Electrochemistry

Assign oxidation numbers for each of the atoms in the following compounds:

Species	Oxidation Number	Species	Oxidation Number
HClO	H: +1 O: -2 Cl: +1	$KClO_3$	K: +1 Cl: -5 O:-2
MnO_2	O: -2 Mn: +4	PbO_2	Pb: +4 O: -2
$PbSO_4$	Pb: +2 S: +6 O: -2	K_2SO_4	K: +1 S: +6 O:-2
NH_4^+	N: -3 H: +1	Na_2O_2	Na: +1 O: -1
FeO	Fe: +2 O: -2	Fe_2O_3	Fe: +3 O: -2
$NaIO_4$	Na: +1 I: +5 O:-2	Fe_3O_4	Fe: +8/3 O:-2
$Cr_2O_7^{2-}$	Cr: +6 O:-2	MnO_4^{2-}	Mn: +6 O: -2
NO_3^-	N: +5 O: -2	ClO_3^-	Cl: +5 O: -2

Assign oxidation numbers for all atoms in the following table, determine which element has a change in its oxidation number, and state whether it is oxidation or reduction.

Reactant	Product	Change in Oxidation Number	Oxidation	Reduction
MnO_4^-	MnO_4^{2-}	Mn +7 to +6		√
K	K^+	K 0 to +1	√	
N_2	NH_3	N 0 to -3		√
NH_3	N_2O	N -3 to +1	√	
P_4O_{10}	P_4O_6	P +5 to +3		√
SO_4^{2-}	SO_3^{2-}	S +6 to +4		√
$HClO_4$	HCl	Cl +5 to -1		√
O_2	O^{2-}	O 0 to -2		√
$Cr_2O_7^{2-}$	Cr^{3+}	Cr +6 to +3		√