

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Per: \_\_\_\_\_ Table: \_\_\_\_\_

### 8.3 Does mass and/or substance affect Chemical Energy Transformations?

Substance	Mass (g)	Starting Temp (°C)	Max Temp (°C)	Temp Change (°C)	Temp Change Class Average	Temp Change Class Median
Aluminum Foil (8.1)	0.5					
Aluminum Foil (8.3)						
Steel Wool (8.3)						

Graph Photo	Detailed Description
<i>Copy and paste this photo from your 8.1 document</i>	<p><b>0.5 g Aluminum Foil in 50 ml CuCl<sub>2</sub></b>                      Time to reach Max Temp after adding Aluminum Foil =</p> <p>Observations:</p>
	<p><b>1.0 g Aluminum Foil &amp; 1.0g Steel wool in 50 ml CuCl<sub>2</sub></b>                      Time to reach Max Temp after adding Aluminum Foil =</p> <p>Time to reach Max Temp after adding Steel Wool =</p> <p>Observations:</p>

**Conclusion – What factors determine the amount of chemical energy an object has?**

**Claim:**

**Evidence:**

**Reasoning:**

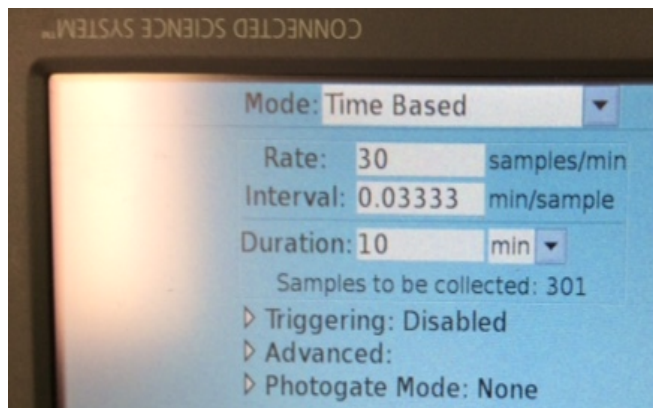
**Activity 8.3 (SN p96 – 97)**

1. This is similar to activity 8.1, except you will be running two experiments at the same time to compare the chemical reaction of  $\text{CuCl}_2$  with Aluminum (Al) or Iron (Fe)
2. Complete the prediction near the top of SN p96. Notice it is two questions. Use the the format: \_\_\_\_\_ because ...

3. Get your table's tub from the back counter.

4. Connect both temperature probes to the LabQuest. Set up your LabQuest to collect temperature data at the rate of 30 times per minute for 10 minutes in graph mode.

- a. Home →
- b. LabQuest App →
- c. Rate →
- d. Fill in as shown in photo starting with Duration
- e. Click "OK"



5. Use the scale to weigh out 0.95 - 1.05 g of Steel wool. Record the mass in your data table. Please use only the scissors in your tub to cut the steel wool. That way only the old scissors become dull.
6. Use the scale to weigh out the same amount of Aluminum Foil as you have steel wool. Ex: If steel wool = 0.98 g, this is how much foil you need.
7. Use a graduated cylinder to measure 50ml of  $\text{CuCl}_2$  solution into each 250 ml beaker.
8. Place the beakers in the center of your table and place your LabQuest flat in front of them. Do not move the LabQuest. The connections to the probes are not so great, so if you move it, they stop collecting data and don't restart.
9. Place thermoprobe in each beaker and start collecting data on the LabQuest ( ➤ ).
10. Collect temperature data for about 30 seconds (0.5 minute). Record starting temp.
11. Simultaneously, add the Aluminum Foil to the  $\text{CuCl}_2$  solution in one beaker and the steel wool to the  $\text{CuCl}_2$  solution in the other beaker and start a timer.
12. Use the thermoprobe to gently stir the foil and steel wool in the beakers.
13. When the timer in the lower right of your LabQuest shows 7 minutes, stop collecting data ( ■ ). Use the stylus to tap the highest point on the Aluminum graph line (this makes the temp and time show up on the right side of the screen) Record the data. Repeat for the Steel wool line. Take a photo of your temperature graph and insert into your document.
14. Insert photo into your data table.
15. Complete all required data before you turn off your LabQuest.
16. **Clean-up:** Rinse and dry the metal tip on the thermoprobe, empty beakers into tub on front table, rinse your beaker three times and place upside down in your tub.
17. Organize your tub and return it to the back counter.

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