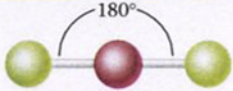
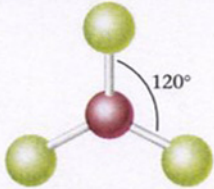
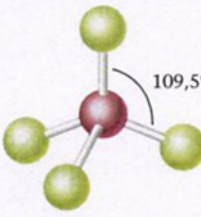
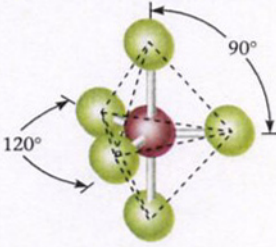
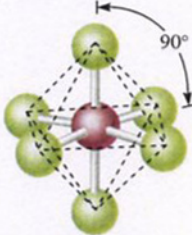

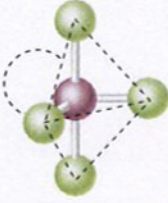
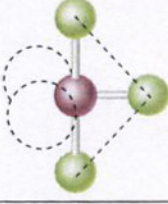
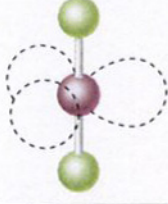

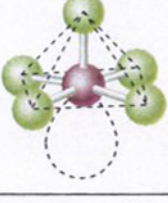



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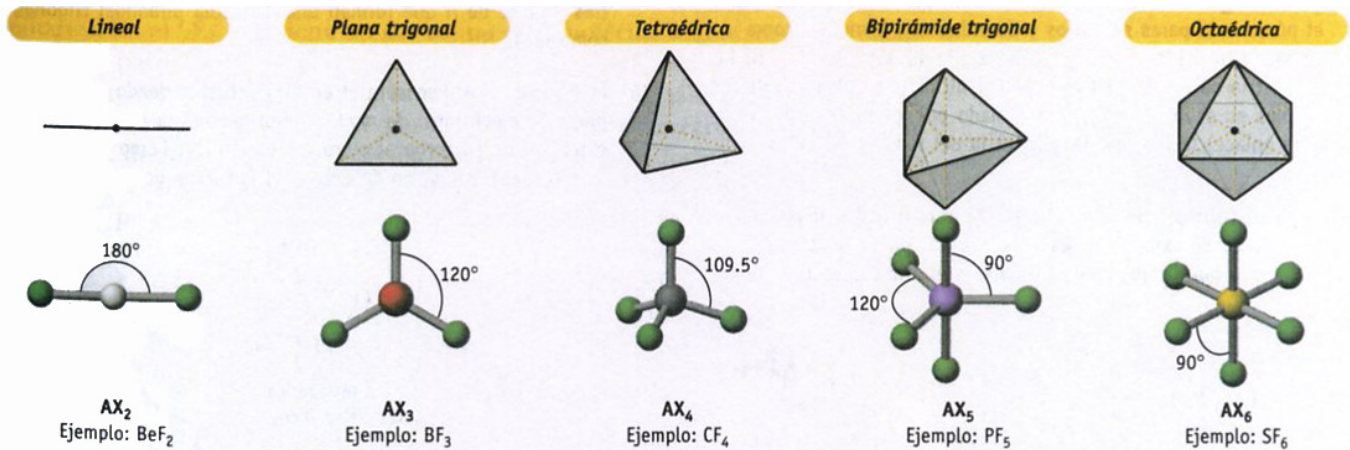
Tipo de especie	Orientación de los pares de electrones	Ángulos de enlace predichos	Ejemplo	Modelo de bolas y barras
AX_2	Lineal	180°	BeF_2	
AX_3	Trigonal plana	120°	BF_3	
AX_4	Tetraédrica	$109,5^\circ$	CH_4	
AX_5	Bipiramidal trigonal	90° 120° 180°	PF_5	
AX_6	Octaédrica	90° 180°	SF_6	

