

Name: .....

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**5.3B HONORS HOMEWORK – OXIDATION NUMBERS**

1. Deduce the oxidation numbers of the atoms in the following species:

Formula	Oxidation Numbers
H <sub>2</sub> SO <sub>4</sub>	H = +1, S = +6, O = -2
PbO <sub>2</sub>	Pb = +4, O = -2
NO <sub>2</sub> <sup>-</sup>	N = +3, O = -2
I <sub>2</sub>	I = 0
KClO <sub>3</sub>	K = +1, Cl = +5, O = -2
CaC <sub>2</sub>	Ca = +2, C = -1
ZnH <sub>2</sub>	Zn = +2, H = -1
TlCl	Tl = +1, Cl = -1
C <sub>2</sub> O <sub>4</sub> <sup>2-</sup>	C = +3, O = -2
OF <sub>2</sub>	O = +2, F = -1
Fe <sub>3</sub> O <sub>4</sub>	Fe = +8/3, O = -2
S <sub>4</sub> O <sub>6</sub> <sup>2-</sup>	S = +2.5, O = -2
H <sub>2</sub> O <sub>2</sub>	H = +1, O = -1

2. In the following processes, indicate which atom's oxidation number is changing, and hence state whether process constitutes oxidation or reduction

Process	Atom changing	From	To	Oxidation or Reduction?
KBr → Br <sub>2</sub>	Br	-1	0	oxidation
KClO → KClO <sub>3</sub>	Cl	+1	+5	oxidation
KClO → KCl	Cl	+1	-1	reduction
H <sub>2</sub> SO <sub>4</sub> → SO <sub>2</sub>	S	+6	+4	reduction
H <sub>2</sub> SO <sub>4</sub> → S	S	+6	0	reduction
CH <sub>4</sub> → CO <sub>2</sub>	C	-4	+4	oxidation
CO <sub>2</sub> → C <sub>6</sub> H <sub>12</sub> O <sub>6</sub>	C	+4	0	reduction
CO → CO <sub>2</sub>	C	+2	+4	oxidation