#	Question	Answer(s)
1	when can we expect to get our midterm results?	We'll start grading them very soon. You can expect results some time mid next week
2	I am confused about how to choose the sign of the volatge for the elements in a circuit. I have heard that we can choose them randomly and INDEPENDETLy from ech other and just adjust the direction of I. But if that is true how does KV works?	Yes we can randomly choose the sign, as long as we label the voltage and current following the passive sign convention. The solution of KVL and KCL equations will tell whether the actual voltage/current direction is the same as our labeling. If we get a negative number in the solution, we know the actual voltage/current is in the opposite direction of our labeling.
3	I'm curious about how the grading for the midterm works, becuase it says that the midterm was only 50 points on the website but on gradescope it said out of 120pts	I'm sorry but please direct midterm policy related questions to Piazza or eecs16a@berkeley.edu.
4	is there no V or no I in the open cuircuit?	No current in the open circuit.
5	Why is the voltage source + on both sides?	The lower terminal is -
6	Would it be wrong to put the I2 arrow above R2 instead of below?	Nope, both above and below are fine
7	can we also use r1 and r2 as 1 for this qs instead of 1/2	Yes. Only the ratio of R1 and R2 matters
8	Why's there no i3 between the resistors?	So last lecture, we mentioned an "i3" coming from the floating wire to the right, but that i3 = 0 since its not a complete loop. We generally ignore it and just talk about i1 and i2 from the resistors.
9	Will we have to deal with resistors that have variable cross-sectional areas?	If you do, we will not expect you to do calculus to solve it
10	Could you explain how we got from 1/2 to R=1/2 (R1 + R2)? And what does R represent, the total resistance?	If you're referring to the voltage divider from earlier in lecture, what we had is 1/2 = R2 / (R1 + R2), so R2 = 1/2 (R1 + R2).
11	What does this tell us about anything?	We will see that Vout is a function of the position X, so if we measure Vout, we can interpret X.
12	is the voltage of every node different or the same?	Node voltages are generally different
13	is the current of every node different?	Current flow through each element. According to KCL, total current goes into each node is 0.
14	how can Vout be equal to itself times something else?	would this mean x/V_s equals 1?
15	how come v out is included in our equation to v out if that is what we are trying to find out?	live answered
16	how was that equation derived?	live answered
17	how is vout on both sides of the equation	live answered
18	the dimensions in the last V_out formula dont match up, right?	live answered
19	why do touch screens only work when touched by a finger and certain styluses, like if you touch it with cloth it doesnt register the touch	Is this touchscreen more of a capactive touch screen on older devices which require a press? rather than a press on glass like current touchscreens
20	What happens if there's multiple touches at once?	Excellent question. This model / setup cannot detect multiple touches. We'll analyze that at some point later, in discussion probably.
21	Does the end of the v_out connects to the ground state node?	We measure the voltage difference Vout between the bottom plate (+) and the ground node (-).

22	is there no current flowing if there isn't something for it to pass through? so how does adding dangling resistors still now allow current to run through?	is it cause there's nothing on the wire perpendicular to the wire with the other resistors on it?
23	prof waller said there's no current in that green node, but isn't there current between r_1 and r_2?	live answered
24	Random question but since we're dealing with electrons, What would happen if we added a magnet?	Generally speaking the electron motion will be affected by the magnet. For example you will see the Hall Effect in your physics courses. And there are other effects that can be very useful for sensing/control applications.
25	are the notes posted for todau	Check out note 11 and 12 first. Note 13 and 14 should be posted later today.
26	When do you measure voltage between resistors and when do you not?	Voltage can be measured across any element. For the voltage divider example we are measuring the voltage across one resistor.
27	why does very high resistance equate no current?	if the resistance is very high it is almost an open circuit.
28	are the notes posted for today's lecture?	Check out note 11 and 12 first. Note 13 and 14 should be posted later today.
29	Why was the current 0 in the last example?	Because the resistance is very high, so approximately an open circuit.
30	wouldn't the arrow go the opposite direction?	live answered
31	wouldn't an open circuit have no resistance?	An open circuit is effectively an infinite resistance. If no resistance it will be a short circuit.
32	so the voltmeter should avoid changing current and the ammeter should avoid changing voltage	the voltmeter should avoid changing the voltage, it achieves this by having a very large resistance. The ammeter should avoid changing the current by not introducing extra resistance.
33	Where does the voltage come from in the water	Water, when it behaves conductively, will have some resistance to it. If there is resistance and current, then there will be a voltage drop.
34	Is the reason we saw current because water is conductive to electricity, or because the ions generated electricity? i.e. If we used a metal wire instead of water, metal is very conductive but there's no actual power source generating electricity in the wire. Would we see non-zero current?	So all conductive materials (water, metal, etc.) will always have a tiny amount of electrical "noise", which does appear as some current or voltage. I'm missed the exact moment in the demo, but either of your explanations are possible, depending on how the demo was setup.
35	Is current the same through out the circuit?	Yes in this example.
36	is I2 = I1?	Yes
37	why was v vout and resistance r2 for our v=IR equation	because Vout is the voltage across the resistor R2
38	where does the voltage come from for water?	
39	What is unit of the energy?	Joules (J) = Volts (V) * Coulomb (C)
40	What ws the equation for energy again?	live answered
41	Is W the symbol for power or watts? I thought power was P	W is for watts, the units of power
42	Conceptually, how should we interpret the difference between energy and charge?	Charge is a physical measure of the number of electrons. Energy is related to the work the charges can do. In a water pumps analogy, charge is like the amount of water you have, and energy is how much potential energy it has, e.g. how high the bucket is above the ground before you pour it.

43	please the professor keeps cutting out for me. what is dissipated?	Power/heat is dissipated from the resistor when there is current flowing through it.
44	Is it lagging for anyone else or is it me	lagging for me too
45	is the prof cutting for everyone?	
46	is V^2/R = I^2*R in this case?	yes, those both apply for resistors
47	so negative signs mean supplying power and positive signs mean we lost power?	Correct. This applies when we use passive sign convention
48	why is Is + Ir =0?	From the directions we defined the voltages, we can take KCL at the top or bottom node to get that equation.
49	what does power dissipated mean for the resistor? does it just mean how much power it takes in?	Yes it takes in electrical power and turns it into heat
50	So if P_r + P_vs = 0 This means energy is conserved?	yes :)
51	what does sc mean	short circuit
52	Is the Ics next to the up arrow supposed to be Vcs?	In the top example, no. This is a current source, so we define the current for it.
53	When is voltage = 0 and when is current = 0 in general?	If we have a short circuit, the voltage across the short circuit part is 0. If we have an open circuit, the current through the open circuit is 0
54	In this short circuit, is the power 0? So is 0*inf = 0?	No we cannot calculate the power in that situation by our model. Our model is not valid in that case.
55	what is the power generated them?	The power from the source is 12V * Ir = 144 KW.
56	why do we label V_sc with pos charge above and neg charge below, instead of the opposite direction?	Since V_sc is 0, there is no big difference
57	is module 2 “easier” or harder than module 1	
58	so what is the power in the last circuit!	undefined I think
59	is there a lecture note for today’s lecture?	See note 12 for the first half. Note 13 and 14 will be posted later today