

- The purpose of assigning oxidation numbers is to keep track of the loss and gain of _____ in redox reactions. Fill in these blanks about oxidation numbers:
 - The oxidation number of an element in its **atomic** state is _____.
 - The oxidation number of an **ion** is its _____.
 - In a compound, the total of all the oxidation numbers of the elements is _____.
 - In a polyatomic ion, the total of all the oxidation numbers of the elements is _____.
 - In a compound, the oxidation number of H is usually _____ and of O is usually _____.
 - In a compound, the oxidation number of elements in group I of the periodic table is _____ and of elements in Group II is _____.
- Give the oxidation number of sulfur in each of the following:



- Assign an oxidation number to each element in these equations: (The equations are balanced, but the coefficients do not affect oxidation numbers.)
 - $2 \text{Al} + 3 \text{Cu}_2\text{O} \rightarrow 6 \text{Cu} + \text{Al}_2\text{O}_3$
 - $\text{HBr} + \text{NaOH} \rightarrow \text{NaBr} + \text{H}_2\text{O}$
- Which of the equations above represents a redox reaction? _____
How can you tell?
- When an element is oxidized, it (gains, loses) electrons, and its oxidation number (increases, decreases).
- When an element is reduced, it (gains, loses) electrons, and its oxidation number (increases, decreases).

7. In this reaction: $4 \text{K} + \text{O}_2 \rightarrow 2 \text{K}_2\text{O}$
_____ is oxidized and _____ is reduced.

8. There are three types of redox reactions. From these descriptions, choose the type -
direct exchange of electrons when chemicals come in contact
forced exchange of electrons using electric current
indirect exchange of electrons through a wire

a. A copper wire is placed in a solution of AgNO_3 . Silver comes out of solution, and the solution turns blue, showing that Cu is going into solution. _____

b. A battery is an example of this type of redox reaction.

c. When a strip of aluminum is placed in a solution of magnesium chloride, no reaction takes place. But when the aluminum is attached to the negative pole of a battery, a strip of magnesium is attached to the + pole, and the strips are placed in the solution, a reaction occurs.

9. The forced exchange of electrons using electric current is called
_____.