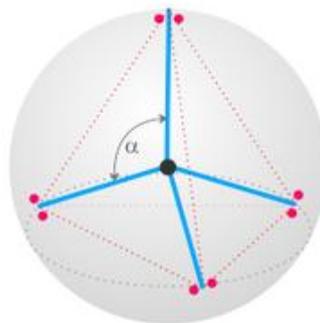




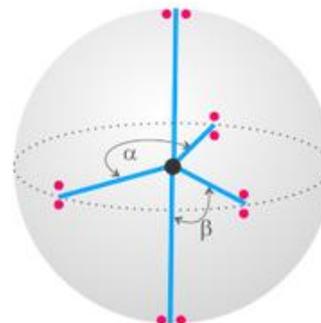
Droite  
 $\alpha = 180^\circ$



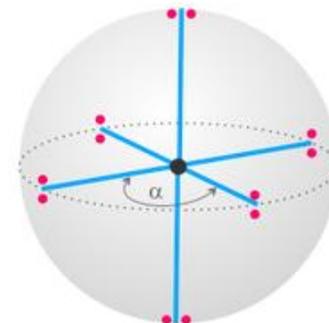
Triangle équilatéral  
 $\alpha = 120^\circ$



Trétraèdre  
 $\alpha = 109^\circ 28'$



Bipyramide trigonale  
 $\alpha = 120^\circ$   
 $\beta = 90^\circ$



Octaèdre  
 $\alpha = 90^\circ$

La molécule est symbolisée par

Atome  
central



**A**

**X<sub>m</sub>**

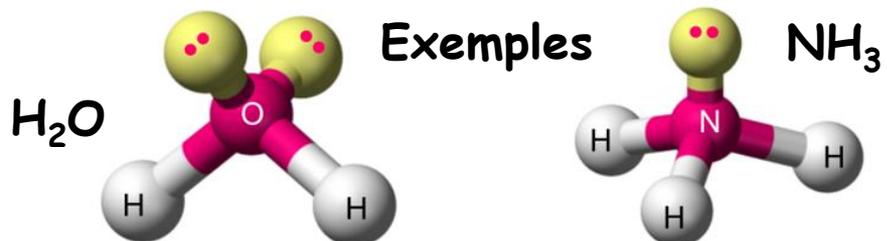
Ligand



**E<sub>n</sub>**

Doublet  
électronique  
libre





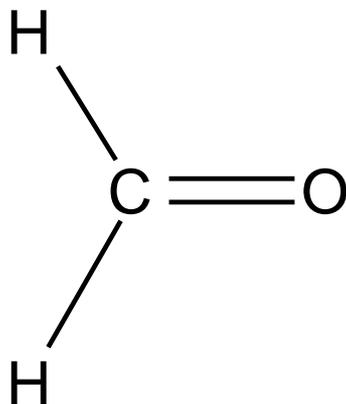
Forme de "V"

Forme pyramidale



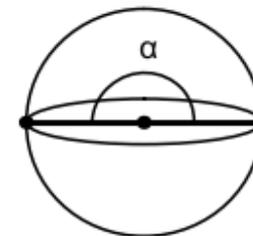
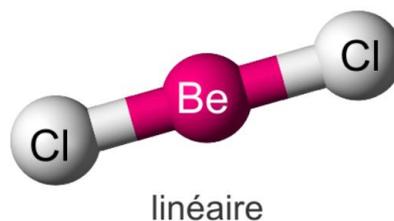
Linéaire

Triangulaire

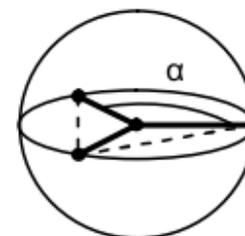
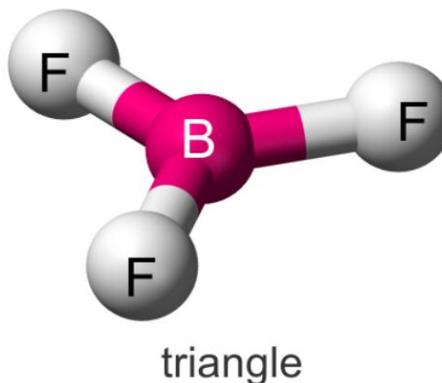


Type	Géométrie	Exemples
$AX_1E_0 (AX_1)$	Linéaire	HF
$AX_2E_0 (AX_2)$	Linéaire	BeCl <sub>2</sub> , HgCl <sub>2</sub>
$AX_2E_1$	Coudée	SO <sub>2</sub> , O <sub>3</sub>
$AX_2E_2$	Coudée	H <sub>2</sub> O
$AX_2E_3$	Linéaire	KrF <sub>2</sub> , XeF <sub>2</sub>
$AX_3E_0 (AX_3)$	Triangle (plan)	BF <sub>3</sub>
$AX_3E_1$	Pyramide trigonale	NH <sub>3</sub>
$AX_3E_2$	Forme en T	ClF <sub>3</sub> , BrF <sub>3</sub>
$AX_4E_0 (AX_4)$	Tétraèdre	CH <sub>4</sub>
$AX_4E_1$	Balançoire	SF <sub>4</sub>
$AX_4E_2$	Carré (plan)	XeF <sub>4</sub>
$AX_5E_0 (AX_5)$	Bipyramide trigonale	PCl <sub>5</sub>
$AX_5E_1$	Pyramide à base carrée	BrF <sub>5</sub>
$AX_6E_0 (AX_6)$	Octaèdre	SF <sub>6</sub>
$AX_6E_1$	Pyramide pentagonale	XeF <sub>6</sub>
$AX_7E_0 (AX_7)$	Bipyramide pentagonale	IF <sub>7</sub>

