Name: …… Section: ……. Date: ……..

5.11 HONORS CLASS WORKSHEET – GALVANIC CELLS

1. The Daniell cell

A single Daniell cell can generate a voltage of 1.1 V

Answer the following questions about the Daniell cell:

What is the oxidation half-equation?	$Zn \rightarrow Zn^{2+} + 2e^-$
What is the reduction half-equation?	$Cu^{2+} + 2e^- \rightarrow Cu$
What is the net ionic equation?	$Zn + Cu^{2+} \rightarrow Cu + Zn^{2+}$
What is the anode made of? Over time, what happens to this anode?	zinc, it gradually dissolves/gets smaller/decreases in mass
What is the cathode made of? Over time, what happens to this cathode?	copper, it gradually gets bigger/increases in mass
In which direction do electrons move through the wire?	From the Zn to the Cu
Which electrode is the positive terminal of the cell?	Copper
Which electrode is the negative terminal of the cell?	Zinc
What do the sulfate ions do, and why?	Move gradually from the cathode compartment to the anode compartment via the salt bridge, to balance out the charge

2. General questions about cells

How many Daniell cells will you need to create a 9 volt battery?	9/1.1 = 8
Why do all cells eventually stop producing energy?	The chemical reaction finishes, so there are no more reactants
What do you think happens when cells are re-charged?	The chemical reaction is reversed
Why are some cells non-rechargeable?	Some chemical reactions are irreversible