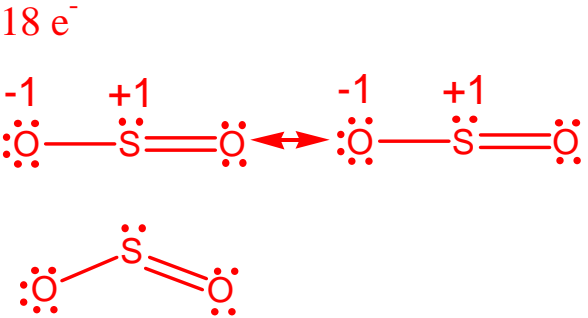
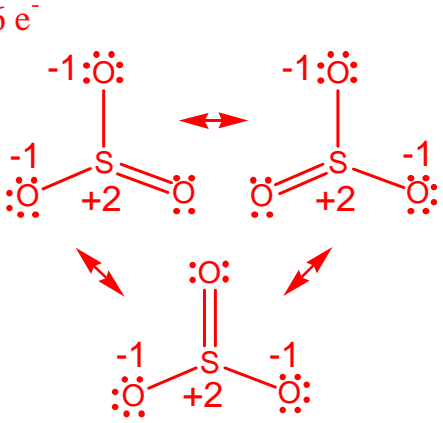
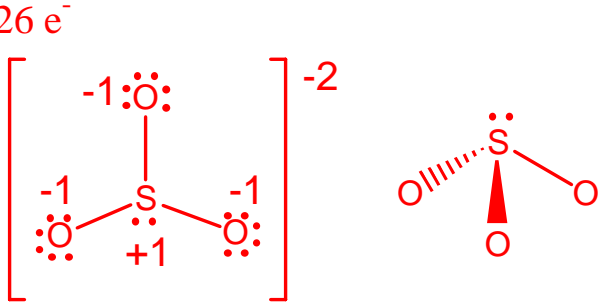
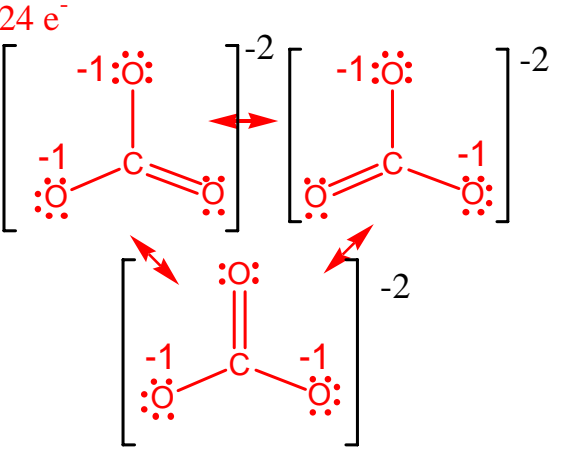
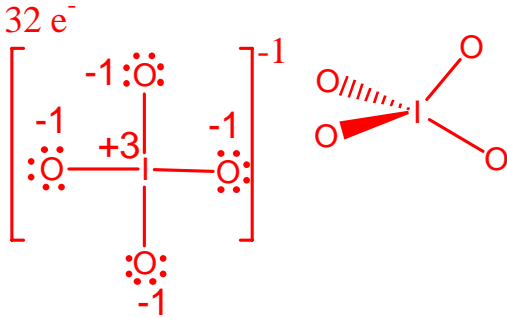
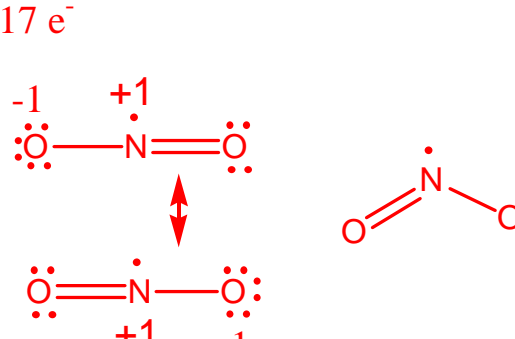
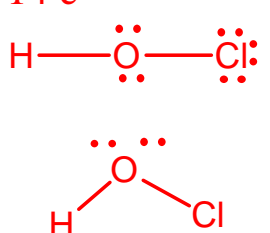
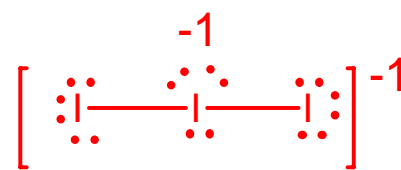
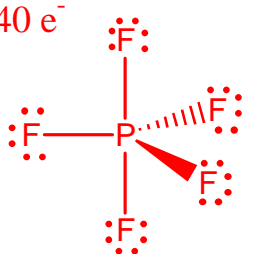
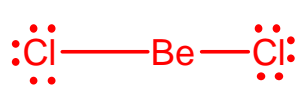
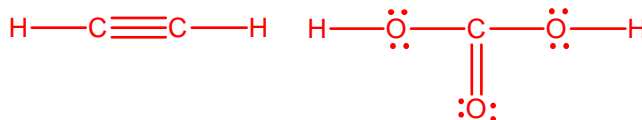
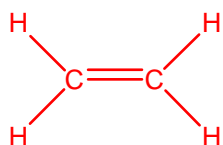
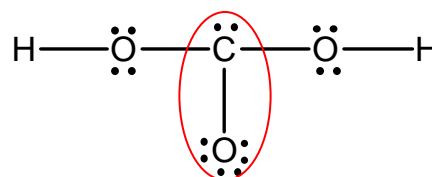
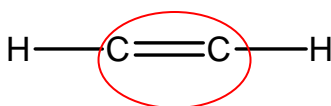
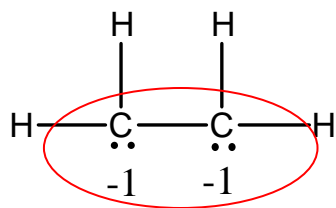