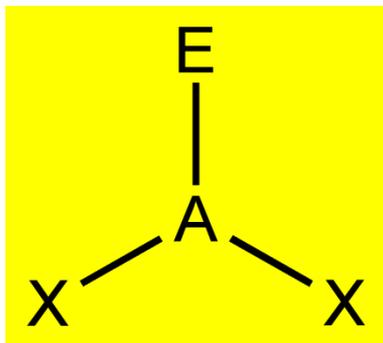
AXE	Nombre de doublets (m+n)	Arrangement des doublets ou Figure de répulsion	Nombre de liaison (m)	Forme des molécules et angle des liaisons (directions)
<b>AX<sub>2</sub></b>	<b>2</b>	<b>Droite</b>	<b>2</b>	<b>Linéaire (180°)</b>



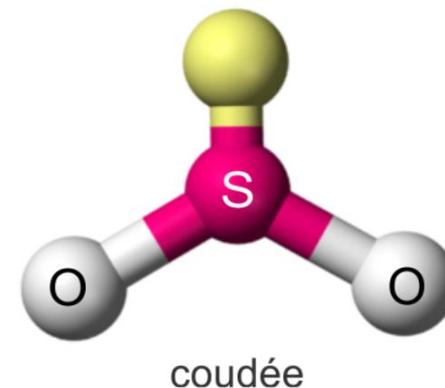
<b>AX<sub>3</sub></b>	<b>3</b>	<b>Triangle équilatéral</b>	<b>3</b>	<b>Triangle plan (120°)</b>
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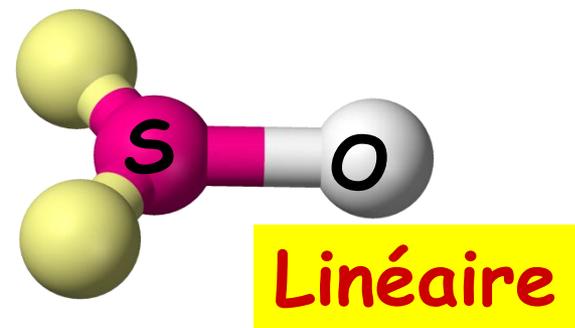
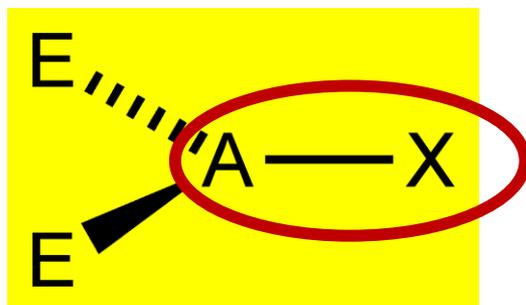
$AX_2E$	3	Triangle équilatéral	2	<b>Coudée (<math>120^\circ</math>)</b> <b>Voir plus loin</b>
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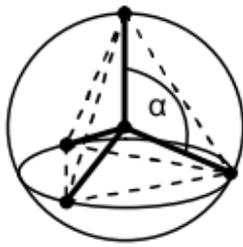


