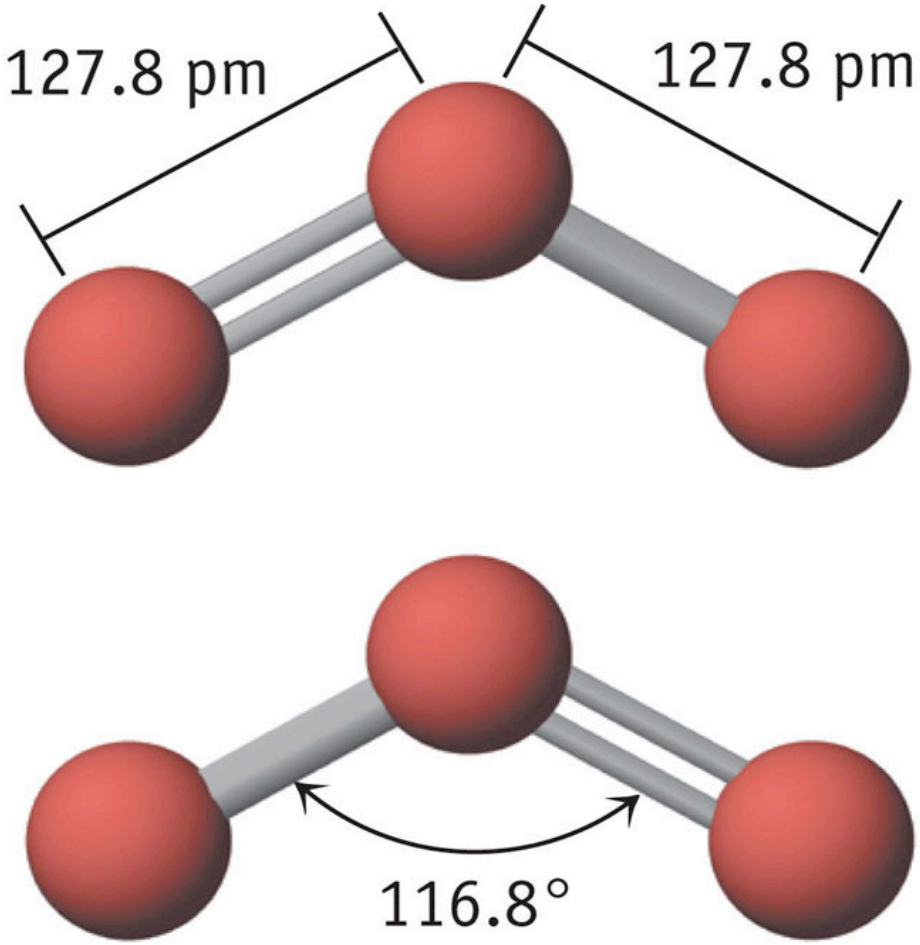
How do we know (predict) that ozone is bent?



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How do we know (predict) that ozone is bent?

Coulomb!

How do we know (predict) that ozone is bent?

Coulomb!

and Lewis

How do we know (predict) that ozone is bent?

Coulomb!

and Lewis

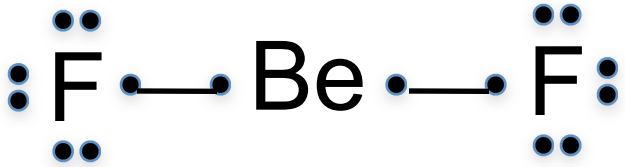
- Consider BeF_2

How do we know (predict) that ozone is bent?

Coulomb!

and Lewis

- Consider BeF_2

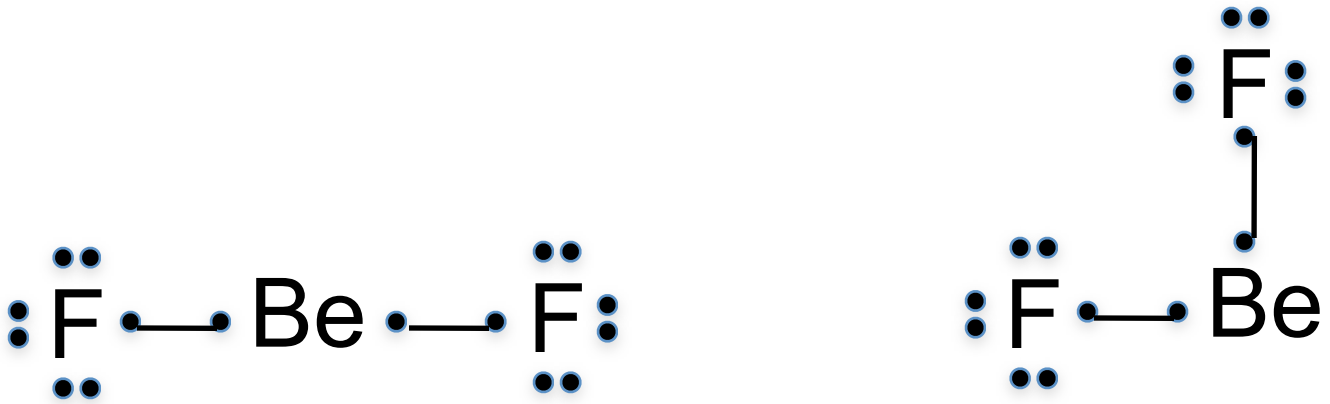


How do we know (predict) that ozone is bent?

Coulomb!

and Lewis

- Consider BeF_2

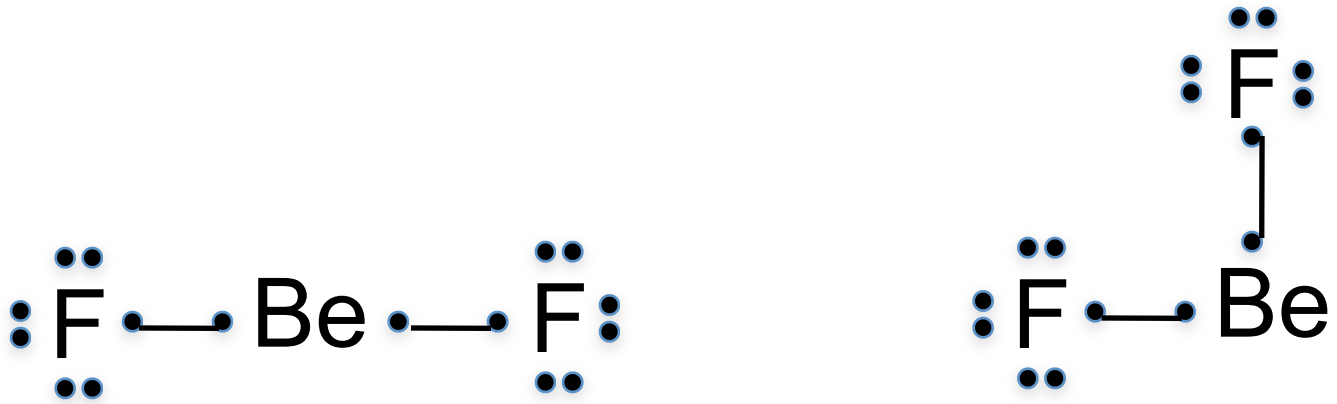


How do we know (predict) that ozone is bent?

Coulomb!

and Lewis

- Consider BeF_2

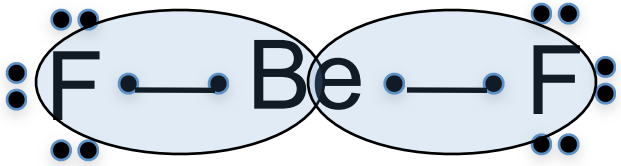


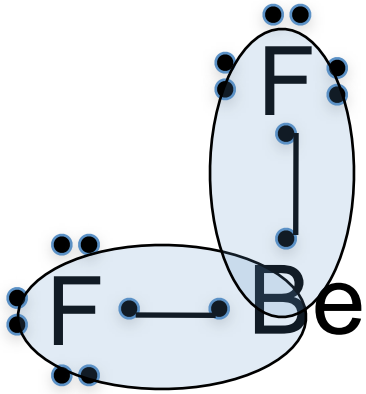
How do we know (predict) that ozone is bent?

Coulomb!

and Lewis

- Consider BeF_2



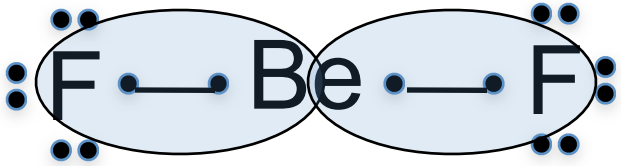


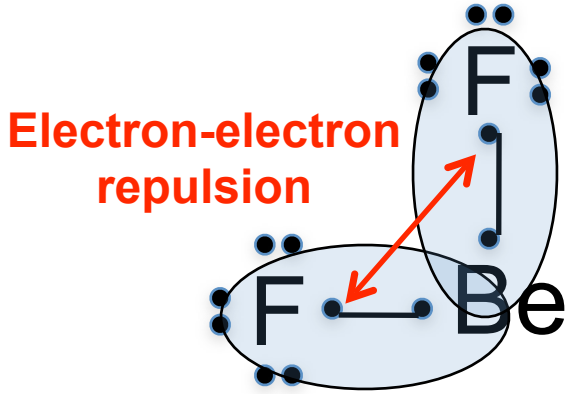
How do we know (predict) that ozone is bent?

