**Pre-lab quiz: Electrochemical cells**

|  |  |
| --- | --- |
| **Reduction half-reaction** | **Potential volts (V)** |
| Cu+2 + 2e- 🡪 Cu | 0.62 V |
| Ni+2 + 2e- 🡪 Ni | 0.00 V |
| Fe+2 + 2e- 🡪 Fe | - 0.15 V |
| Al+3 + 3e- 🡪 Al | - 1.38 V |

1. What is a half-cell?
2. What electrode is usually used as a reference to determine standard reduction potentials? What value is assigned to this electrode’s standard reduction potential?
3. Using the reference table presented above, which ion is most easily reduced?
4. Using the reference table presented above, which ion is most easily oxidized?
5. How should the values found using the zinc electrode as a standard compare with those determined using the standard hydrogen electrode?
6. What factors can contribute to differences between experimental and reported values?
7. What does it mean if the voltmeter displays a negative value for an electrochemical cell?
8. Combine two half-equations to produce the best battery. Which reactions would you use for the anode and which for the cathode?