**Coudée**

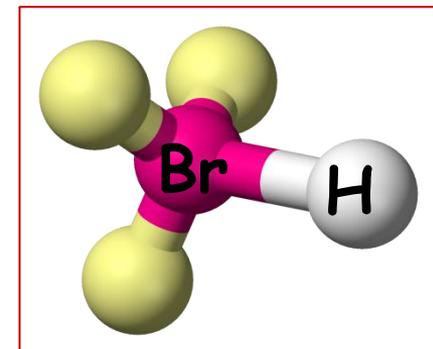
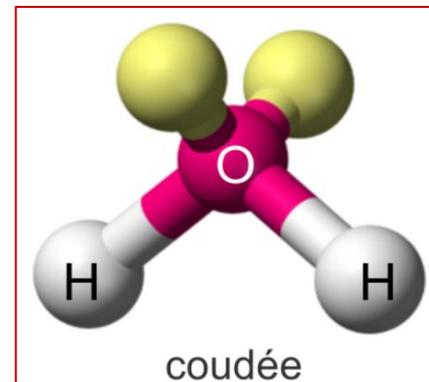
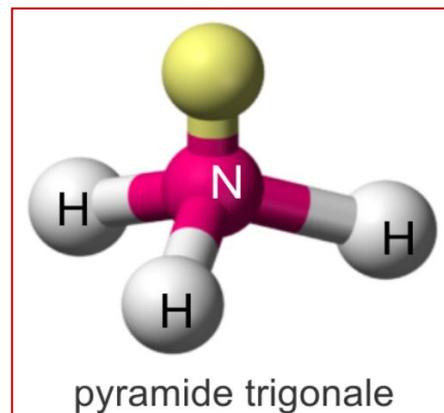
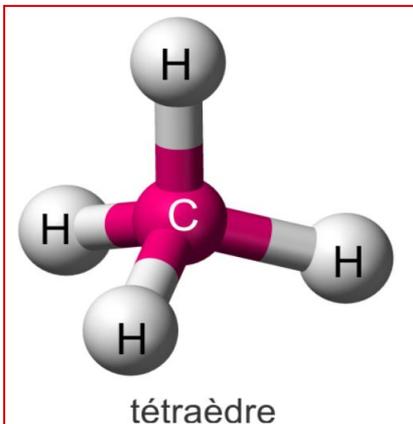
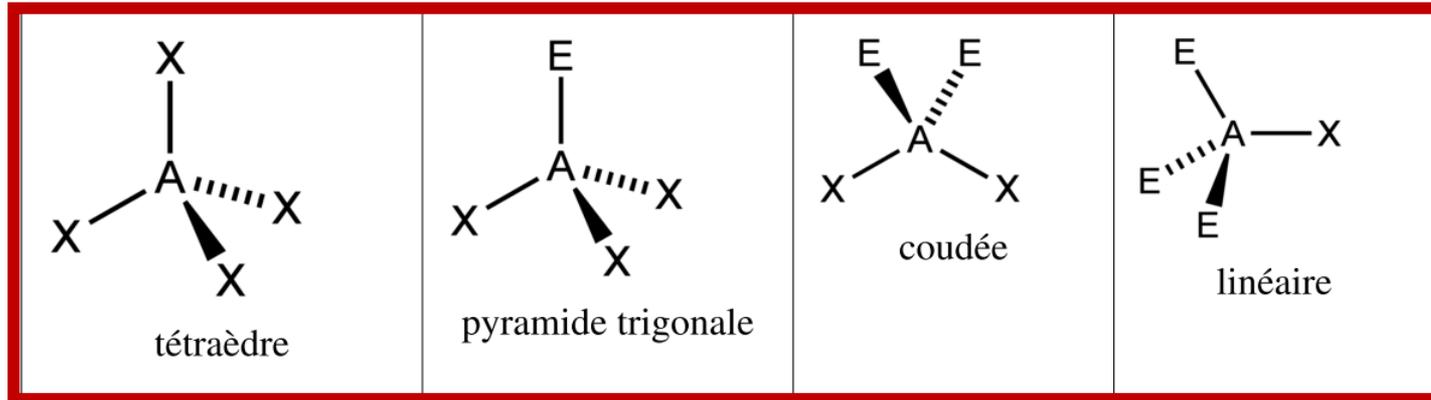


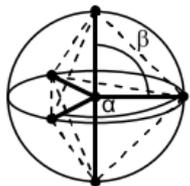
$AXE_2$	3	Triangle équilatéral	1	<b>Linéaire (<math>180^\circ</math>)</b>
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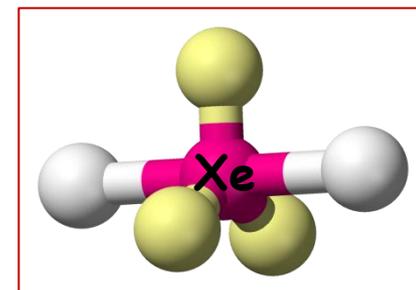
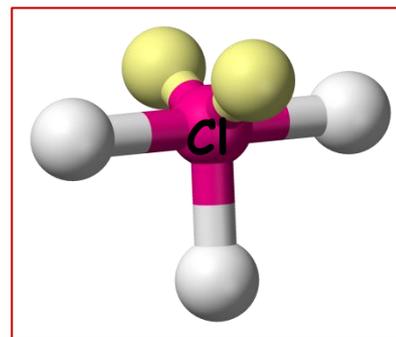
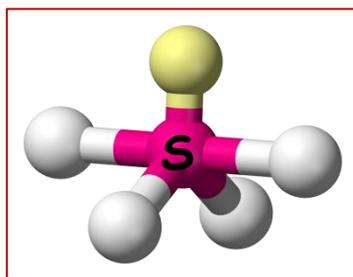
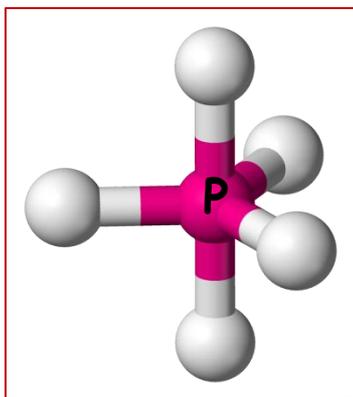
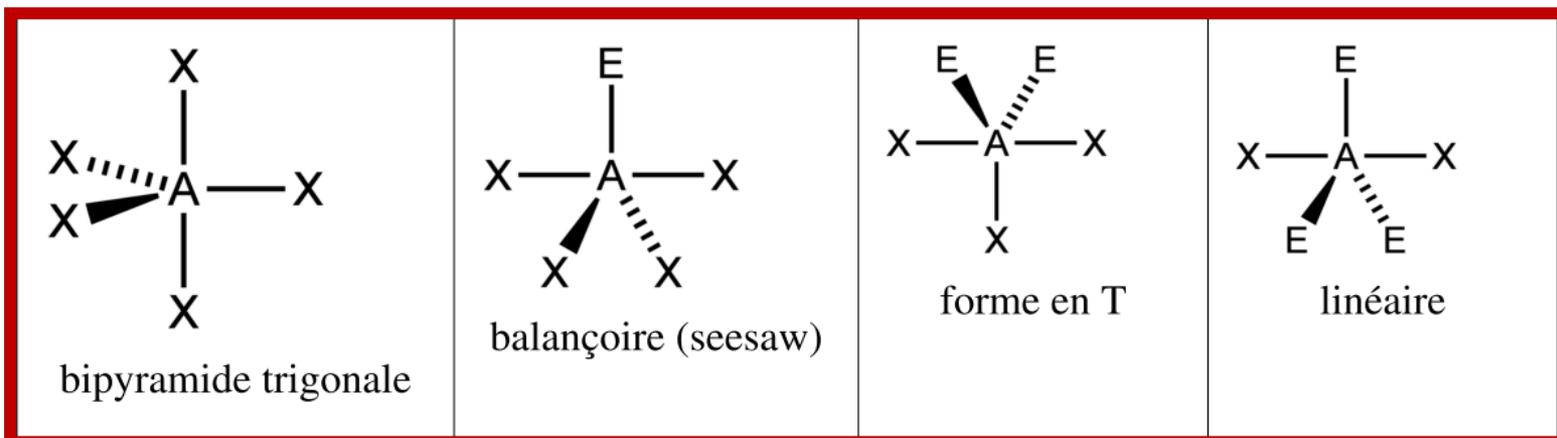