Masterton, W. L.; Hurley, C. N., “Principios y Reacciones”,
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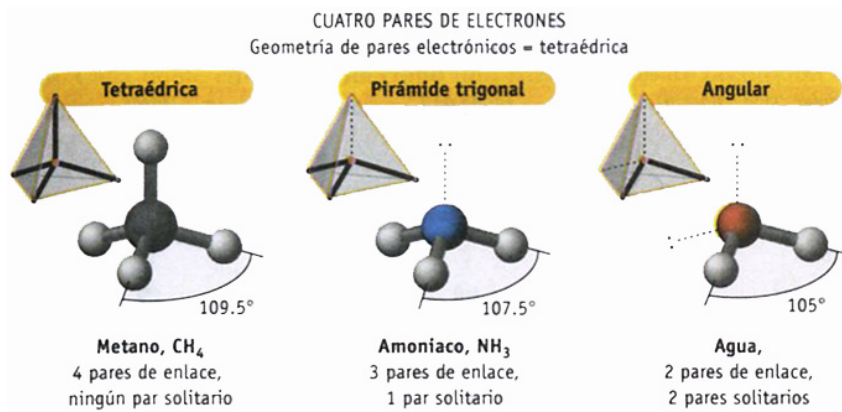
5 PARES DE ELECTRONES				
Tipo de molécula	Estructura	Descripción	Ejemplo	Ángulos de enlace
AX_5		Bipirámide triangular	PF_5	$90^\circ, 120^\circ, 180^\circ$
AX_4E		Tetraedro deformado (balancín)	SF_4	$90^\circ, 120^\circ, 180^\circ$
AX_3E_2		Forma de T	ClF_3	$90^\circ, 180^\circ$
AX_2E_3		Lineal	XeF_2	180°

6 PARES DE ELECTRONES				
AX_6		Octaédrica	SF_6	$90^\circ, 180^\circ$
AX_5E		Pirámide cuadrada	ClF_5	$90^\circ, 180^\circ$
AX_4E_2		Plana cuadrada	XeF_4	$90^\circ, 180^\circ$

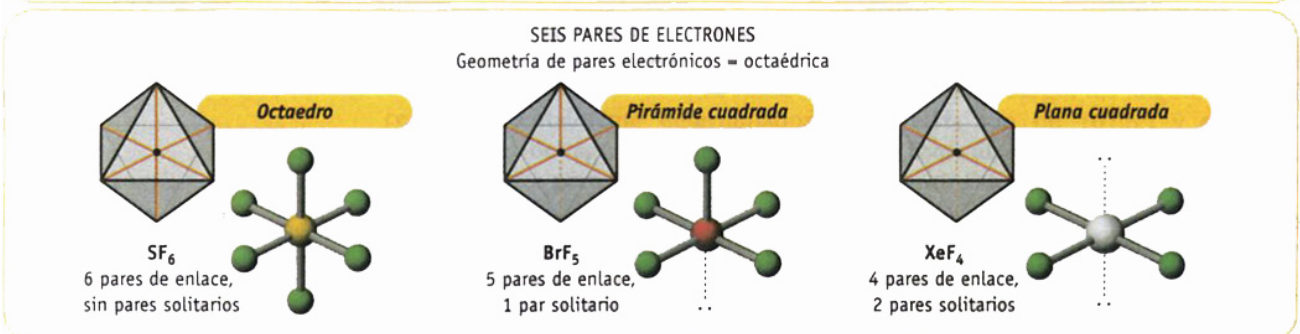
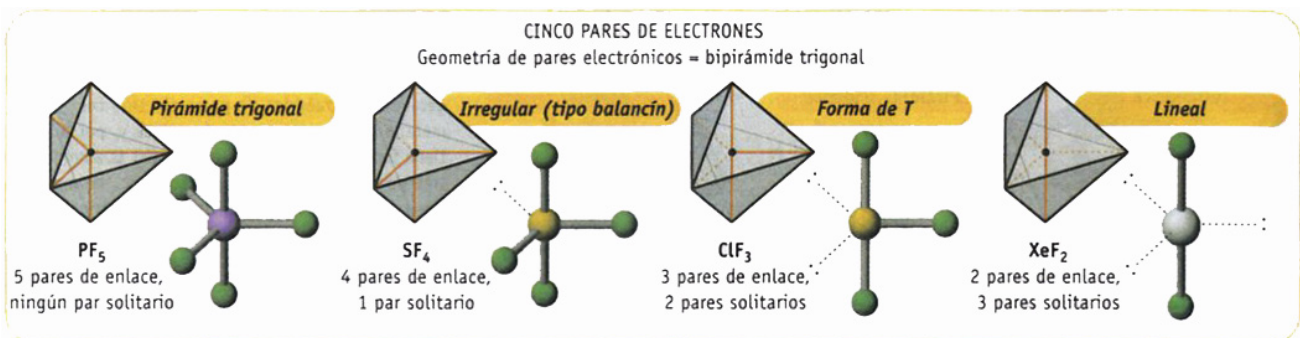
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Kotz, J. C.; Treichel, P. M., "Química y Reactividad Química", 5ª Ed., Thomson Paraninfo, 2003, 362.



