Title: Reactions in a Battery

**Purpose:** To test different combinations of metals to see which produce the most energy in a battery.

**Introduction:** Would you buy an electric car or hybrid electric car? Why or why not? These new automobile technologies are based on having batteries that store energy and batteries are an important part of many modern conveniences. Do you have a battery with you right now?

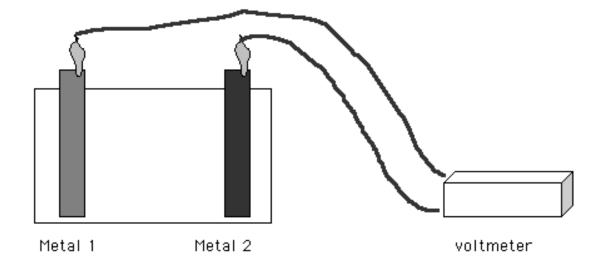
Draw what you think is in a battery: Label any parts you can think of.

**Materials:** strips of metals (list: ) steel wool, salt, wet cell chamber, graduated cylinder, jumper leads, voltmeter, paper towel.

## Procedure:

- 1. Add 35 ml water to beaker. Stir in .05 M of NaCl.
- 2. Pick two metals. Use the steel wool to polish each strip. Attach an alligator clip to each strip. The alligator clips should be attached to the terminals on the voltmeter.
- 3. Choose a different pair of metals and repeat the process until you have tested all possible combinations.

**Prediction:** Which metal combinations will produce the most current?



Data:

Metal 1	Metal 2	Voltage	

4.	Pick	the pa	ir of	metals	that	produc	ed the	most	charge.	Design	severa	ıl exper	iments
to	see if	you c	an ir	mprove	the \	/oltage	in the	pair.	Describe	e clearly	what y	ou will	do for
ea	ch:												

Experiment b:			
Experiment c:			
<b>D</b> 4 1/4 1/4			
Data: Voltages for			
Experiment a:			
Experiment b:			
Experiment c:			

Experiment a:

Analysis:
1. Which combination of metals produced the most energy?
2. Write the balanced equation for the redox reaction that is occurring in the pair above
3. Which combination of metals produced the least energy?
4. Write the balanced equation for the redox reaction that was occurring in this pair.
5. Why did we have to polish the metals with steel wool?
6. Why did occasionally get a negative charge and have to change the leads?
7. What experiment worked best in your class to increase the voltage?
8. In a car battery, a strong acid is used instead of salt water. What might that do to the strength of the battery?
9. Why might disposal of hatteries he a problem?

9. Why might disposal of batteries be a problem?

10. What creates electricity?

**Conclusion:** 2 things you learned.