

**Science 9****Unit D: Electrical Principles and Technologies****Lesson 4****Practice Worksheet 40: Modifying an Electrochemical Cell**

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Complete the following questions as you work through the simulation “**Modifying Electrochemical Cells**” on LearnAlberta.ca. See your online course for directions on how to access the simulation.

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**Question 1**

- a) On Page 2 of the simulation, choose “Type of Electrode”. Record the voltage produced by each electrode combination in the table below.

Electrodes	Voltage
Copper and Zinc	
Copper and Graphite	
Graphite and Zinc	

- b) Predict what might happen if you used two copper electrodes. Would any voltage be produced? Explain your answer.
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**Question 2**

- a) On Page 2 of the simulation, choose “Type of Electrolyte”. Record the voltage produced by each electrolyte combination in the table below.

Electrolyte	Voltage
Tap water	
Cola drink	
Vinegar	
Lemon juice	
Dilute sulfuric acid	
Baking soda	

b) Which electrolyte produces the most voltage in your battery?

### Question 3

a) On Page 2 of the simulation, choose "Concentration of the Electrolyte in Solution". Record the voltage produced by each concentration in the table below.

Concentration of Electrolyte	Voltage
0%	
1%	
2%	
5%	
10%	
50%	

b) What sulfuric acid concentration produces the most voltage in your battery?

### Question 4

a) On Page 2 of the simulation, choose "Temperature of the Electrolyte Solution". Record the voltage produced by each concentration in the table below.

Temperature of Electrolyte	Voltage
0°C	
10°C	
20°C	
30°C	
40°C	

b) What electrolyte temperature produces the most voltage in your battery?

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**Question 5**

Using your data tables from Questions 1 to 4, list the combination of variables that would produce the greatest voltage in an electrochemical cell.

<b>Electrodes</b>	
<b>Electrolyte</b>	
<b>Concentration</b>	
<b>Temperature</b>	

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**Congratulations! You have completed this practice worksheet.**

Now it's time to carefully compare your answers to the suggested answers in the online course. When comparing, you should feel free to make changes to your answers or make extra notes.

**Keep this practice worksheet for study purposes.** Using practice worksheets as a study tool to review for exams is a great idea.

**If you unsure about any of the questions or answers, or you just want more feedback, share this practice worksheet with your teacher and ask for assistance.** You can do that by emailing the teacher, or by submitting it in the Course Questions Forum in the online course. If you are using this practice worksheet in Google Drive, don't forget to change the sharing settings so that anyone can view it before sending the link to your teacher.

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