Coulomb!

and Lewis

- Consider BeF_2



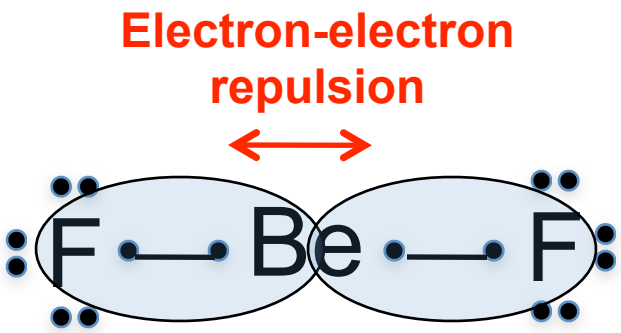


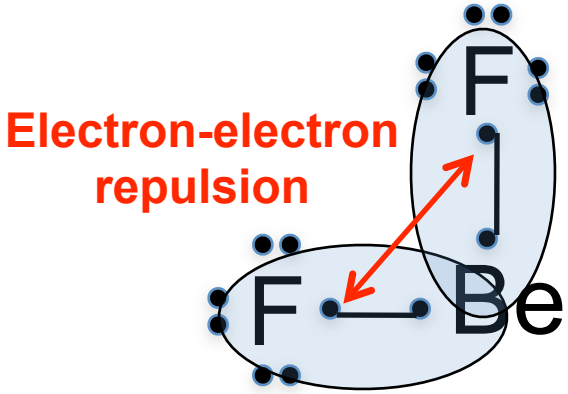
How do we know (predict) that ozone is bent?

Coulomb!

and Lewis

- Consider BeF_2





Valence Shell Electron Pair Repulsion

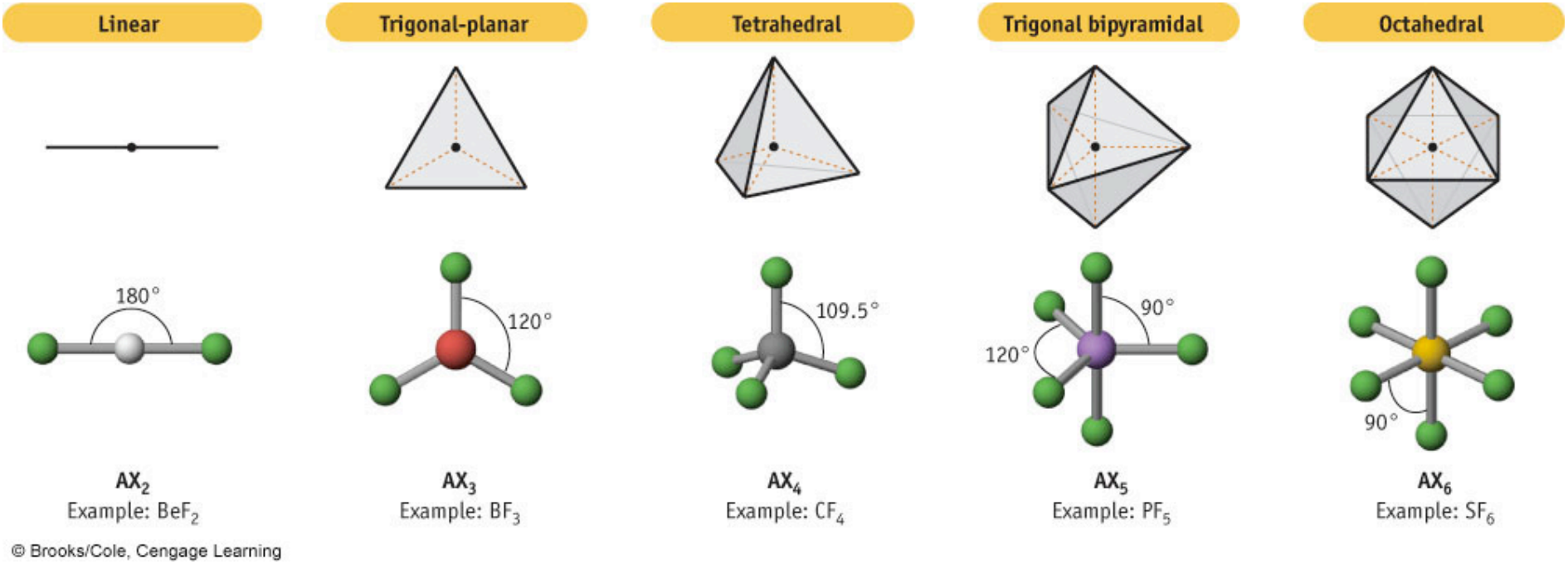


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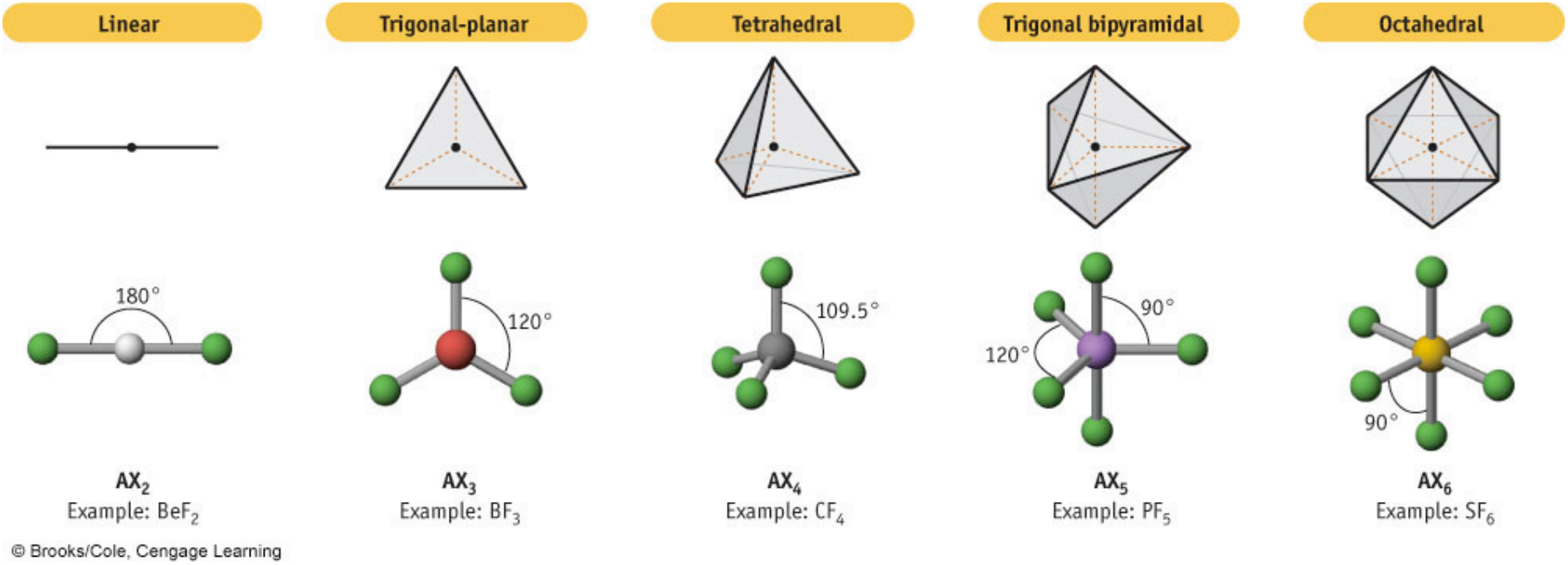
Fig. 8-5, p. 369

Valence Shell Electron Pair Repulsion



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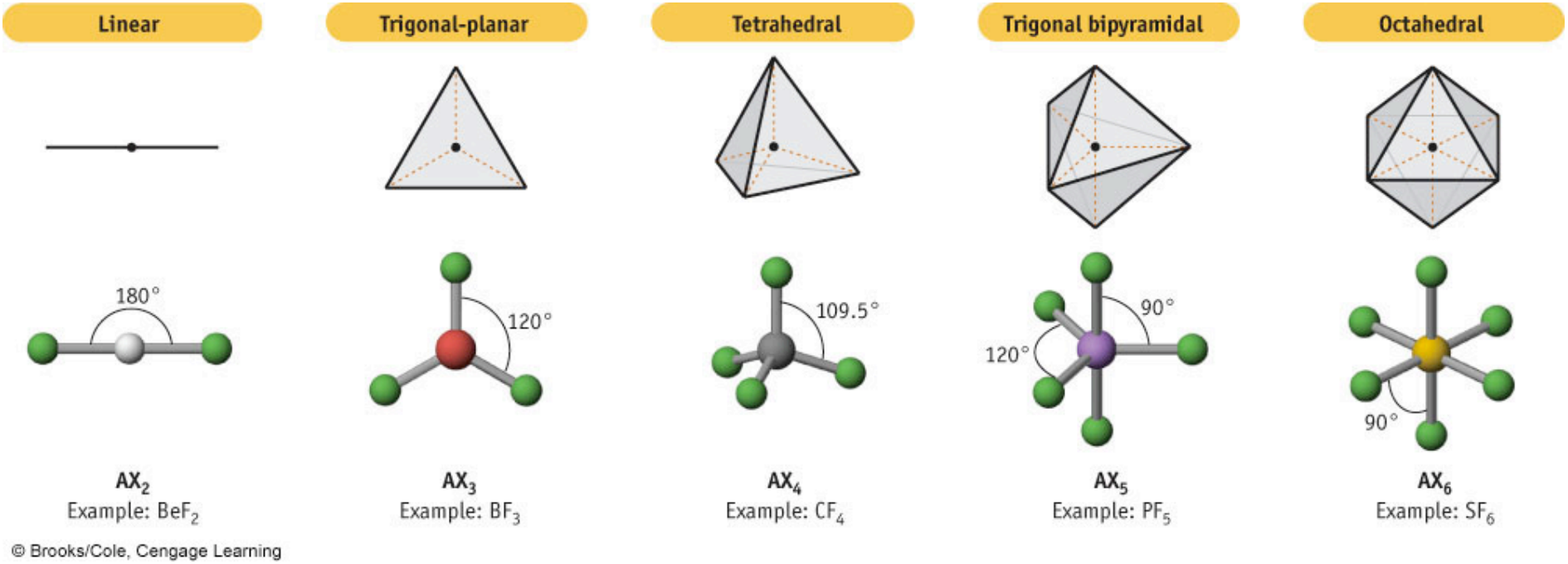
Valence Shell – bonds and lone pairs