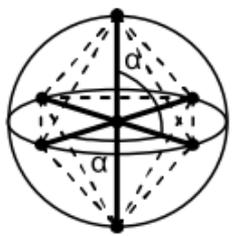
Tétraèdre  
 $\alpha = 109,5^\circ$



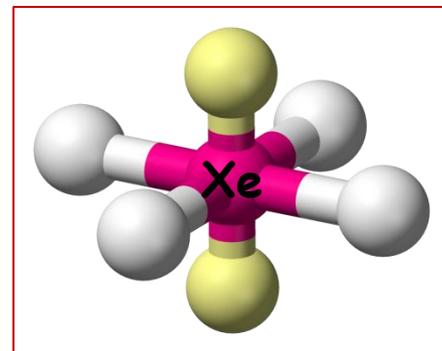
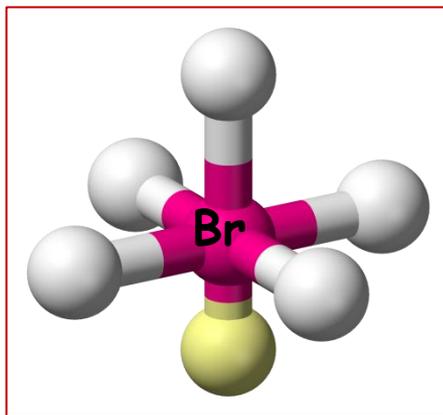
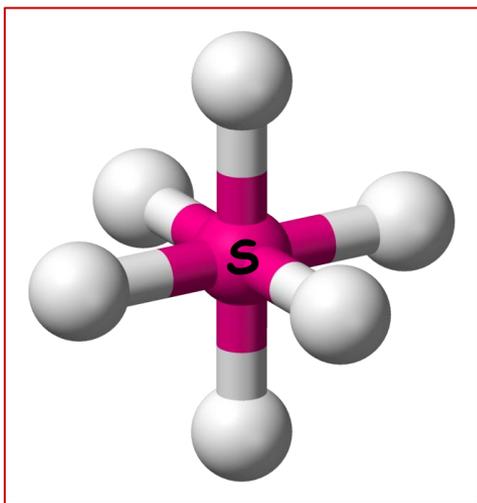
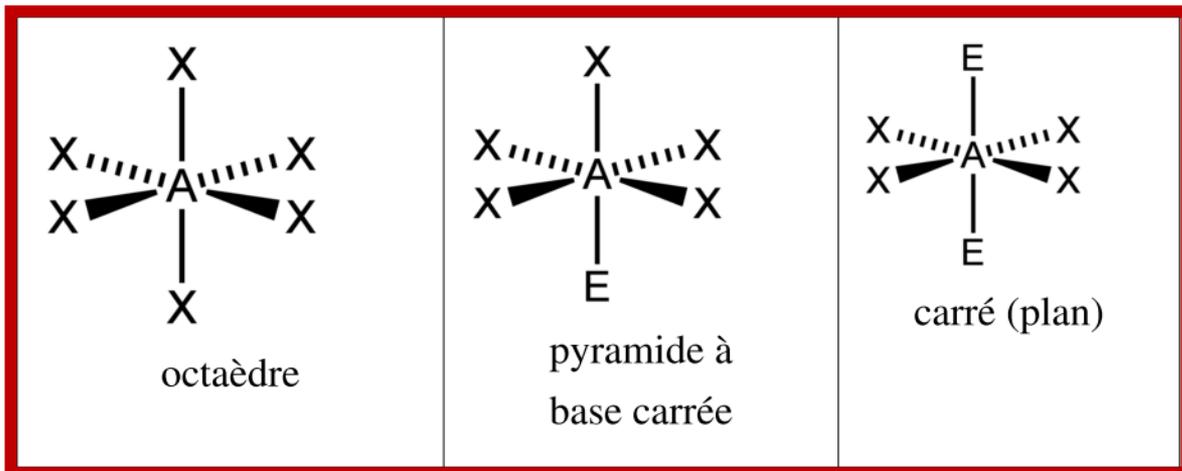


