47. Write the Lewis structure for each molecule.
(a) PH_3
(b) SCl_2
(c) F_2
(d) HI

48. Write the Lewis structure for each molecule.
(a) CH_4
(b) NF_3
(c) OF_2
(d) H_2O

50. Write the Lewis structure for each molecule.
(a) N_2O (oxygen is terminal)
(b) SiH_4
(c) CI_4
(d) Cl_2CO (carbon is central)

51. Write the Lewis structure for each molecule.
(a) C_2H_2
(b) C_2H_4
(c) N_2H_2
(d) N_2H_4

52. Write the Lewis structure for each molecule.
(a) H_2CO (carbon is central)
(b) H_3COH (carbon and oxygen are both central)
(c) H_3COCH_3 (oxygen is between the two carbon atoms)
(d) H_2O_2

53. Determine what is wrong with each Lewis structure and write the correct structure.
(a) :N=N:

(b) :S—Si—S:

(c) H—H—O:

(d) :I—N—I:
        |
        :I:

57. Write the Lewis structure for each ion. Include resonance structures if necessary.
(a) PO_4^{3-}
(b) CN^-
(c) NO_2^-
(d) SO_3^{2-}

61. Determine the number of electron groups around the central atom for each molecule.
(a) OF_2
(b) NF_3
(c) CS_2
(d) CH_4

62. Determine the number of electron groups around the central atom for each molecule.
(a) CH_2Cl_2
(b) SBr_2
(c) H_2S
(d) PCl_3

65. Determine the molecular geometry of each molecule.
(a) CBr_4
(b) H_2CO
(c) CS_2
(d) BH_3

67. Determine the bond angles for each molecule in Problem 65.

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69. Determine the electron and molecular geometries of each molecule.
(a) N_2O (oxygen is terminal)
(b) SO_2
(c) H_2S
(d) PF_3

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71. Determine the bond angles for each molecule in Problem 69.

75. Determine the molecular geometry of each polyatomic ion.
(a) CO_3^{2-}
(b) ClO_2^-
(c) NO_3^-
(d) NH_4^+

76. Determine the molecular geometry of each polyatomic ion.
(a) ClO_4^-
(b) BrO_2^-
(c) NO_2^-
(d) SO_4^{2-}

79. List these elements in order of decreasing electronegativity: Rb, Si, Cl, Ca, Ga.

85. Classify each diatomic molecule as polar or nonpolar.
(a) CO
(b) O_2
(c) F_2
(d) HBr

89. Classify each molecule as polar or nonpolar.
(a) CS_2
(b) SO_2
(c) CH_4
(d) CH_3Cl

91. Classify each molecule as polar or nonpolar.
(a) BH_3
(b) $CHCl_3$
(c) C_2H_2
(d) NH_3