Reference Points

1. If the reference point for electrode potentials is changed so that the reduction of $Ni^{2+}(aq) + 2e^- \rightarrow Ni(s)$ represents $E^o = 0.00$ V, then the electrode potential for the reduction of $Br_2(l) + 2e^- \rightarrow 2Br^-(aq)$ will be _____ V

a	+0.26
b	+0.81
c	+1.07
d	+1.33

2. If the reduction of iodine had been selected as the standard half- reaction, then the E^o for the reduction of $PbSO_4(s)$ would be _____ V

a	-0.90
b	+0.90
c	-0.18
d	+0.18

3. Scientists Tom and Janel rewrite the reduction table in the data booklet. They choose the half reaction $I_2(s) + 2e^- \rightarrow 2I^-(aq)$ as the new reference point.

   Based on this new reference point, choose the **true** statement below is ____.

a	$Pb^{2+}(aq) + 2e^- \rightarrow Pb(s)$	$E^o = -0.67$ V
b	$2F^-(aq) \rightarrow F_2(g) + 2e^-$	$E^o = +2.33$ V
c	$Fe^{2+}(aq) \rightarrow Fe^{3+}(aq) + e^-$	$E^o = +1.31$ V
d	$Cr^{2+}(aq) + 2e^- \rightarrow Cr(s)$	$E^o = -0.37$ V

4. Eli and Grayson choose a new reference point for the reduction table.
   They decide that $PbsO_4(s)\ 2e^- \rightarrow Pb(s) + SO_4^{2-}(aq)$ will have an electrical potential of 0.0V
   Using this new reference point they calculate the expected electrical potential for a series of reactions.

	Reaction	Voltage
1	$Ni^{2+}(aq) + 2e^- \rightarrow Ni(s)$	0.20 V
2	$I_2(s) + Cu(s) \rightarrow 2I^-(aq) + Cu^{2+}(aq)$	0.20 V
3	$NO(g) + 2OH^- \rightarrow NO_2^-(aq) + H_2O(l) + e^-$	0.20 V
4	$3N_2O(g) + 6H_2O(l) + 4Au^{3+}(aq)$ □ $6HNO_3(aq) + 12H^+(aq) + 4Au(s)$	0.20 V
5	$2Na^+(aq) + Ba(s) \rightarrow Ba^{2+} + 2Na(s)$	0.20 V

   Which statements above are **FALSE**?

a	1,2,3
b	2,4,5
c	3,5
d	1,3

5. Eli and Grayson choose a new reference point for the reduction table.

They decide that $PbsO_4(s)\ 2e^- \rightarrow Pb(s) + SO_4^{2-}(aq)$ will have an electrical potential of 0.0V

Using this new reference point they calculate the expected electrical potential for a series of reactions.

	Reaction	Voltage
1	$Ni^{2+}(aq) + 2e^- \rightarrow Ni(s)$	0.20 V
2	$I_2(s) + Cu(s) \rightarrow 2I^-(aq) + Cu^{2+}(aq)$	0.20 V
3	$NO(g) + 2OH^- \rightarrow NO_2^-(aq) + H_2O(l) + e^-$	0.20 V
4	$3N_2O(g) + 6H_2O(l) + 4Au^{3+}(aq) \rightarrow 6HNO_3(aq) + 12H^+(aq) + 4Au(s)$	0.20 V
5	$2Na^+(aq) + Ba(s) \rightarrow Ba^{2+} + 2Na(s)$	0.20 V

The number of true statements above is _____ .

a	5
b	4
c	3
d	2

Solutions:

1. D
2. A
3. A
4. D
5. C