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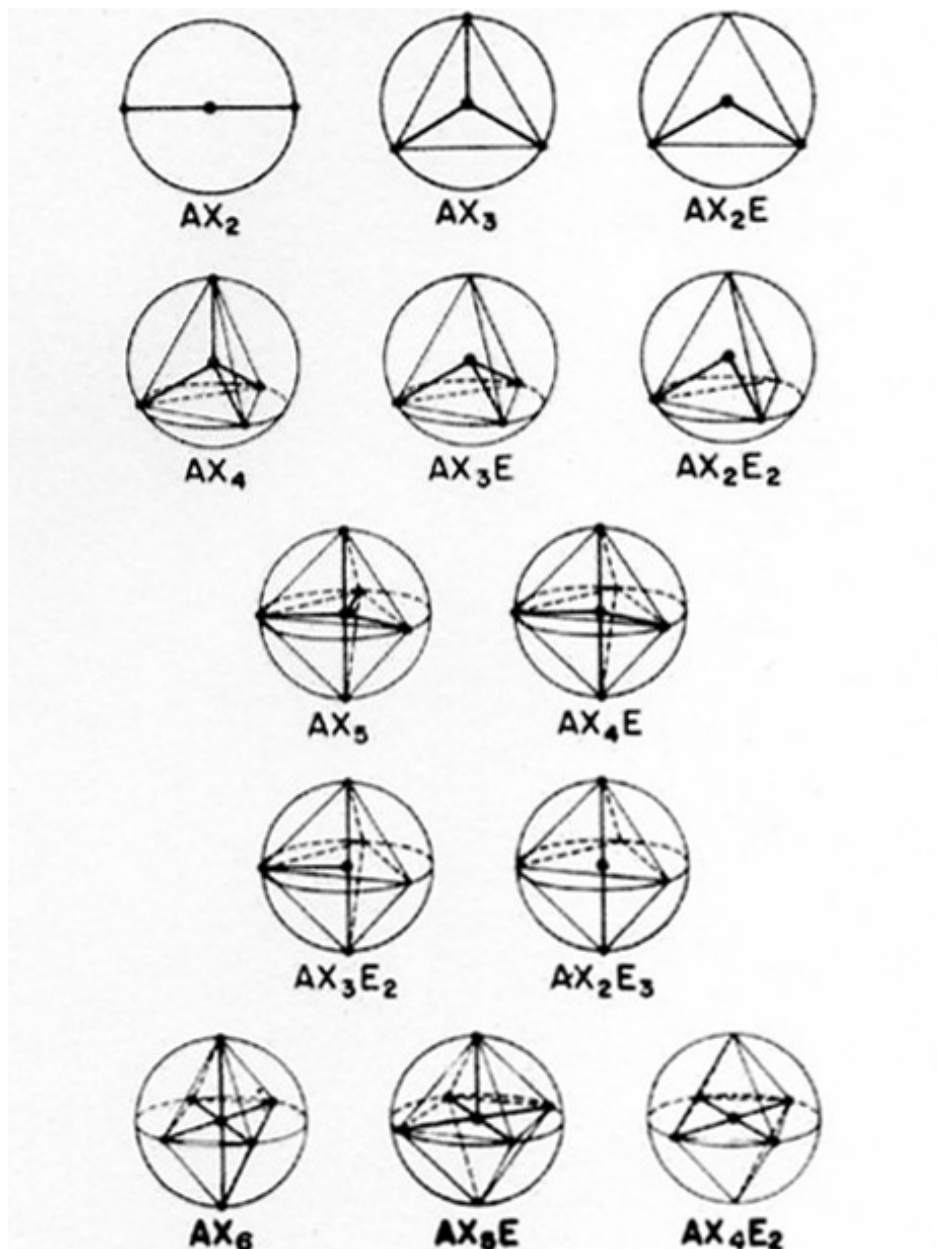
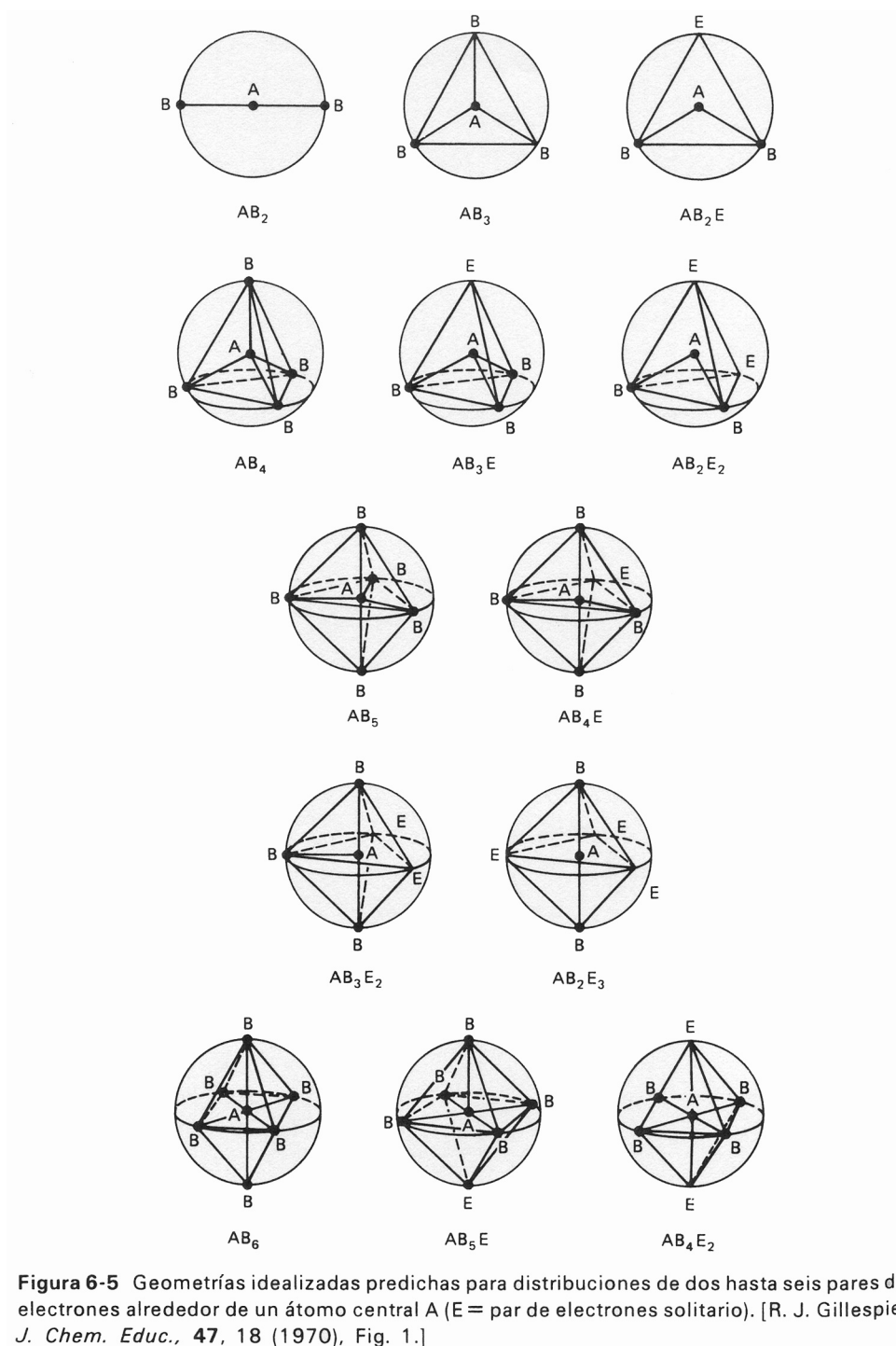


