

# Electrochemistry Grade 4 Quiz

## Teacher's Answer Key

1. Name three kinds of electrolytes we've used in our electrochemistry experiments. *(Salt water, lemon juice, vinegar and salt.)*
2. Where would you place your DMM probes to measure the generated voltage? *(The black probe on the foil and the red probe on the silverware.)*
3. What happens if you use two strips of the same material? *(You won't have a difference. These copper ions interact with the zinc electrode to form zinc ions. The copper electrons are chemically reacting with the lemon juice to form copper ions. The difference in electrical charge (potential) on these two plates causes a voltage.)*  
What would happen if we used non-metal strips? *(They don't break into ions, and don't work.)*
4. What kinds of fruit make the best batteries and why? *(Citrus, because of the acid.)*
5. What happens if you put one electrode in one fruit and one electrode in another? *(The ions are not able to be attracted to the different electrodes, so there's no current flowing.)*
6. Where did the copper on your key come from? *(The copper ions in the solution.)*
7. What kind of bubbles formed when we split the water molecule? *(As the water molecule breaks apart into smaller pieces: hydrogen ions (positively charged hydrogen) and oxygen ions (negatively charged oxygen), they bubble up into the test tube.)*
8. Does plain water conduct electricity? *(You need the electrolytes to carry the current through the water and separate the water molecule into its ions. Without salt, the water acts like a weak insulator and no bubbles will form.)*
9. Why does electricity flow through some solutions but not all of them? *(Salt mixes with water and separates into positively ( $\text{Na}^+$ ) and negatively ( $\text{Cl}^-$ ) charged particles (ions). If you pass a current through the solution of salt and water, opposites attract: the positive ions are attracted to the negative pole and the negative ions go toward the positive pole. These migrations ions allow electricity to flow, which is why "salt" solutions conduct electricity.)*
10. What is a salt? *(When a substance mixes with water and separates into its positive and negative parts, it's called a "salt.")*

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Name \_\_\_\_\_

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2. Where would you place your DMM probes to measure the generated voltage?
3. What happens if you use two strips of the same material? What would happen if we used non-metal strips?
4. What kinds of fruit make the best batteries and why?
5. What happens if you put one electrode in one fruit and one electrode in another?
6. Where did the copper on your key come from?
7. What kind of bubbles formed when we split the water molecule?
8. Does plain water conduct electricity?
9. Why does electricity flow through some solutions but not all of them?
10. What is a salt?