Fig. 8-5, p. 369

Valence Shell Electron Pair Repulsion

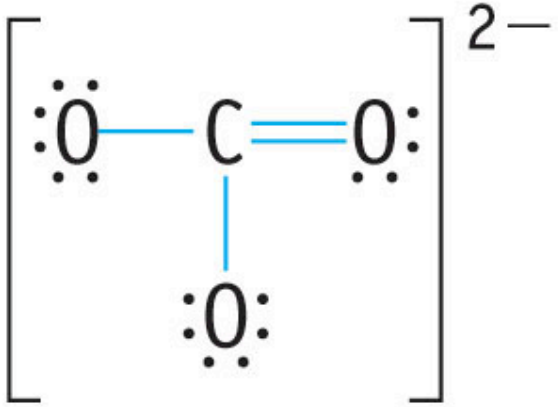


2 groups **3 groups** **4 groups** **5 groups** **6 groups**

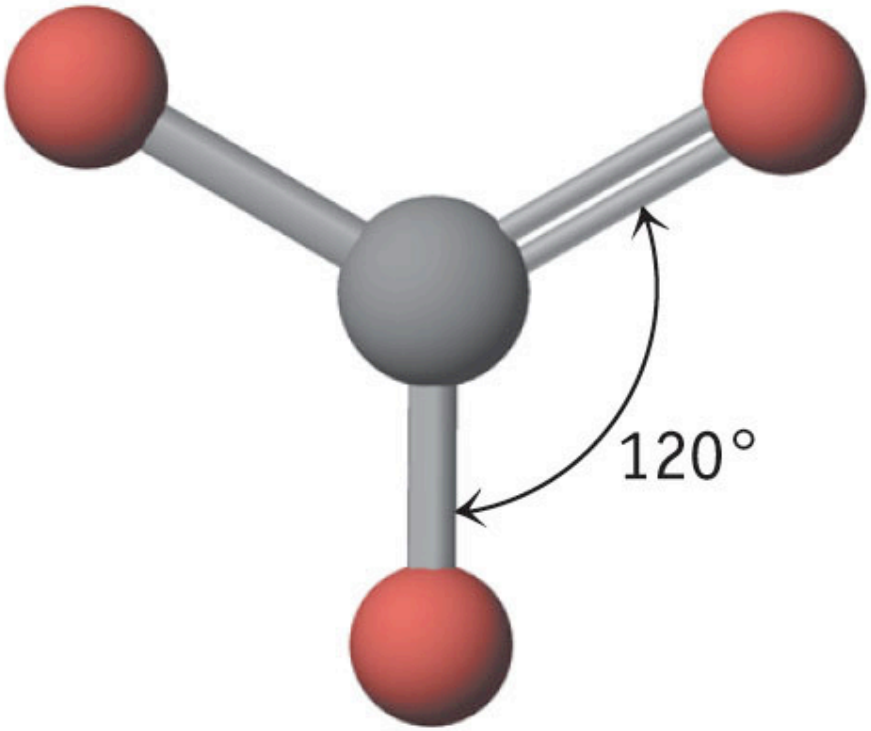
Valence Shell – bonds and lone pairs

Fig. 8-5, p. 369

3 “groups” of valence shell electrons



Lewis structure, one resonance structure, electron-pair geometry = trigonal planar



Molecular structure, trigonal planar

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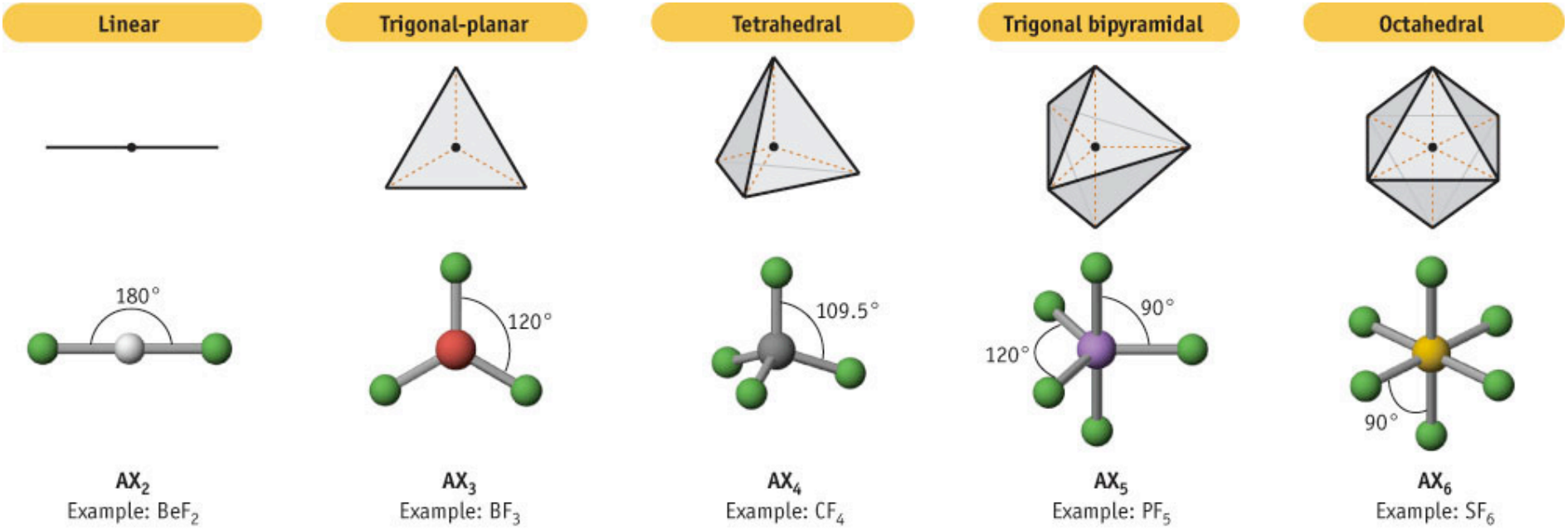

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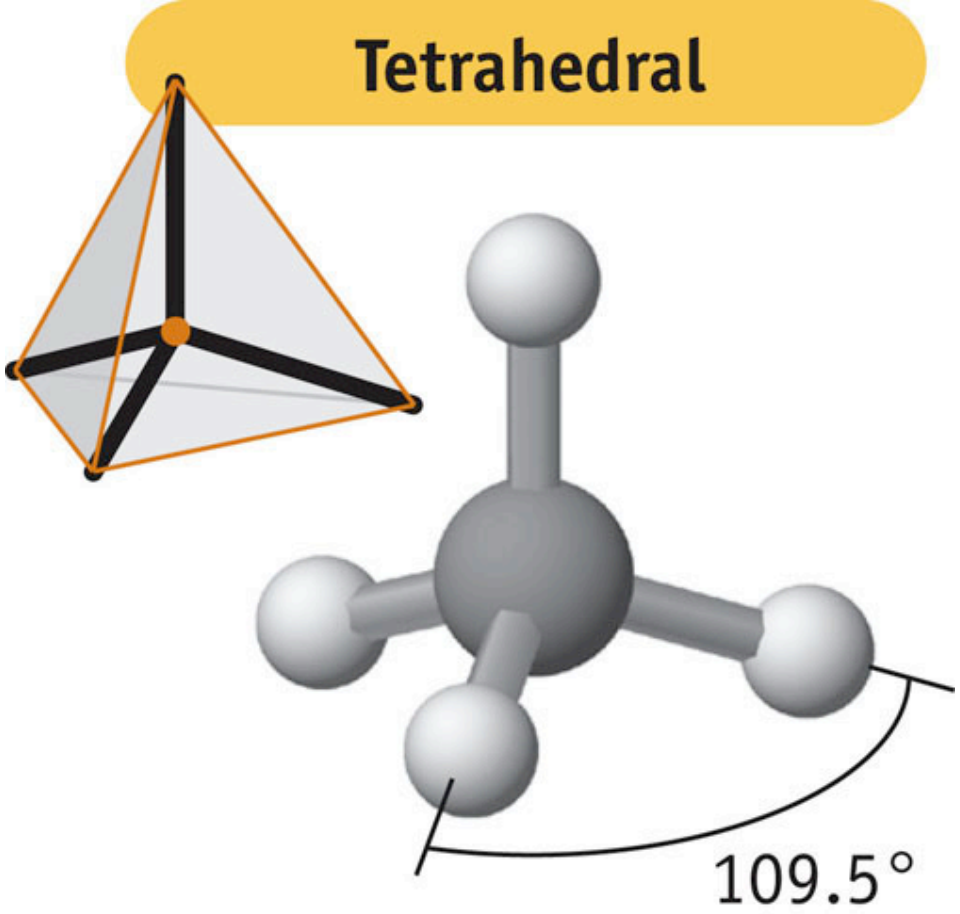
Fig. 8-5, p. 369



Methane, CH_4

4 bond pairs

no lone pairs

(a)