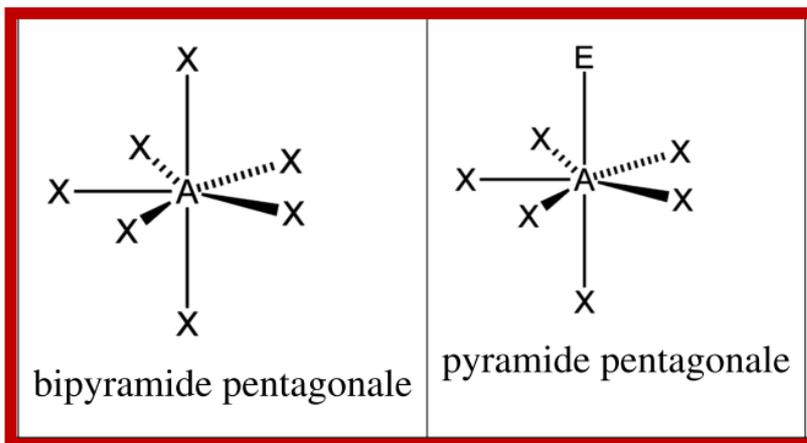
Bipyramide  
trigonale  
 $\alpha = 120^\circ$  ;  $\beta = 90^\circ$





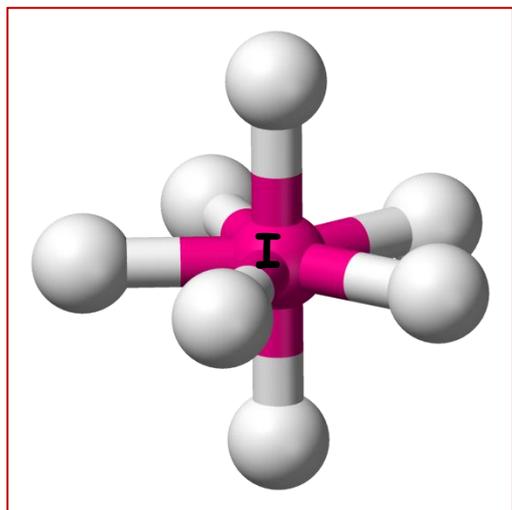
Octaèdre  
 $\alpha = 90^\circ$



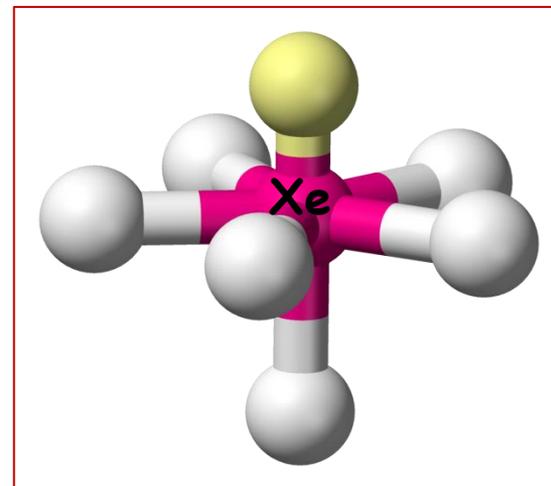


$AX_7$

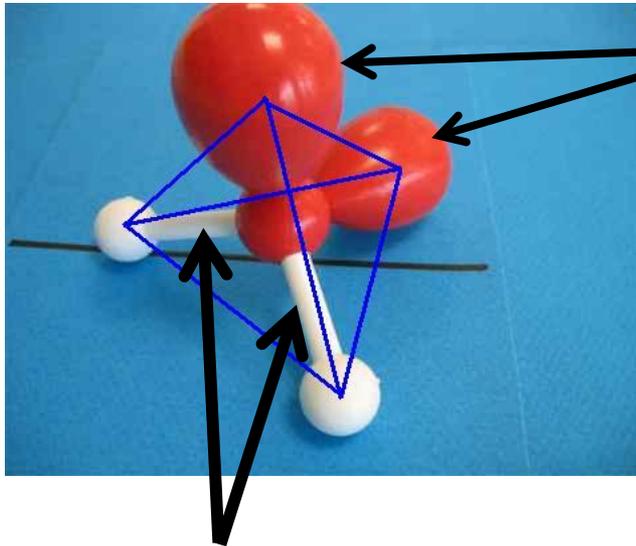
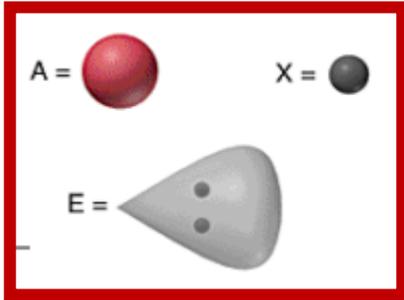
$AX_6E$



