

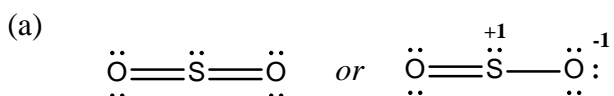
Answers to Exercise 8.5 Determining Geometry Using VSEPR

1. Where appropriate, both the formal-charge-minimized diagram and the obey-octet-rule diagram are shown in the answers below. Choose one convention and follow it. It is not acceptable to draw structures that are “half way between” the two conventions.

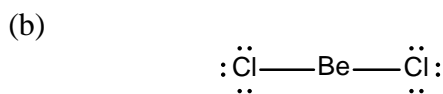
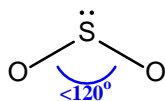
It is possible that an instructor may specify which convention you must follow on a test question. If a test question dictates a convention, you must follow that convention.

Where more than one degenerate resonance structure exists, only one is shown.

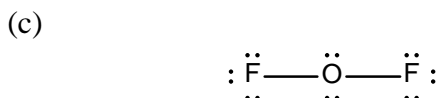
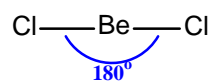
The molecular geometry diagrams do not show bond order (because double/triple bonds on wedges or dashes are impossible to draw) or lone pairs on terminal atoms (to reduce clutter). Lone pairs on the central atom are shown.



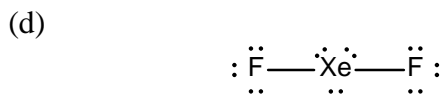
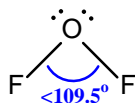
trigonal planar electron group geometry
bent molecular geometry



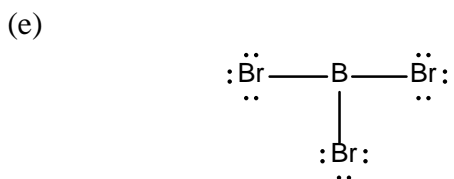
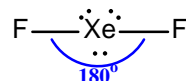
linear electron group geometry
linear molecular geometry



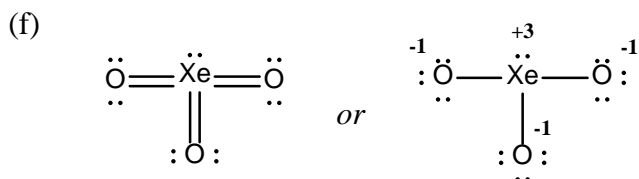
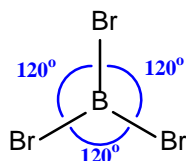
tetrahedral electron group geometry
bent molecular geometry



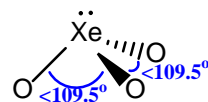
trigonal bipyramidal e⁻ group geometry
linear molecular geometry



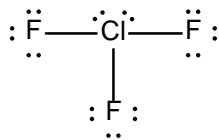
trigonal planar electron group geometry
trigonal planar molecular geometry



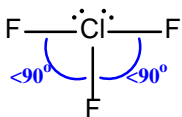
tetrahedral electron group geometry
trigonal pyramidal molecular geometry



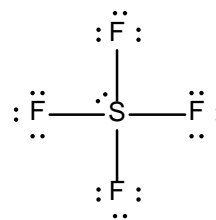
(g)



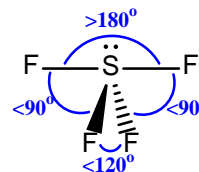
trigonal bipyramidal e⁻ group geometry
T-shaped molecular geometry



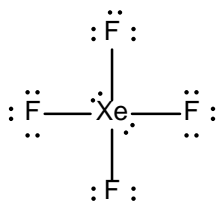
(h)



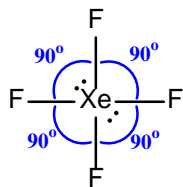
trigonal bipyramidal e⁻ group geometry
seesaw molecular geometry



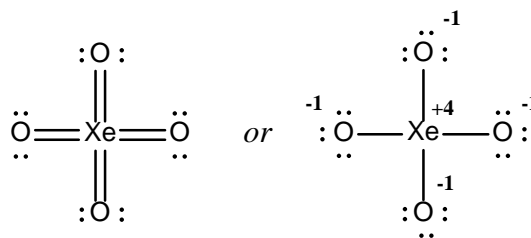
(i)



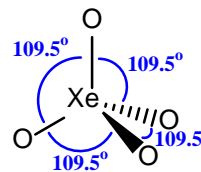
octahedral electron group geometry
square planar molecular geometry



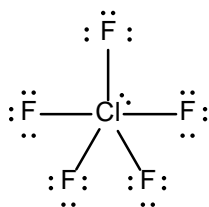
(j)



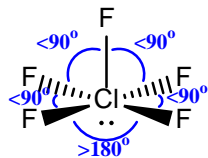
tetrahedral electron group geometry
tetrahedral molecular geometry



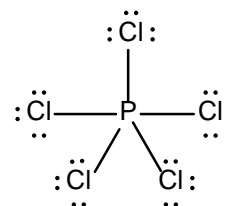
(k)



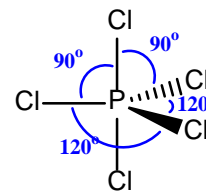
octahedral electron group geometry
square pyramidal molecular geometry



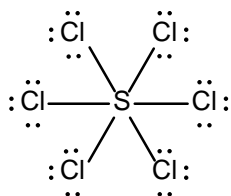
(l)



trigonal bipyramidal e⁻ group geometry
trigonal bipyramidal molecular geometry



(m)



octahedral electron group geometry
octahedral molecular geometry