Figure 1. Shapes of singly-bonded molecules containing up to six electron pairs in the valency shell. A, central atom; X, ligand; E, unshared electron-pair.

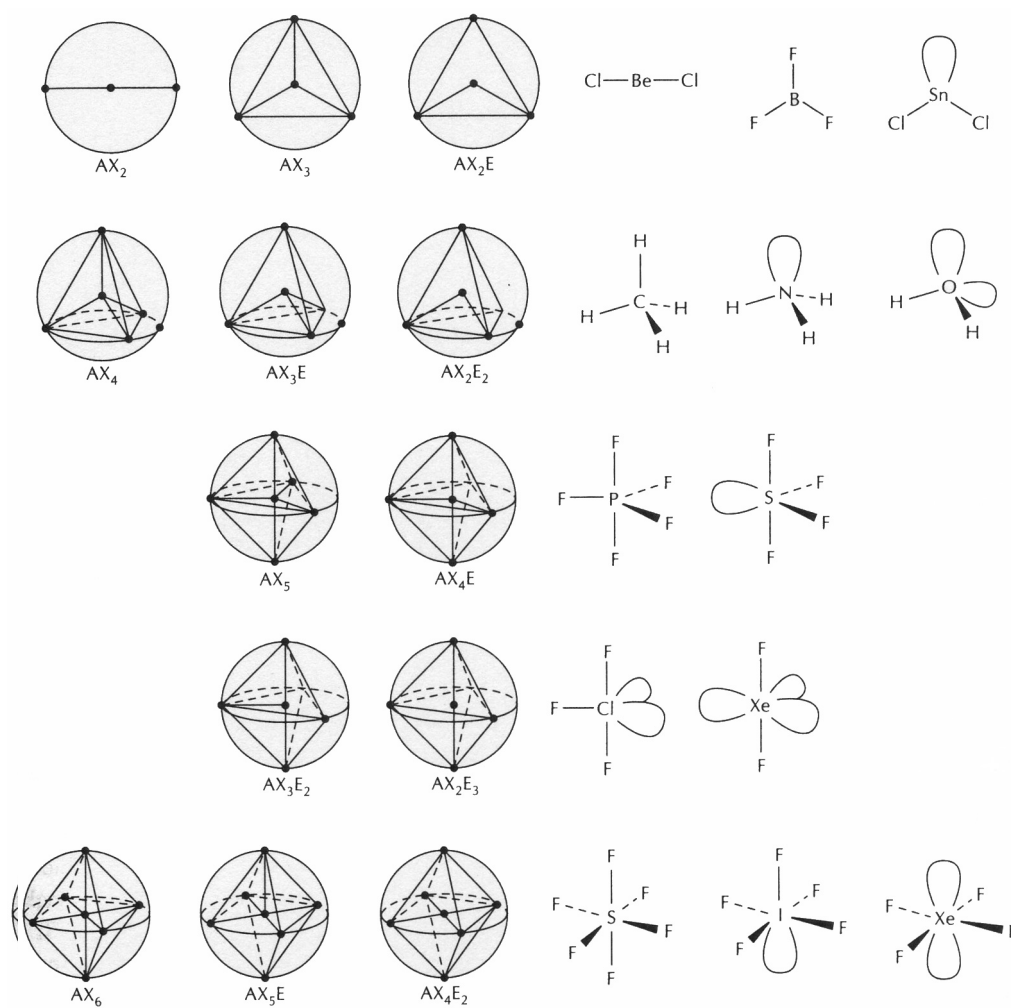
Presented at the 154th Meeting of the American Chemical Society held in Chicago, Illinois, September, 1967.