$IF_7$

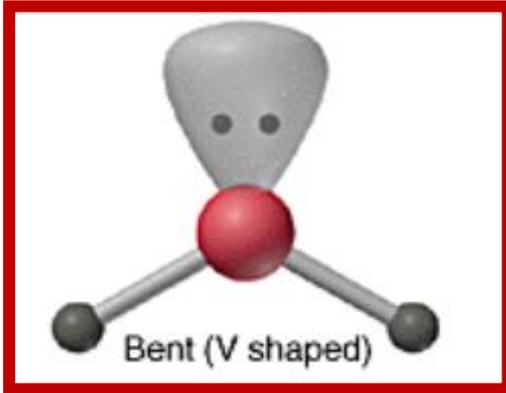


$XeF_6$

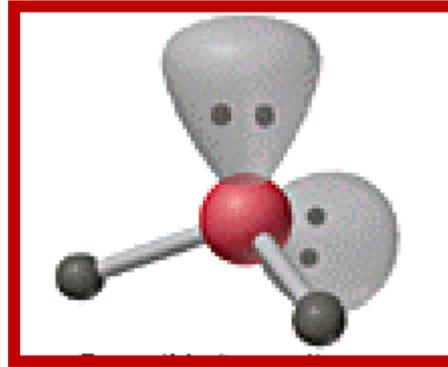


**Doublets e non liants  
(influence d'un seul noyau)**

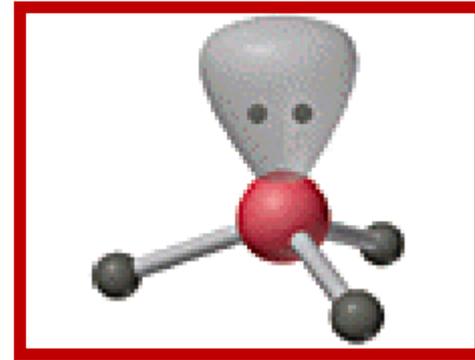
**Doublets e liants (sous  
l'influence de 2 noyaux)**



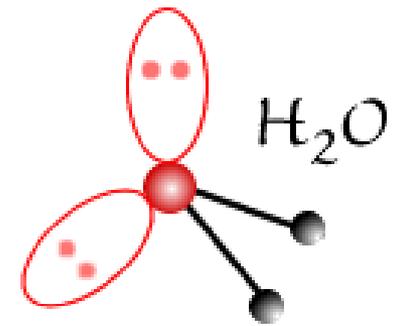
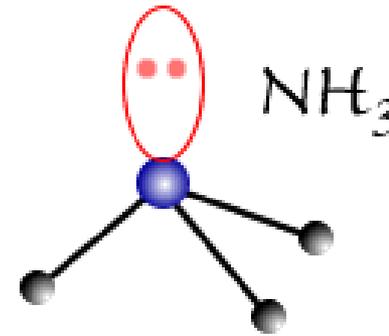
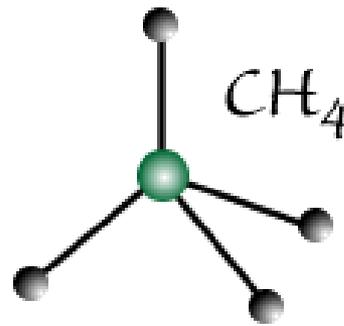
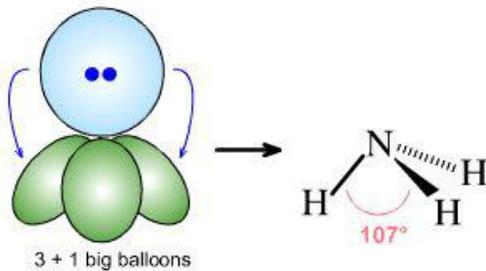
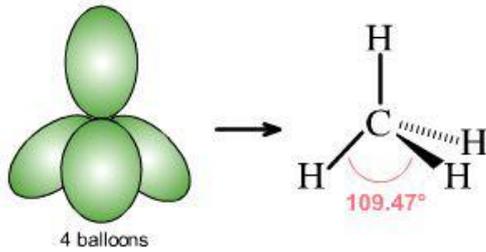
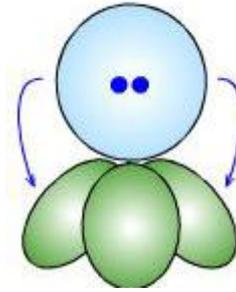
$$\alpha < 120^\circ$$