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Fig. 8-6, p. 371

Tetrahedral
Electron Pair
Geometry

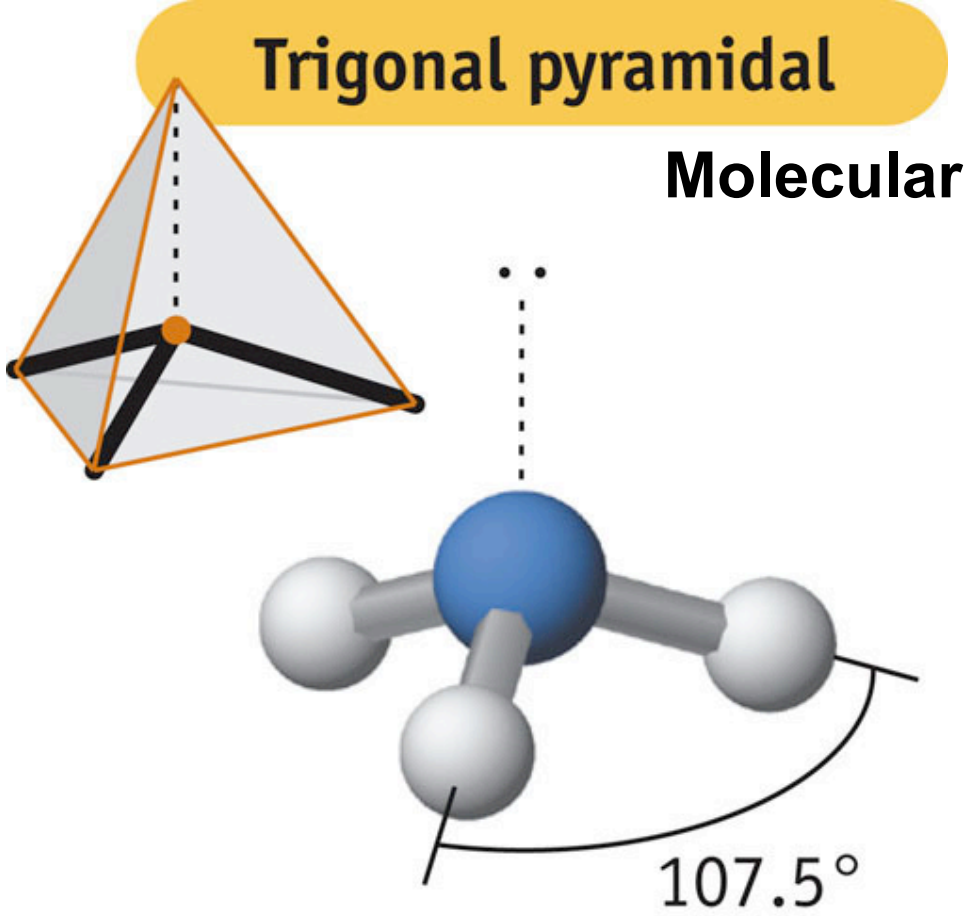

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Fig. 8-6, p. 371

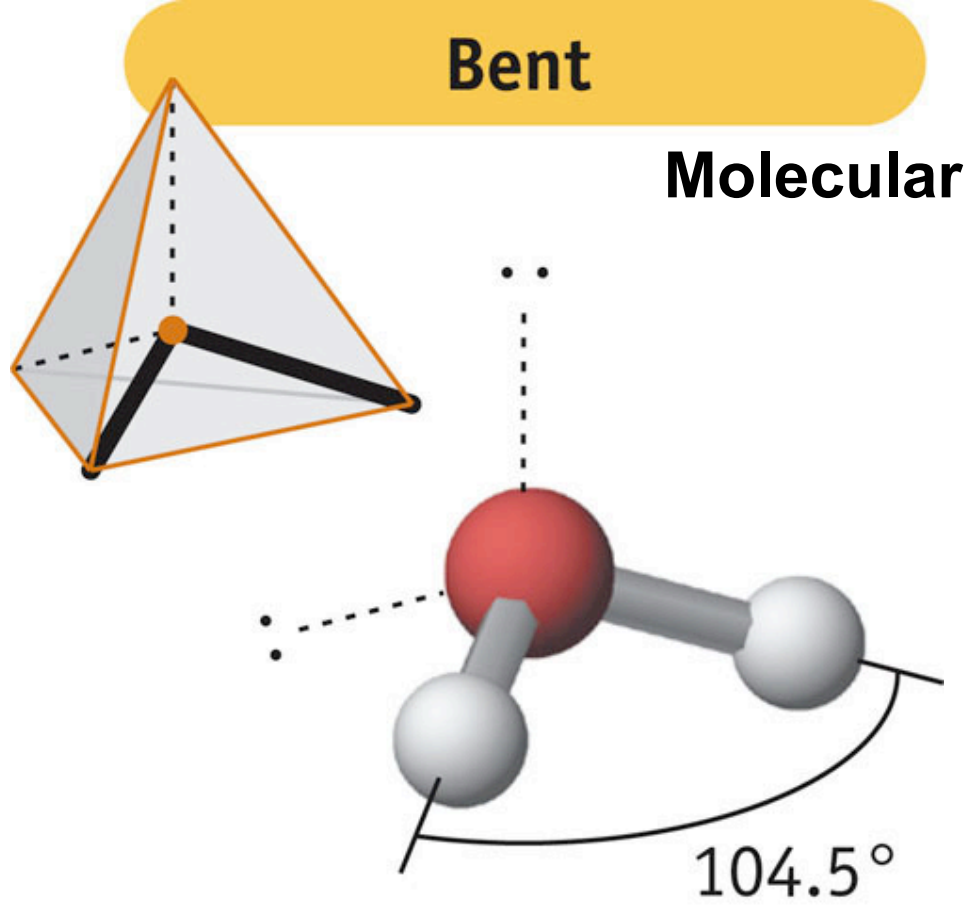

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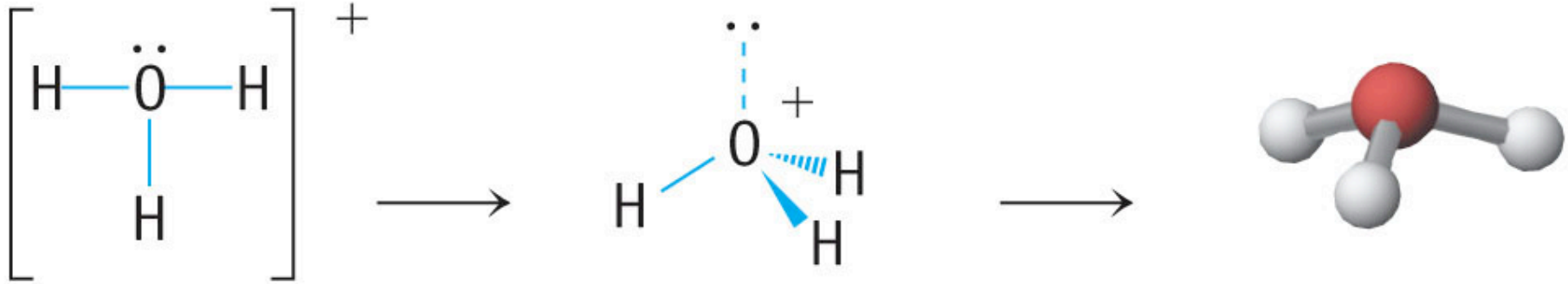
Fig. 8-6, p. 371

When asked for molecular geometry
Always determine electron pair geometry *first*



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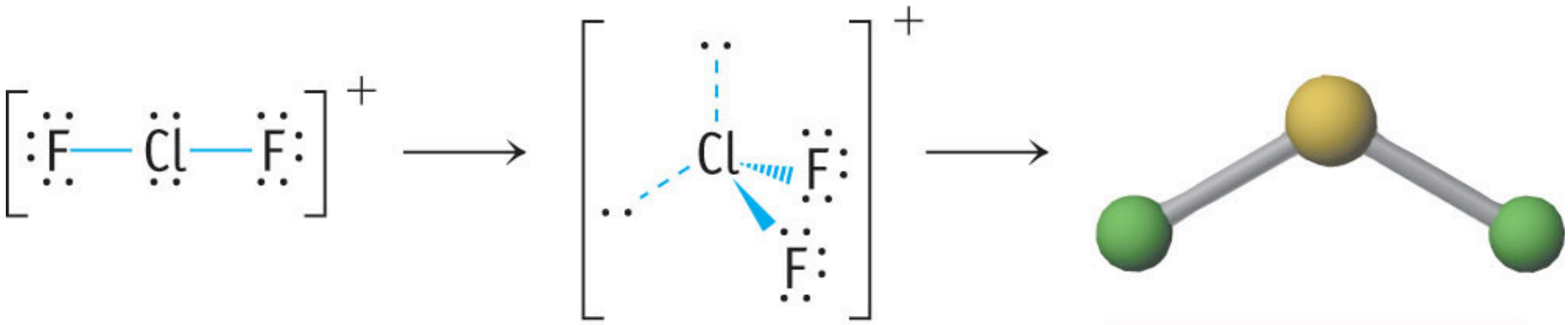
Example 8-7, p. 371

When asked for molecular geometry
Always determine electron pair geometry *first*



