What Are Oxidation Numbers?

Worksheet

Oxidation numbers are numbers assigned to elements in compounds showing how many electrons are lost or gained. Key rules: uncombined elements = 0, oxygen = 2 (usually), hydrogen = +1 (in compounds), alkali metals = +1, alkaline earth metals = +2, and the sum in a neutral compound = 0.

Questions

1. Oxidation number of N in NO?

A) +2
B) +4
C) +3
D) +5

2. Oxidation number of S in SO?

A) +6
B) +4
C) +2
D) 2

3. Oxidation number of Cr in KCrO?

A) +3
B) +4
C) +6
D) +7

4. Oxidation number of H in LiH?

A) +1
B) 1
C) 0
D) +2

5. Assign oxidation numbers in HO.

6. Assign oxidation numbers in KMnO.

7. Assign oxidation numbers in the ion NO.

8. Define: Oxidation number for uncombined element?

9. Define: Oxidation number of hydrogen in compounds?

10. Define: Oxidation number of oxygen?

Answer Key

1. C) +3 - O = 2. N + 2(2) = 0 N = +4.
2. A) +6 - O = 2. S + 4(2) = 2 S = +6.
3. C) +6 - K = +1, O = 2. 2(+1) + 2(Cr) + 7(2) = 0 Cr = +6.
4. B) 1 - LiH is a metal hydride. In metal hydrides, H = 1.
5. H is +1 (hydrogen in compound). O is 2 (oxygen in compound). Check: 2(+1) + (2) = 0 (neutral compound).
6. K is +1 (alkali metal). O is 2 (oxygen in compound). Mn: +1 + Mn + 4(2) = 0 Mn = +7.
7. O is 2 (oxygen in compound). Sum = charge: N + 3(2) = 1 N = +5.
8. Always 0. Example: O, N, Fe.
9. +1, except in metal hydrides (e.g., NaH where H = 1).
10. Usually 2, except in peroxides (1) and OF (+2).