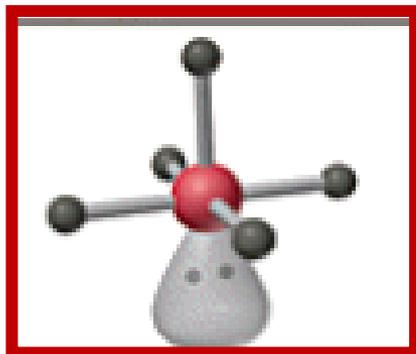
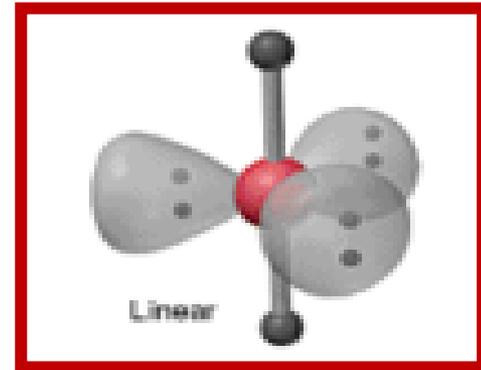
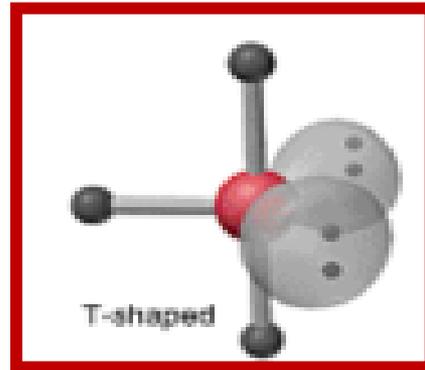
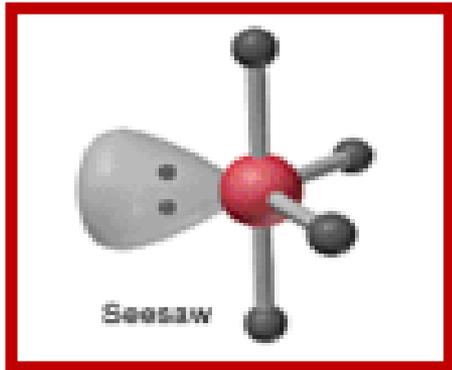


