

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 <sub>2</sub>	Cl		
2.	Cl <sup>-</sup>	Cl		
3.	Na	Na		
4.	Na <sup>+</sup>	Na		
5.	O <sub>2</sub>	O		
6.	N <sub>2</sub>	N		
7.	Al <sup>+3</sup>	Al		
8.	H <sub>2</sub> O	H	O	
9.	NO <sub>3</sub> <sup>-</sup>	N	O	
10.	NO <sub>2</sub>	N	O	
11.	Cr <sub>2</sub> O <sub>7</sub> <sup>2-</sup>	Cr	O	
12.	KCl	K	Cl	
13.	NH <sub>3</sub>	N	H	
14.	CaH <sub>2</sub>	Ca	H	
15.	SO <sub>4</sub> <sup>2-</sup>	S	O	

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