1) For each of the following: a) find the number of valence electrons; b) draw the Lewis Structure (include all resonance structures); c) calculate the formal charge for each atom in each molecule and add it to the Lewis Structure; d) fill in the remainder of the information requested in the table.

<p>a) SO_2</p> <p>18 e^-</p> 	<p>b) SO_3</p> <p>26 e^-</p> 
Name: sulfur dioxide	Name: sulfur trioxide
Electron pair geometry: trigonal planar	Electron pair geometry: trigonal planar
Molecular geometry: bent	Molecular geometry: trigonal planar
<p>c) SO_3^{2-}</p> <p>26 e^-</p> 	<p>d) CO_3^{2-}</p> <p>24 e^-</p> 
Name: sulfite	Name: carbonate
Electron pair geometry: tetrahedral	Electron pair geometry: trigonal planar
Molecular geometry: trigonal pyramidal	Molecular geometry: trigonal planar

<p>e) IO_4^-</p> <p>32 e^-</p> 	<p>f) NO_2</p> <p>17 e^-</p> 
Name: iodate	Name: nitrogen dioxide
Electron pair geometry: tetrahedral	Electron pair geometry: triangular planar
Molecular geometry: tetrahedral	Molecular geometry: bent
<p>g) HOCl</p> <p>14 e^-</p> 	<p>h) I_3^-</p> <p>22 e^-</p> 
Electron pair geometry: tetrahedral	Electron pair geometry: triangular bipyramidal
Molecular geometry: bent	Molecular geometry: linear
<p>i) PF_5</p> <p>40 e^-</p> 	<p>j) BeCl_2</p> <p>16 e^-</p> 
Electron pair geometry: triangular bipyramidal	Electron pair geometry: linear
Molecular geometry: triangular bipyramidal	Molecular geometry: linear

2) Find the error in each of the following Lewis structures. Circle the error and redraw the structure so that it is correct.



