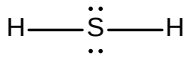
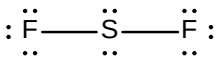
Answers to Exercise 11.1
Assigning Oxidation States

While there are multiple acceptable resonance structures for several of the molecules/ions, you get the same oxidation states regardless of which of the resonance structures you have drawn.

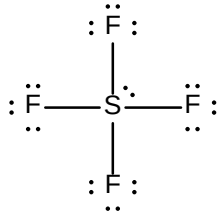
1.

(a) 

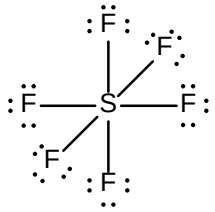
oxidation state of H is +1
oxidation state of S is -2

(b) 

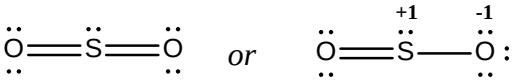
oxidation state of F is -1
oxidation state of S is +2

(c) 

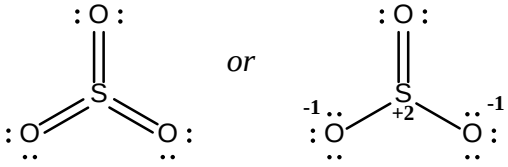
oxidation state of F is -1
oxidation state of S is +4

(d) 

oxidation state of F is -1
oxidation state of S is +6

(e) 

oxidation state of O is -2
oxidation state of S is +4

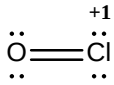
(f) 

oxidation state of O is -2
oxidation state of S is +6

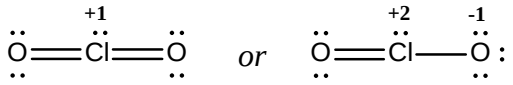
2. The sulfur atom in H_2S has the most electron density. It is the only one with a negative oxidation state and therefore the only one with a partial negative charge.

The sulfur atoms in SF_6 and SO_3 have the least electron density. They have the most positive oxidation state and therefore the most positive charge (though not nearly as high as +6!).

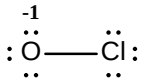
3.

(a) 

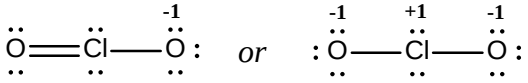
oxidation state of Cl is +3
oxidation state of O is -2

(b) 

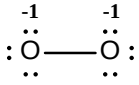
oxidation state of Cl is +5
oxidation state of O is -2

(c) 

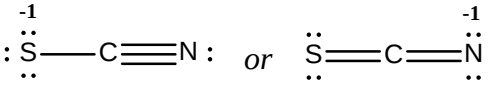
oxidation state of Cl is +1
oxidation state of O is -2

(d) 

oxidation state of Cl is +3
oxidation state of O is -2

(e) 

oxidation state of O is -1

(f) 

oxidation state of S is -2
oxidation state of C is +4
oxidation state of N is -3