

Galvanic Cells

Student Name:

Partner Name:

Date

Instructor Initials

Grade

Part One

Cell	E_{cell} Measured	E°_{cell} calculated	Q Rxn Quotient	E_{cell} calculated	%Error
Zn(s) Zn ²⁺ (1.0 M) Cu ²⁺ (0.1 M) Cu(s)					
Zn(s) Zn ²⁺ (1.0 M) Cu ²⁺ (1.0 M) Cu(s)					
Zn(s) Zn ²⁺ (0.1 M) Cu ²⁺ (1.0 M) Cu(s)					
Zn(s) Zn ²⁺ (0.1 M) Cu ²⁺ (0.1 M) Cu(s)					
Al(s) Al ³⁺ (1.0 M) Cu ²⁺ (0.1 M) Cu(s)					
Al(s) Al ³⁺ (1.0 M) Cu ²⁺ (1.0 M) Cu(s)					
Al(s) Al ³⁺ (0.1 M) Cu ²⁺ (1.0 M) Cu(s)					
Al(s) Al ³⁺ (0.1 M) Cu ²⁺ (0.1 M) Cu(s)					
Mg(s) Mg ²⁺ (1.0 M) Cu ²⁺ (0.1 M) Cu(s)					
Mg(s) Mg ²⁺ (1.0 M) Cu ²⁺ (1.0 M) Cu(s)					
Mg(s) Mg ²⁺ (0.1 M) Cu ²⁺ (1.0 M) Cu(s)					
Mg(s) Mg ²⁺ (0.1 M) Cu ²⁺ (0.1 M) Cu(s)					

Show your calculations for the E_{cell}° for the $\text{Zn(s)}|\text{Zn}^{2+} (1.0 \text{ M})||\text{Cu}^{2+} (1.0 \text{ M})|\text{Cu(s)}$, $\text{Al(s)}|\text{Al}^{3+} (1.0 \text{ M})||\text{Cu}^{2+} (1.0 \text{ M})|\text{Cu(s)}$, and $\text{Mg(s)}|\text{Mg}^{2+} (1.0 \text{ M})||\text{Cu}^{2+} (1.0 \text{ M})|\text{Cu(s)}$ cells.

What is the balanced equation for the redox reaction that occurred in the $\text{Zn(s)}|\text{Zn}^{2+} (1.0 \text{ M})||\text{Cu}^{2+} (0.1 \text{ M})|\text{Cu(s)}$ cell? Show your calculation for the initial reaction quotient. Show your calculation of E_{cell} for this reaction.

What is the balanced equation for the redox reaction that occurred in the $\text{Al(s)}|\text{Al}^{3+} (1.0 \text{ M})||\text{Cu}^{2+} (0.1 \text{ M})|\text{Cu(s)}$ cell? Show your calculation for the initial reaction quotient. Show your calculation of E_{cell} for this reaction.

What is the balanced equation for the redox reaction that occurred in the $\text{Mg(s)}|\text{Mg}^{2+} (1.0 \text{ M})||\text{Cu}^{2+} (0.1 \text{ M})|\text{Cu(s)}$ cell? Show your calculation for the initial reaction quotient. Show your calculation of E_{cell} for this reaction.

Show an example of one of your %error calculations. Were there any sources of error in your technique that you can identify? What would you do to mitigate these errors in the future?