¹ Valence shell electron pair repulsion.

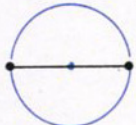
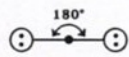


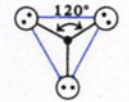
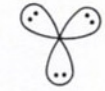

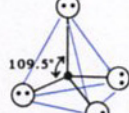
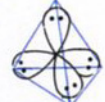
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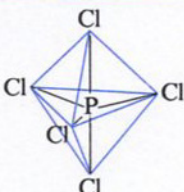

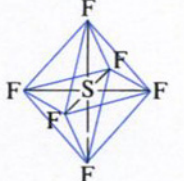
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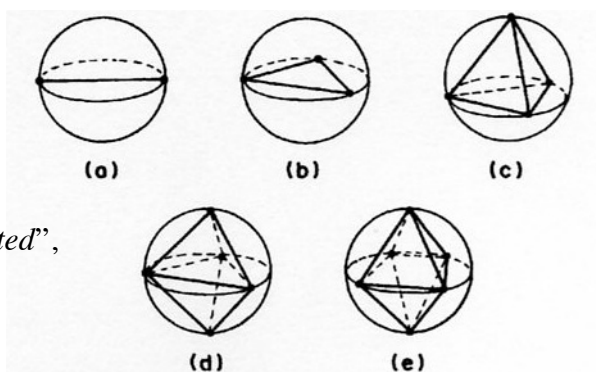


Gillespie, R. J.; Humphreys, D. A.; Baird, N. C.; Robinson, E. A.,
 “Química”, Vol I, Reverté, 1990, pp 340.

NÚMERO DE PARES DE ELECTRONES	FORMA	DISPOSICIÓN DE LOS PARES DE ELECTRONES		
		(a)	(b)	(c)
2	Lineal			
3	Triangular			
4	Tetraédrica			

Gillespie, R. J.; Humphreys, D. A.; Baird, N. C.; Robinson, E. A.,
 “Química”, Vol I, Reverté, 1990, pp 350.

NÚMERO DE PARES DE ELECTRONES	DISPOSICION	EJEMPLO
5	Bipiramidal trigonal	 
6	Octaédrica	 



Gillespie, R. J., “The VSEPR Model Revisited”,
 Chem. Soc. Rev., 1992, 21, 59-69.

Figure 1 The-points-on-a-sphere model. Arrangements of points that maximize their distance apart: (a) linear arrangement of two points; (b) equilateral triangular arrangement of three points; (c) tetrahedral arrangement of four points; (d) trigonal bipyramidal arrangement of five points; (e) octahedral arrangement of six points.

Housecroft, C. E.; Sharpe, A. G., "Inorganic Chemistry", 3^a Ed., Pearson Prentice Hall, 2008, pp 52.

Table 2.3 'Parent' shapes for EX_n molecules (n = 2–8).

Formula EX _n	Coordination number of atom E	Shape	Spatial representation	Ideal bond angles (∠X–E–X) / degrees
EX ₂	2	Linear	X—E—X	180
EX ₃	3	Trigonal planar		120
EX ₄	4	Tetrahedral		109.5
EX ₅	5	Trigonal bipyramidal		∠X _{ax} –E–X _{eq} = 90 ∠X _{eq} –E–X _{eq} = 120
EX ₆	6	Octahedral		∠X ₁ –E–X ₂ = 90

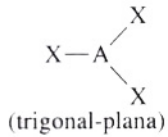
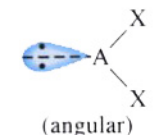
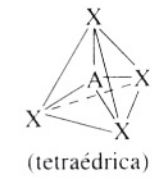
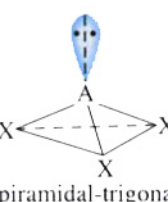
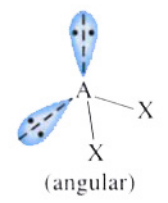
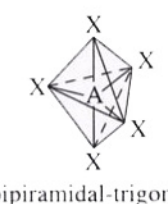
Purcell, K. F.; Kotz, J. C., "An Introduction to Inorganic Chemistry", Saunders College, 1980, pp 89.