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Example 8-7, p. 371

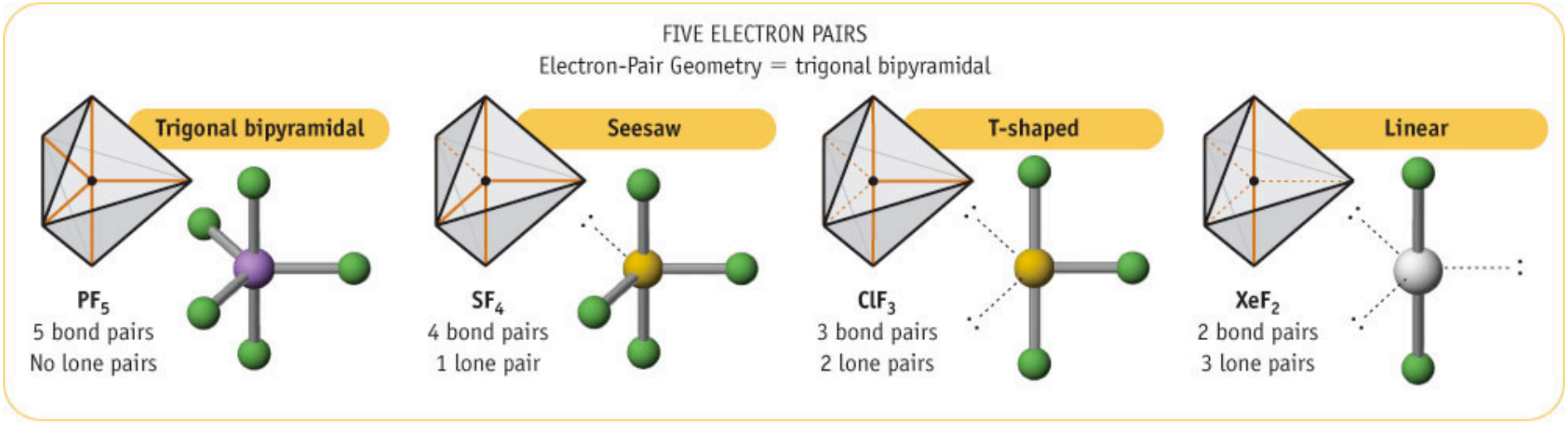

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Fig. 8-8, p. 372

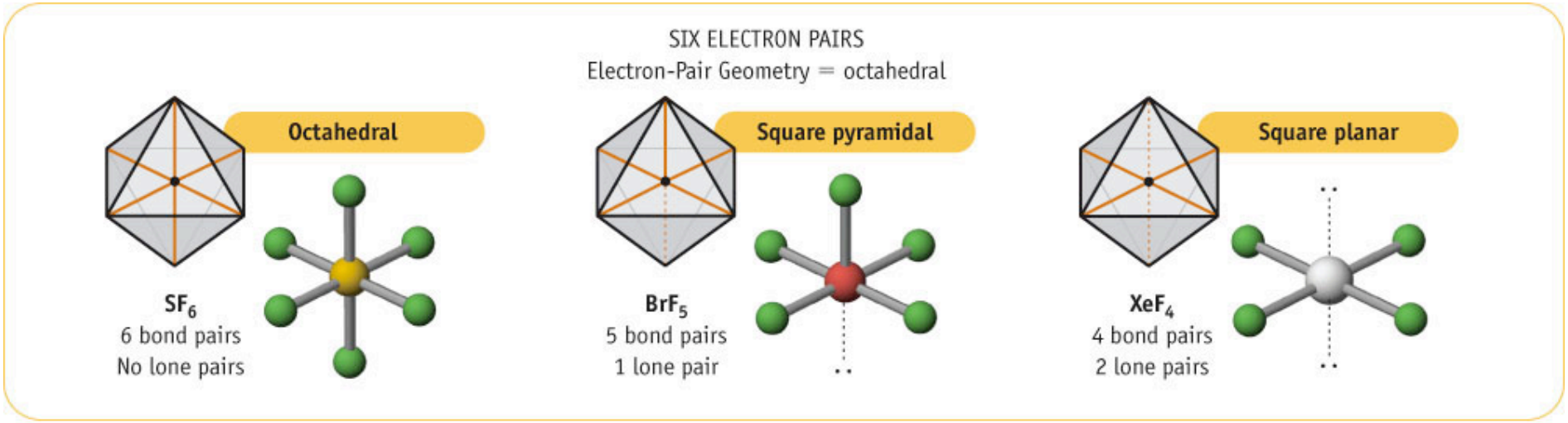

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Fig. 8-8, p. 372

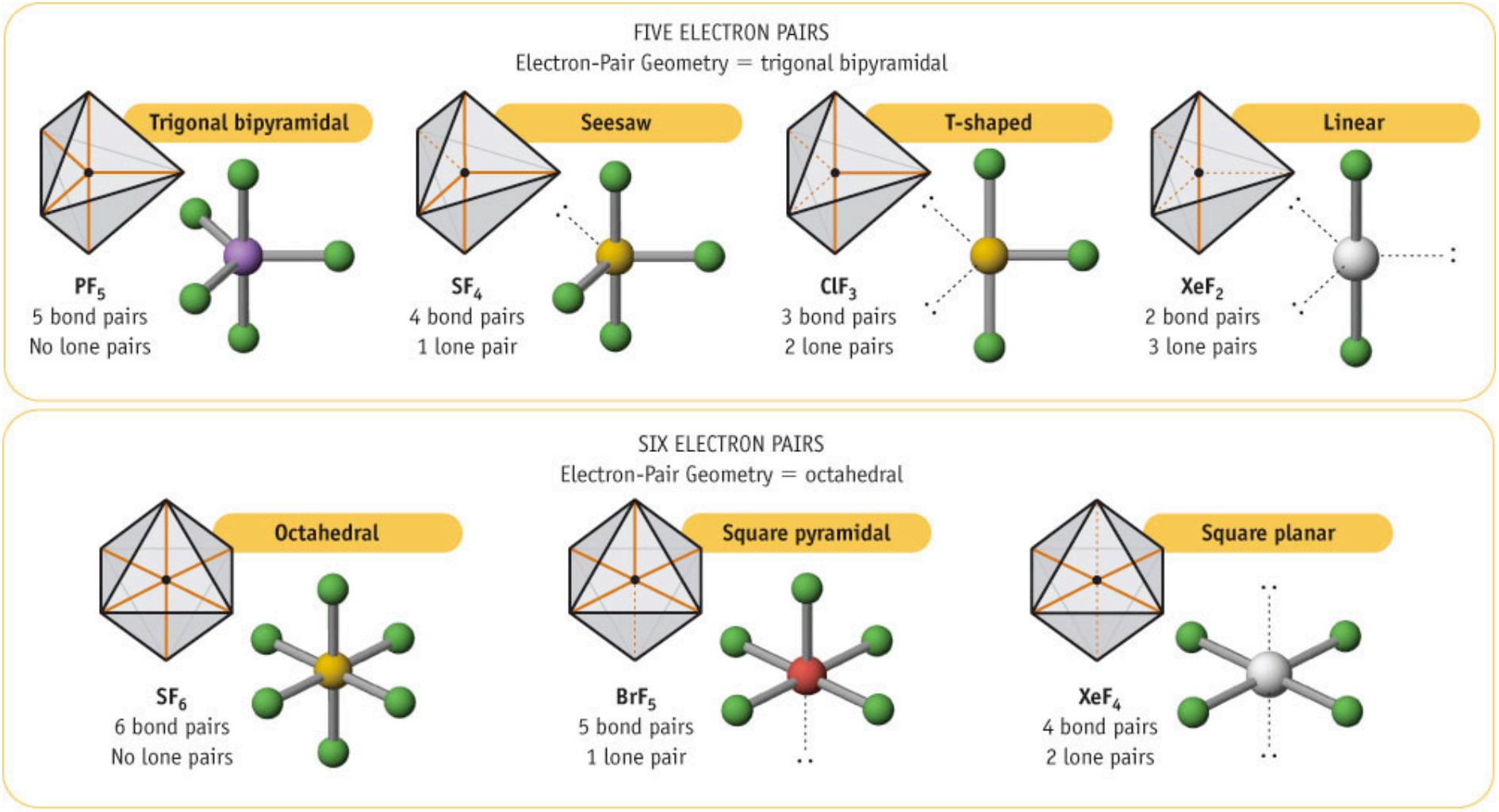

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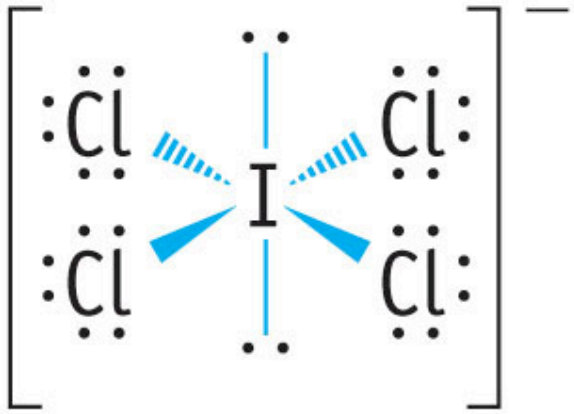
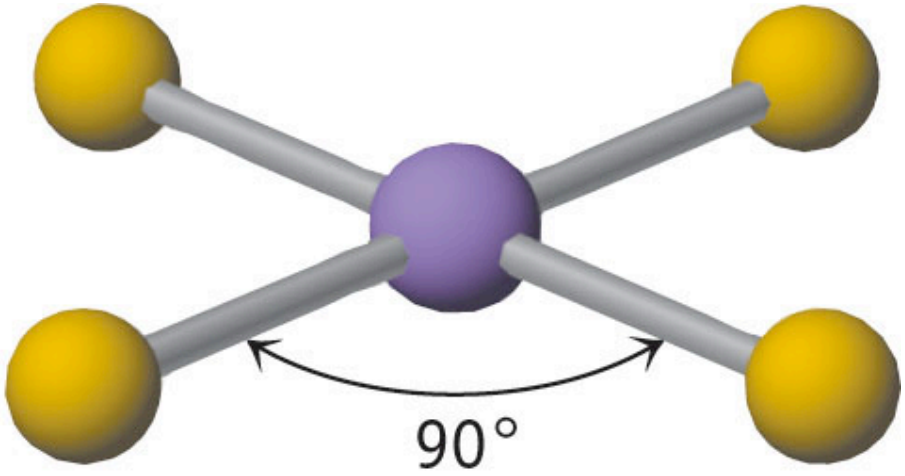
Fig. 8-8, p. 372

What is the molecular geometry of ICl_4^-?

1) Tetrahedral
2) Trigonal pyramidal
3) Square planar
4) Octahedral





Electron-pair geometry, octahedral

Molecular geometry, square planar

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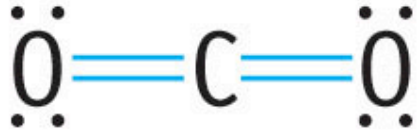
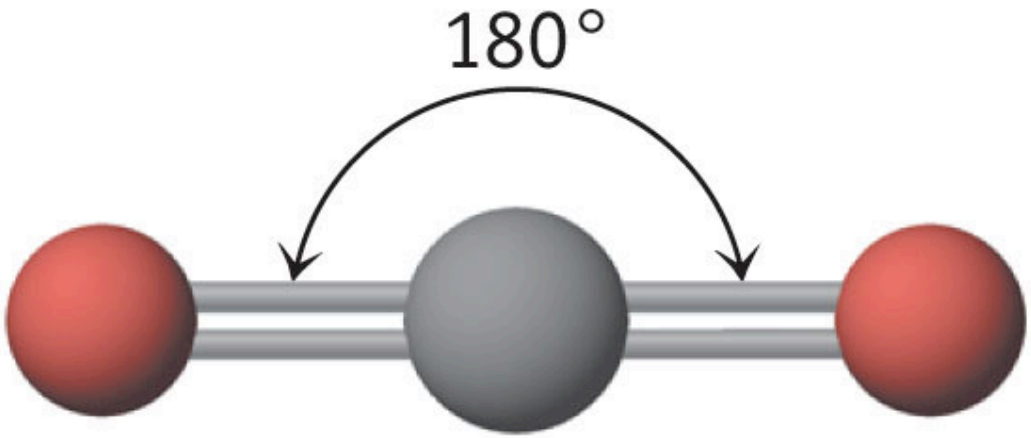
Example 8-8, p. 373

What is the molecular geometry of CO_2?