3) Identify two elements that can represent "X" if X has one lone pair in the molecule XBr_4 .

Group 6: S, Se

Moore, Stanitski, and Jurs: Chapter 8: 35 (explain why), 39, 64, 79, 85, 91, 95

Chapter 9: 22, 26

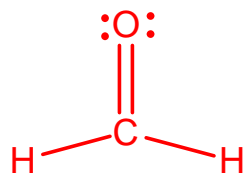
35 a) B-Cl; Boron has a smaller atomic radius than gallium

b) C-O; Carbon has a smaller atomic radius than tin

c) P-O; Oxygen has a smaller atomic radius than sulfur

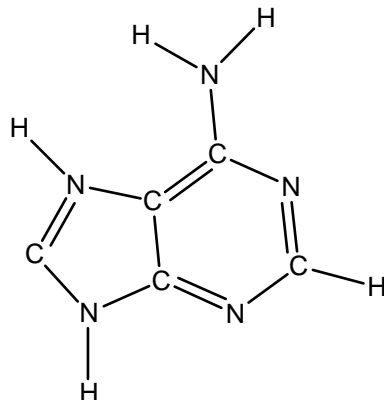
d) C=O Oxygen has a smaller atomic radius than carbon

39)



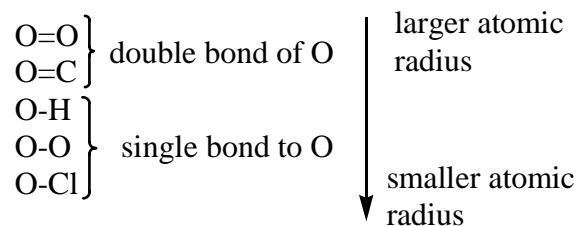
$C\equiv O$ of carbon monoxide takes more energy to break than the $C=O$ of formaldehyde

64)



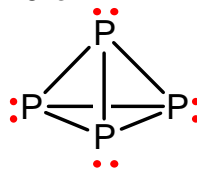
79) $\text{Br-Br} = 228 \text{ pm} / 2 = 114 \text{ pm}$ radius Br
 $\text{C-Br} = 191 \text{ pm} - 114 \text{ pm} = 77 \text{ pm}$ C
 $\text{C-C} = 77 \text{ pm} + 77 \text{ pm} = 154 \text{ pm}$ radii or atoms are approximately the same in similar molecules

85)



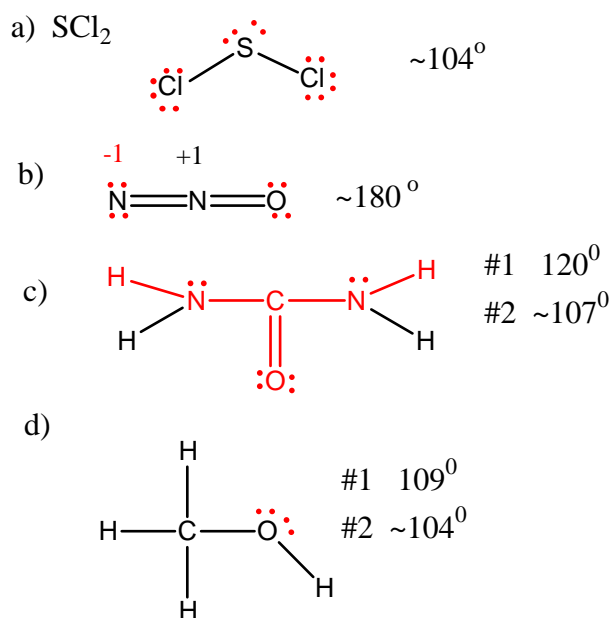
91) changed the connectivity of the atoms

95)

20 e⁻

Chapter 9

22)



26)

 ClF_2^+ 20e⁻

tetrahedral

 $< 109.5^\circ$ ClF_2^- 22e⁻

triangular bipyramidal

 180°