Número de pares de e ⁻	Estructura idealizada de pares de e ⁻	Ángulos
2	lineal	180°
3	plana trigonal	120°
4	tetraedro	109,5°
5	bipirámide trigonal	90°, 120°
6	octaedro	90°
7	bipirámide pentagonal	90°, 72°
	octaedro apuntado (o apiraminado) «1:3:3»	90°, 72°
	prisma trigonal apuntado «1:4:2»	90°, 72°

Material recopilado y seleccionado por el Profesor: Rafael Aguado Bernal

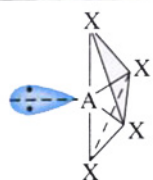
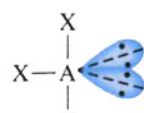
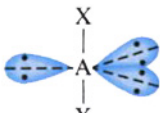
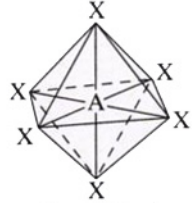
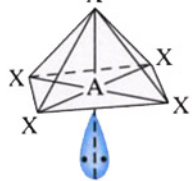
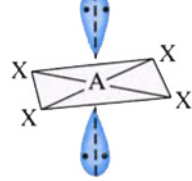
Petrucci, R. H.; Harwood, W. S.; Herring, F. G., "Química general", 8ª Ed., Prentice Hall, 2003, reimpresión 2006, pp 413.

TABLA 11.1 Geometría molecular en función de la geometría de los grupos de electrones

Número de grupos de electrones	Geometría de los grupos de electrones	Número de pares solitarios	Notación RPECV	Geometría molecular	Ángulos de enlace ideales	Ejemplo
2	lineal	0	AX_2	$X-A-X$ (lineal)	180°	$BeCl_2$
3	trigonal-plana	0	AX_3	 (trigonal-plana)	120°	BF_3
	trigonal-plana	1	AX_2E	 (angular)	120°	SO_2^a
4	tetraédrica	0	AX_4	 (tetraédrica)	$109,5^\circ$	CH_4
	tetraédrica	1	AX_3E	 (piramidal-trigonal)	$109,5^\circ$	NH_3
	tetraédrica	2	AX_2E_2	 (angular)	$109,5^\circ$	OH_2
5	bipiramidal-trigonal	0	AX_5	 (bipiramidal-trigonal)	$90^\circ, 120^\circ$	PCl_5

Petrucci, R. H.; Harwood, W. S.; Herring, F. G., "Química general",
8ª Ed., Prentice Hall, 2003, reimpresión 2006, pp 414.

TABLA 11.1 (Continuación)

Número de grupos de electrones	Geometría de los grupos de electrones	Número de pares solitarios	Notación RPECV	Geometría molecular	Ángulos de enlace ideales	Ejemplo
	bipiramidal-trigonal	1	AX_4E^b	 (balancín)	$90^\circ, 120^\circ$	SF_4
	bipiramidal-trigonal	2	AX_3E_2	 (forma de T)	90°	ClF_3
	bipiramidal-trigonal	3	AX_2E_3	 (lineal)	180°	XeF_2
6	octaédrica	0	AX_6	 (octaédrica)	90°	SF_6
	octaédrica	1	AX_5E	 (piramidal-cuadrada)	90°	BrF_5
	octaédrica	2	AX_4E_2	 (plano-cuadrada)	90°	XeF_4

Housecroft, C. E.; Sharpe, A. G., "Inorganic Chemistry",
3ª Ed., Pearson Prentice Hall, 2008, pp 51.

