

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.

Rules for Assigning Oxidation Numbers	Example:
1. The oxidation number of any uncombined element is 0 .	Ne, O ₂ ▷ 0
2. The oxidation number of a monatomic ion equals the charge on the ion.	Fe ⁺³ ▷ +3
3. The oxidation number of halogens in a compound is mostly -1 .	F ⁻¹ ▷ -1
4. Oxygen has an oxidation number of -2 unless it's a peroxide is -1	H ₂ O ⁻² ▷ -2 Na ₂ O ₂ ⁺² ▷ -1
5. The oxidation number of a metal is +1 in Group 1 and +2 in Group 2.	K ⁺¹ ▷ +1
6. Hydrogen works with +1 with nonmetals and -1 with metals.	H ⁺¹ Cl ⁻¹ ▷ +1 Na ⁺¹ H ⁻¹ ▷ -1
7. The sum of the oxidation numbers of all atoms in a neutral compound is 0.	
8. The sum of the oxidation numbers of all atoms in a polyatomic ion = the charge of the ion.	

1. Give oxidation numbers for the underlined atoms in these molecules:

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|--|-----|-----|--------------------------|--|-----|----|
| a. <u>Cs</u> ₂ O | Cs: | O: | i. <u>N</u> ₂ | N: | | |
| b. <u>N</u> ₂ O ₃ | N: | O: | j. <u>Kr</u> | Kr: | | |
| c. <u>Na</u> ₄ <u>Si</u> O ₄ | Na: | Si: | O: | k. <u>H</u> ₂ O | H: | O: |
| d. <u>K</u> ₂ <u>Cr</u> ₂ O ₇ | K: | Cr: | O: | l. <u>Fe</u> O | Fe: | O: |
| e. <u>H</u> ₂ <u>O</u> ₂ | H: | O: | (This is a peroxide) | m. <u>Ca</u> S | Ca: | S: |
| f. <u>Al</u> (OH) ₃ | Al: | O: | H: | n. <u>H</u> ₂ | H: | |
| g. <u>H</u> PO ₃ | H: | P: | O: | o. <u>He</u> | He: | |
| h. <u>H</u> ₂ <u>Se</u> O ₃ | H: | Se: | O: | p. <u>H</u> ₂ <u>S</u> O ₄ | S: | H: |

2. Give the oxidation numbers for the following ions

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|--|-----|----------------------------|---|----------------------------|-----|
| a. <u>Cu</u> ⁺¹ | Cu: | b. <u>Co</u> ²⁺ | Co: | c. <u>Cl</u> ⁻¹ | Cl: |
| d. <u>I</u> O ₂ ⁻¹ | I: | O: | e. <u>Sb</u> F ₆ ⁻¹ | Sb: | F: |
| | | | f. <u>O</u> H ⁻¹ | O: | H: |