1) Bent
2) Linear
3) Tetrahedral



Lewis structure, electron-pair geometry = linear



Molecular structure, linear

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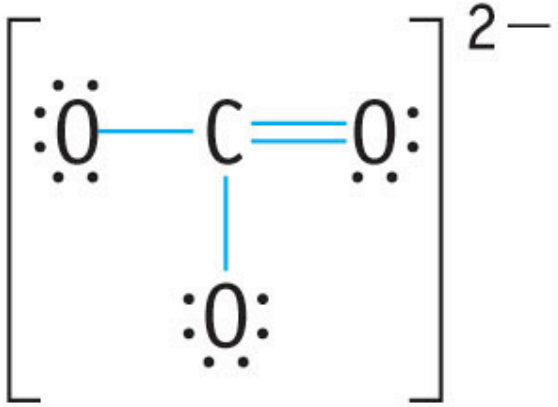
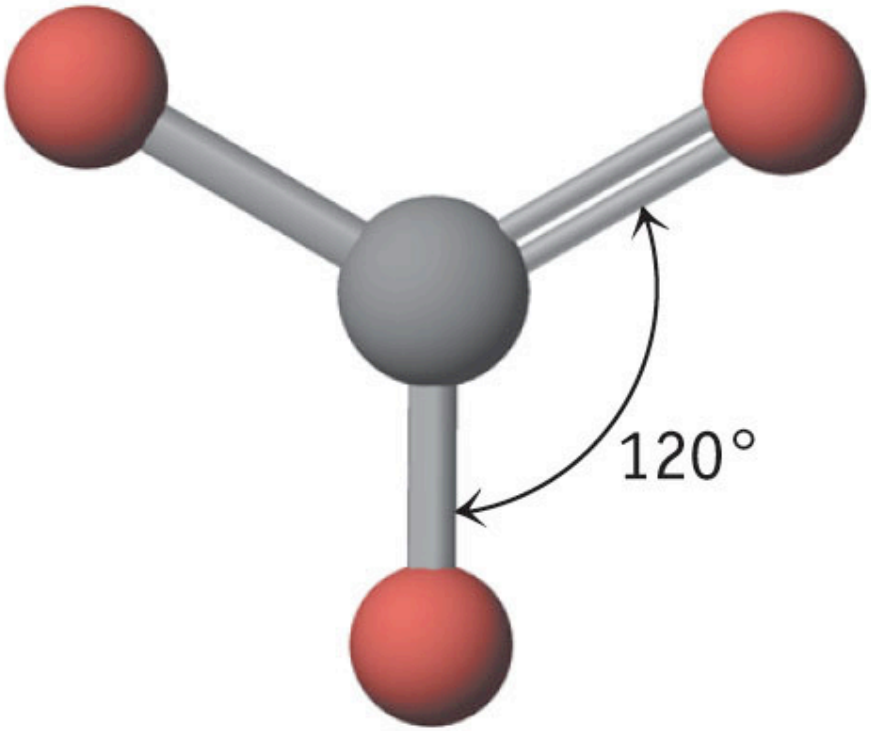


Lewis structure, one resonance structure, electron-pair geometry = trigonal planar



Molecular structure, trigonal planar

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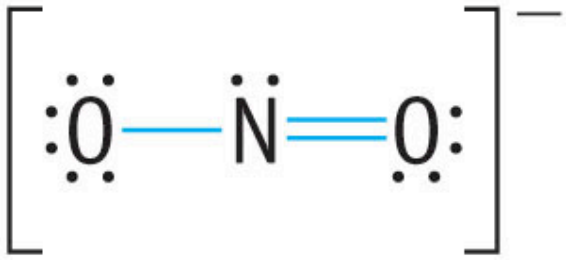
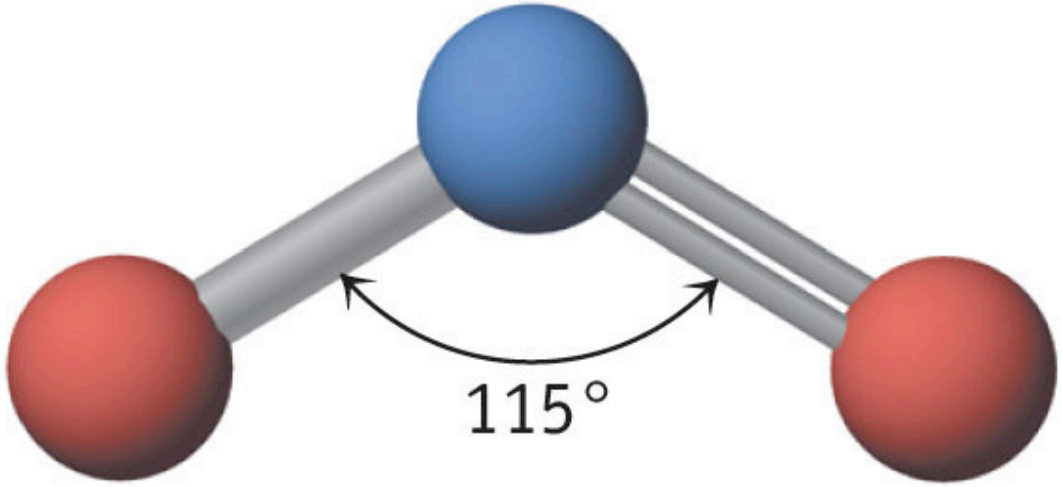


Lewis structure, one resonance structure, electron-pair geometry = trigonal planar



Molecular structure, angular or bent

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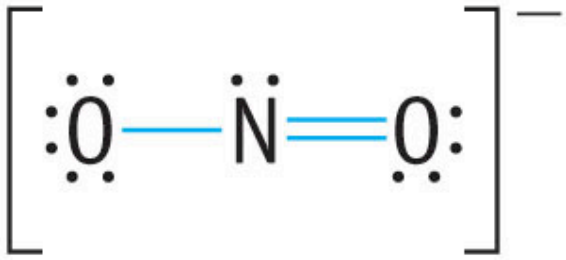

Lewis structure, one resonance structure, electron-pair geometry = trigonal planar

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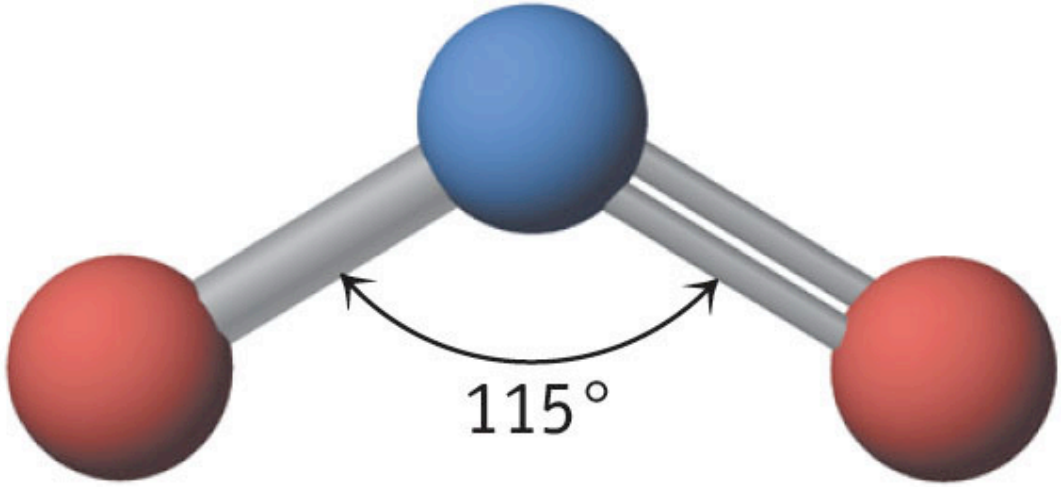
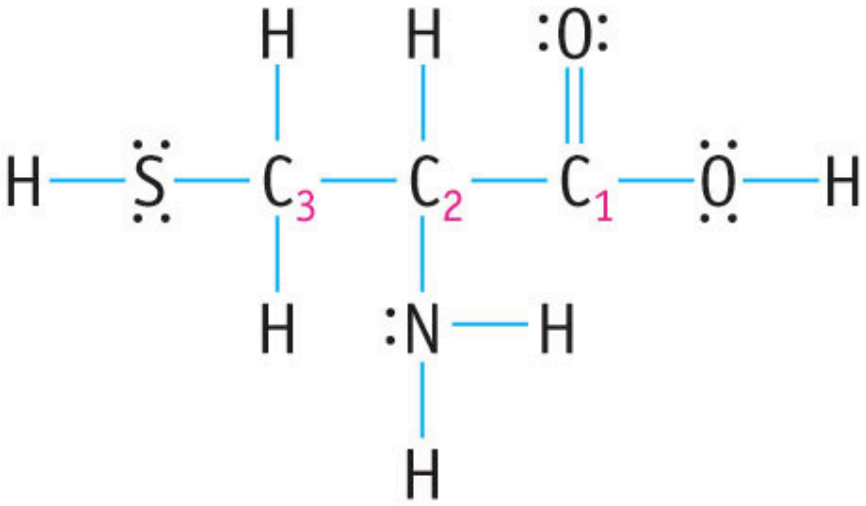


