

NAME:

Oxidation Numbers Worksheet

Directions: Use the *Rules for Assigning Oxidation Numbers* to determine the oxidation number assigned to each element in each of the given chemical formulas.

	Formula	Element and Oxidation Number			
1.	Cl ₂	Cl			
2.	Cl ⁻	Cl			
3.	Na	Na			
4.	Na ⁺	Na			
5.	O ₂	O			
6.	N ₂	N			
7.	Al ³⁺	Al			
8.	H ₂ O	H		O	
9.	NO ₃ ⁻	N		O	
10.	NO ₂	N		O	
11.	Cr ₂ O ₇ ²⁻	Cr		O	
12.	KCl	K		Cl	
13.	NH ₃	N		H	
14.	CaH ₂	Ca		H	
15.	SO ₄ ²⁻	S		O	

	Formula	Element and Oxidation Number			
16.	Na ₂ O ₂	Na		O	
17.	SiO ₂	Si		O	
18.	CaCl ₂	Ca		Cl	
19.	PO ₄ ³⁻	P		O	
20.	MnO ₂	Mn		O	
21.	FeO	Fe		O	
22.	Fe ₂ O ₃	Fe		O	
23.	H ₂ O ₂	H		O	
24.	CaO	Ca		O	
25.	H ₂ S	H		S	
26.	H ₂ SO ₄	H		S	O
27.	NH ₄ Cl	N		H	Cl
28.	K ₃ PO ₄	K		P	O
29.	HNO ₃	H		N	O
30.	KNO ₂	K		N	O

Rules for Assigning Oxidation Numbers

1. The oxidation number of any uncombined element is 0.
2. The oxidation number of a monatomic ion equals the charge on the ion.
3. The more-electronegative element in a binary compound is assigned the number equal to the charge it would have if it were an ion.
4. The oxidation number of fluorine in a compound is always -1.
5. Oxygen has an oxidation number of -2 unless it is combined with F (when it is +2), or it is in a peroxide (such as H₂O₂ or Na₂O₂), when it is -1.
6. The oxidation state of hydrogen in most of its compounds is +1 unless it is combined with a metal, in which case it is -1.
7. In compounds, the elements of groups 1 and 2 as well as aluminum have oxidation numbers of +1, +2, and +3 respectively.
8. The sum of the oxidation numbers of all atoms in a neutral compound is 0.
9. The sum of the oxidation numbers of all atoms in a polyatomic ion equals the charge of the ion.