Electricity and circuit-analysis quiz

Here's a quiz for basic electricity. You can use it to decide whether or not it's worth looking at the Khan Academy basic-electricity lectures. Or if you've already looked at them, you can use the quiz to test how well you learned the material.

How much current flows through the resistor in amps? In mA?



How much charge (in Coulombs) is on the capacitor?



Here's a similar quiz for circuit analysis.



- 1. Can you compute the voltage at the node "ICG" in the picture above (relative to "ECF", which we'll assume to be our ground)? Assume that the two current sources have units of mA and the three resistors are actually conductances and have units of $1/\Omega$. (Our actual cell model will have different units, but these are good enough for now).
- 2. What if we made, e.g., the conductance of 2.2 roughly 100 times larger? Can you tell without any equations roughly what the ICF voltage would be? (Feel free to first compute the result using equations and then try to intuitively justify what you got).