$$\alpha < 109.5^\circ$$

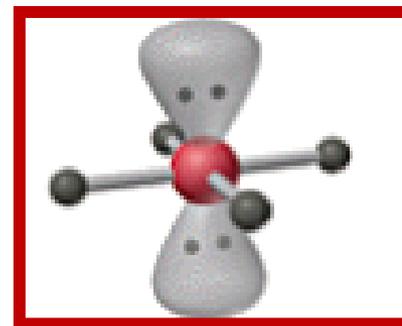


$$\alpha < 109.5^\circ$$

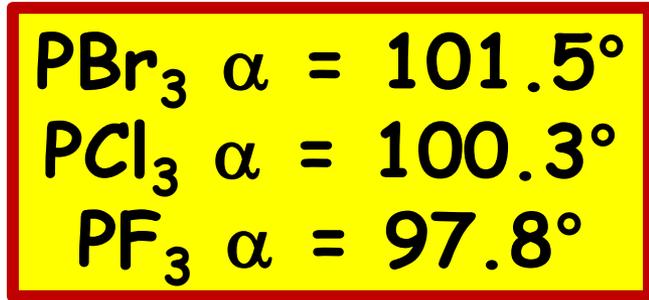
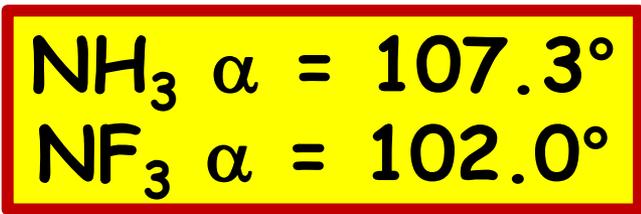
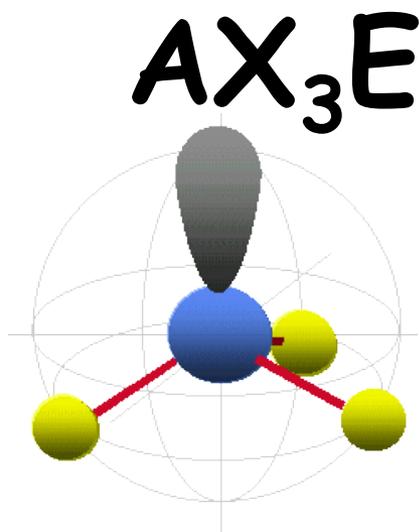
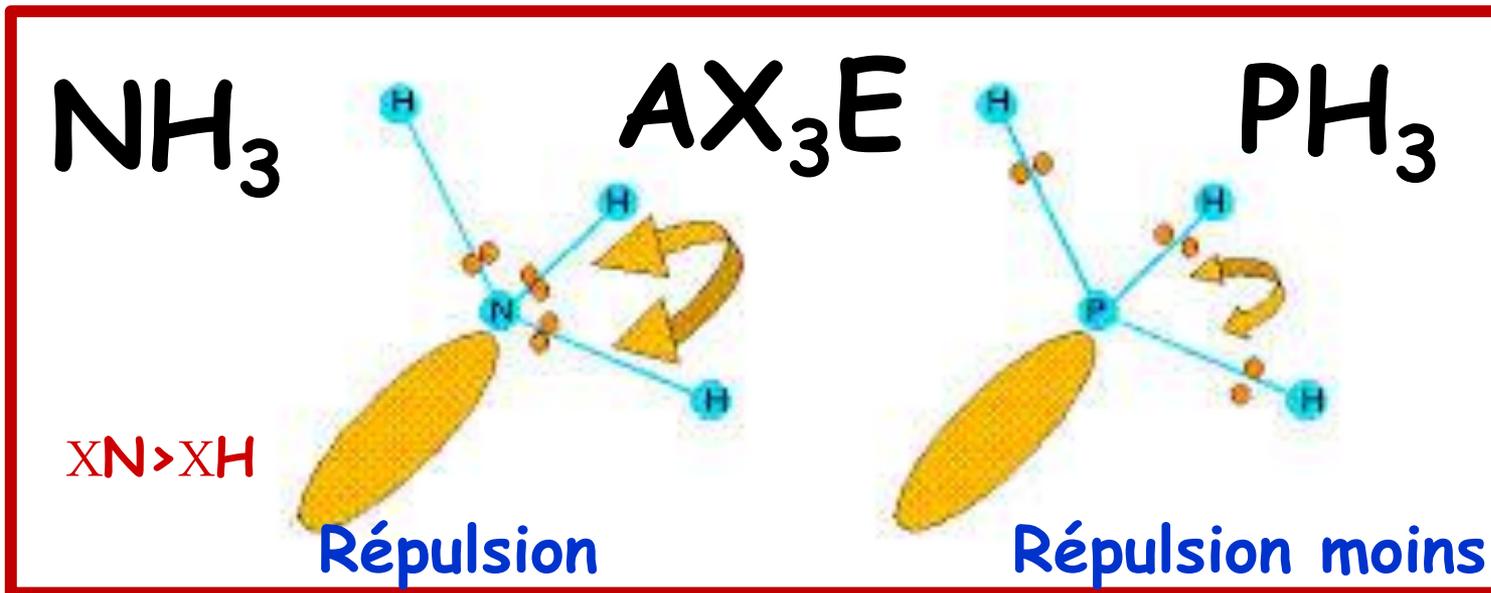


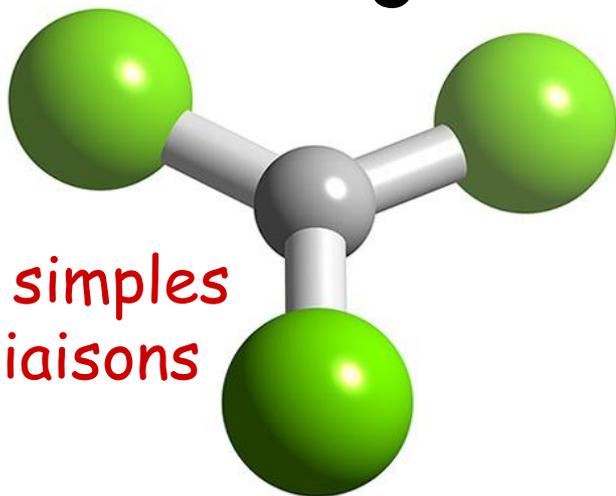


$\alpha < 90^\circ$   
 $\beta < 90^\circ$



$\alpha = 90^\circ$



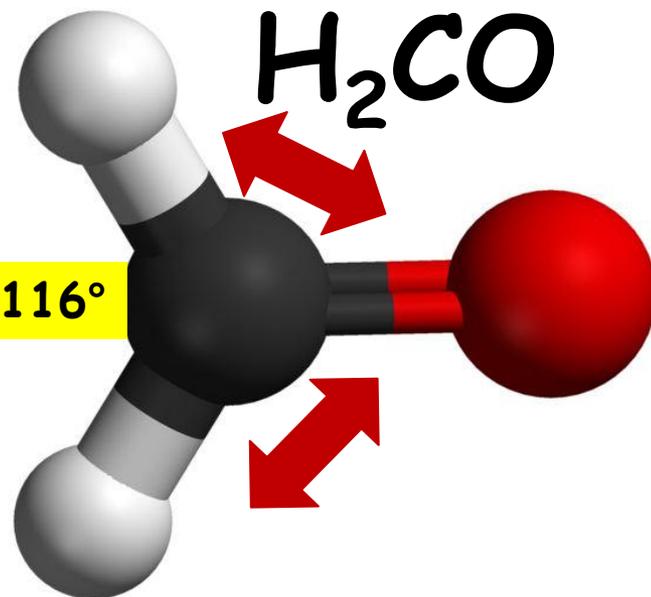


3 simples  
liaisons



2 simples  
et 1 double

116°



Une DL occupe  
plus d'espace