Molecular structure, angular or bent

Same for ozone O_3



Cysteine, $HSCH_2CH(NH_2)CO_2H$

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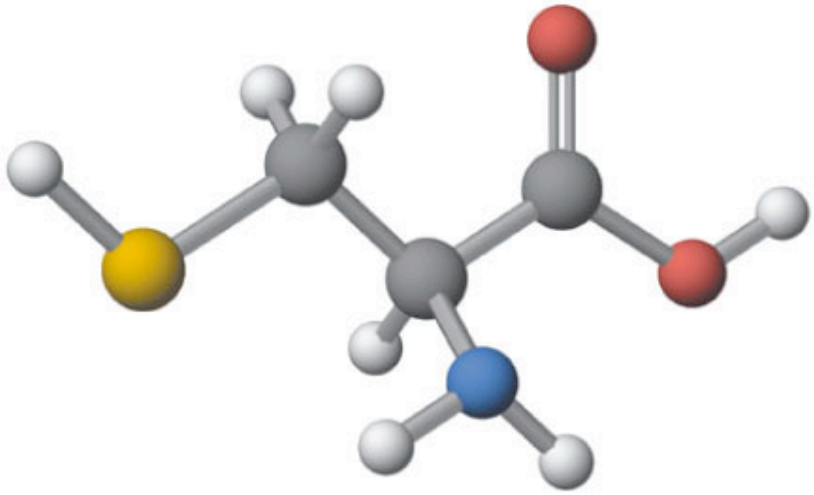

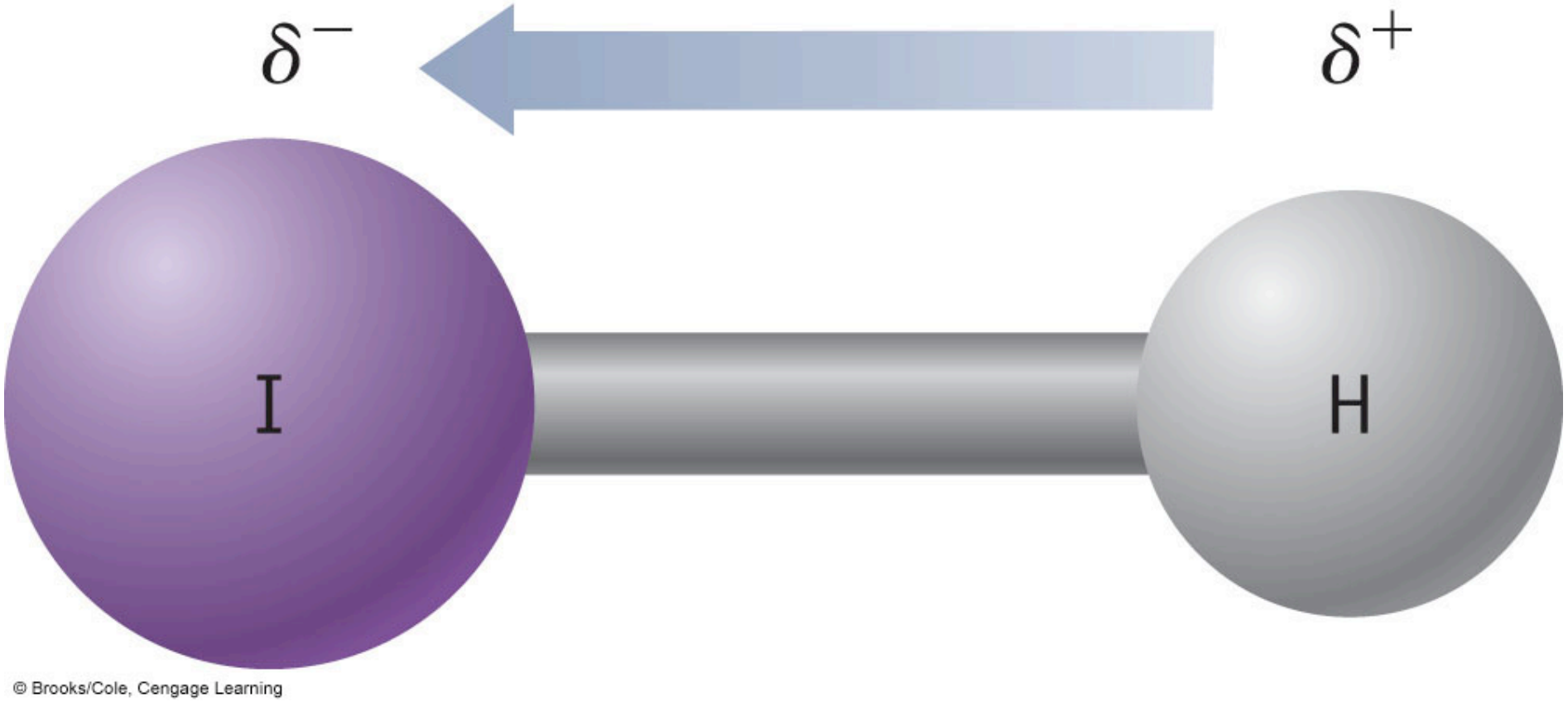

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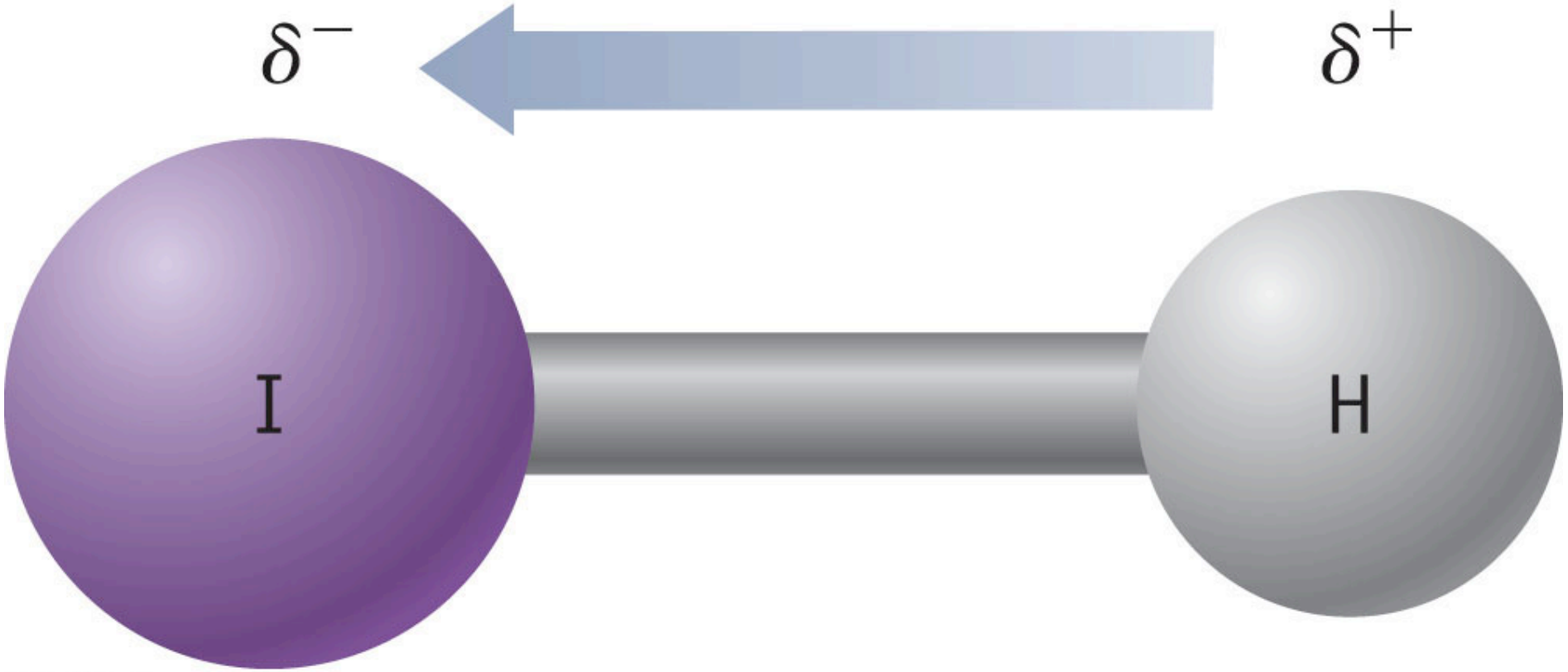
Unequal sharing of the bonding electron pair

Fig. 8-9, p. 375

Polarity



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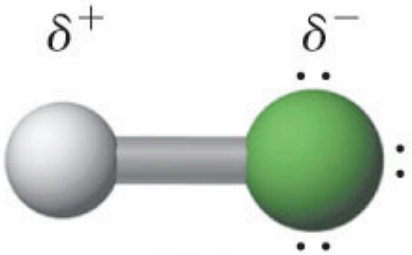
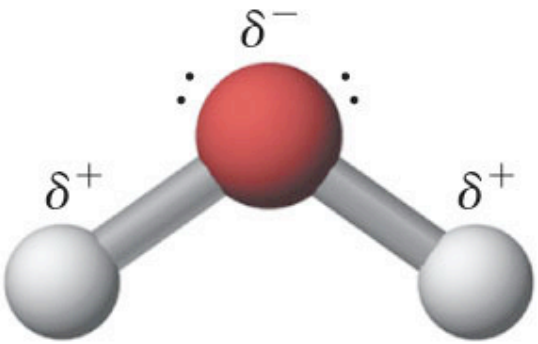
Unequal sharing of the bonding electron pair

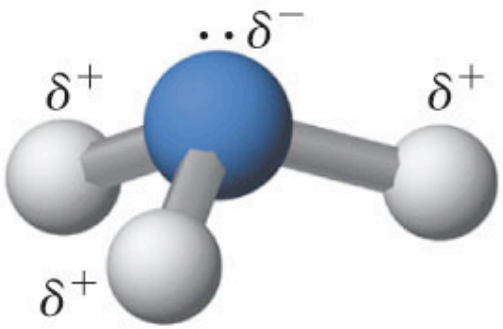
Fig. 8-9, p. 375



HF



H_2O



NH_3

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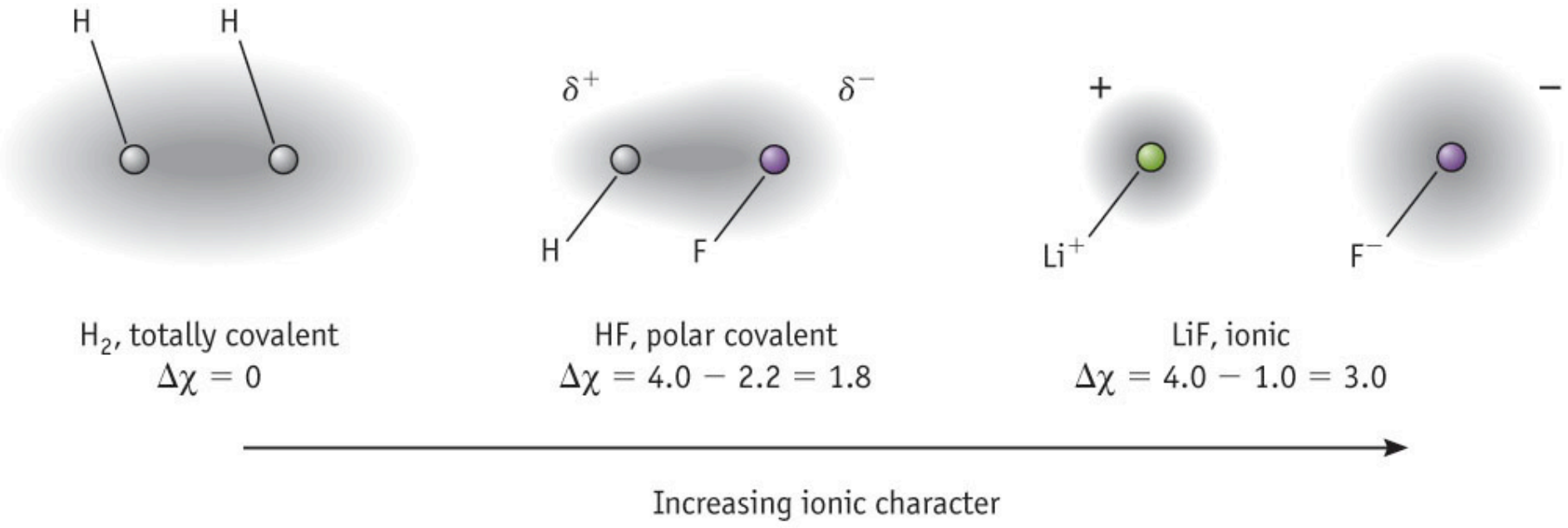

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Fig. 8-10, p. 376

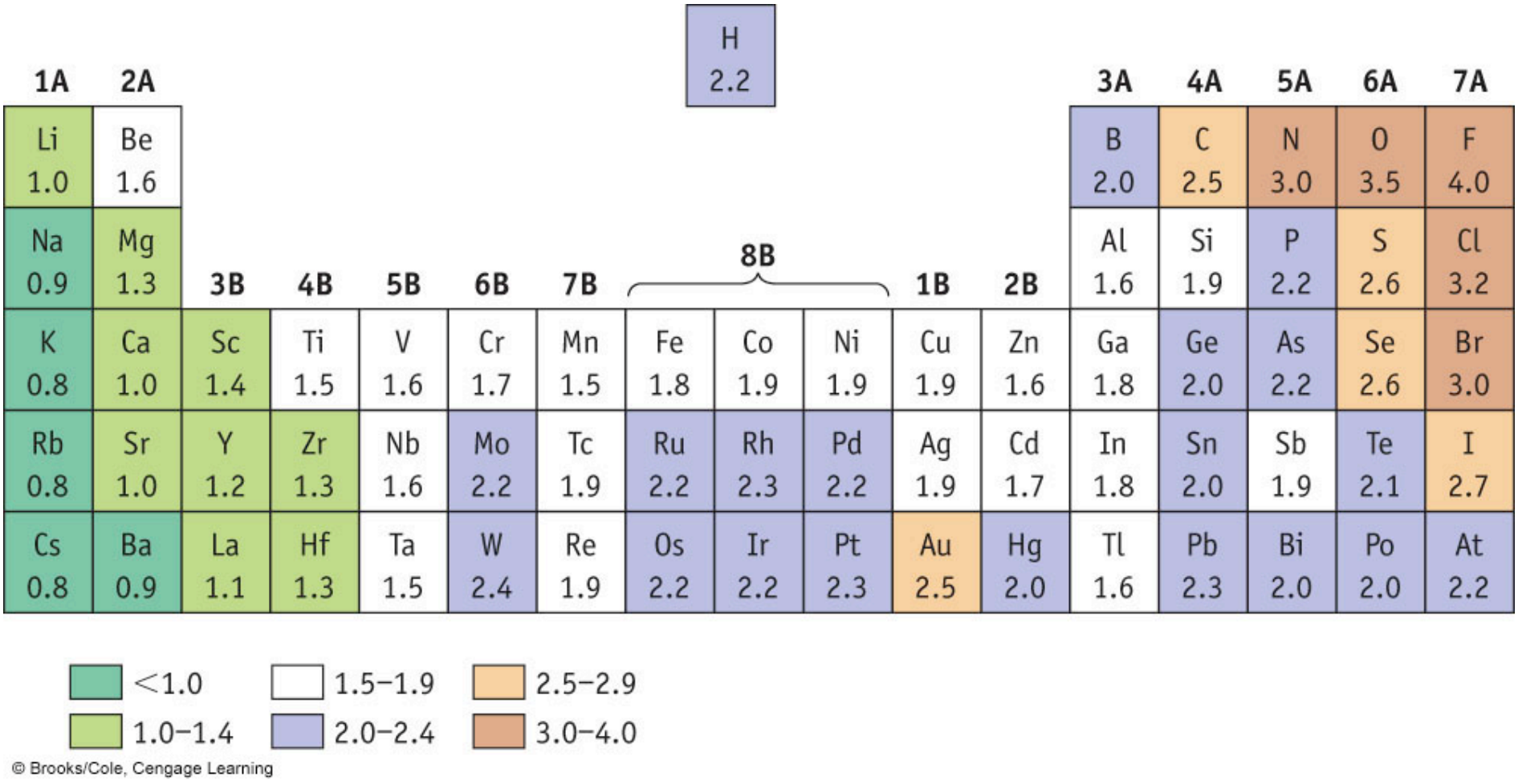

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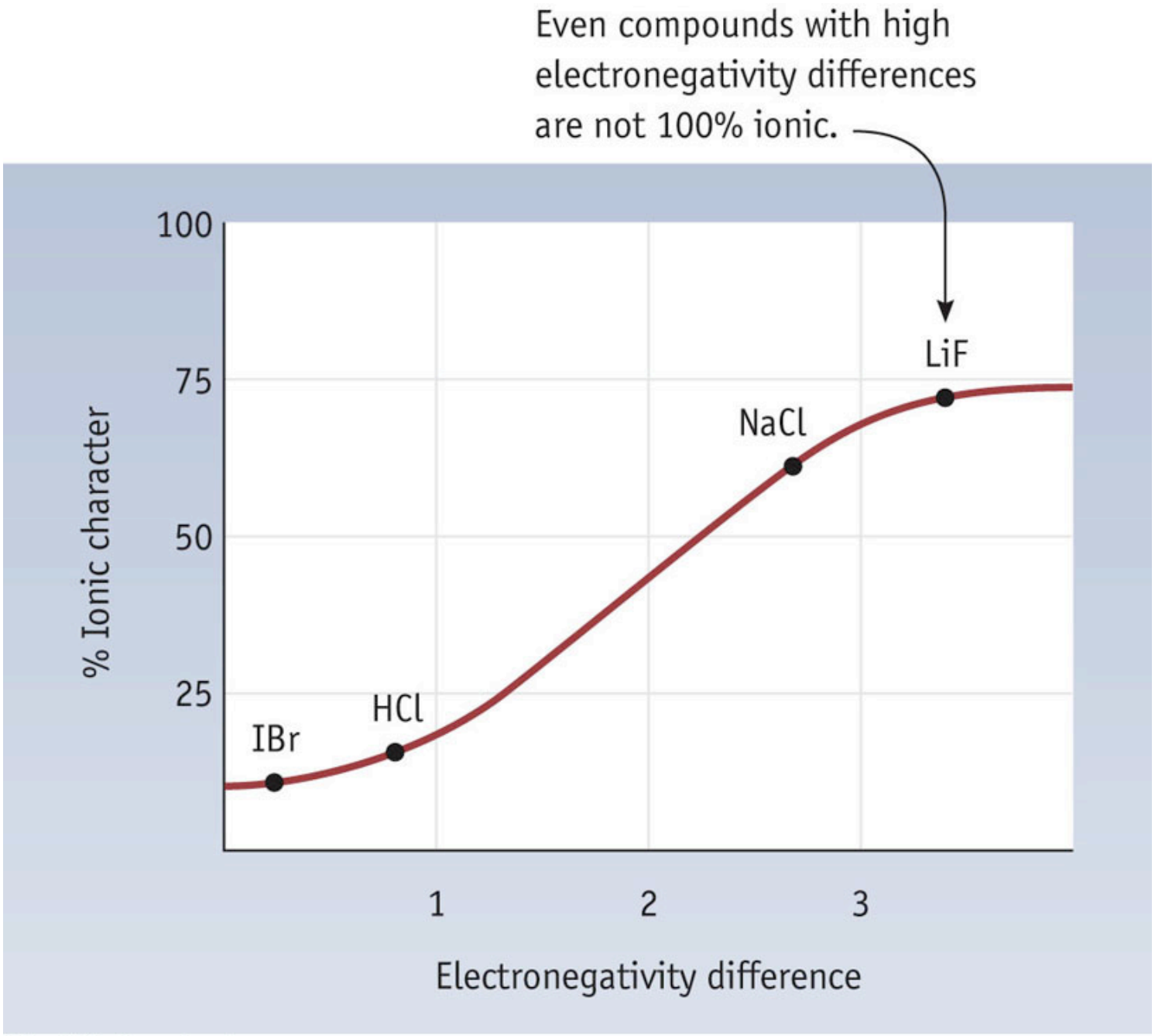
Fig. 8-11, p. 376



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A Closer Look, p. 378