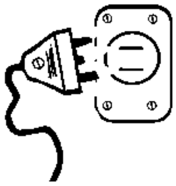


Answers to Electricity Review

Chapter 11 – pg. 498

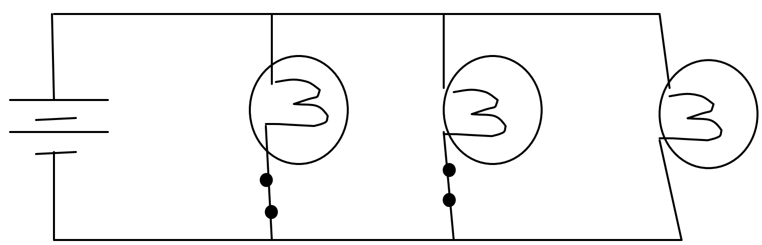
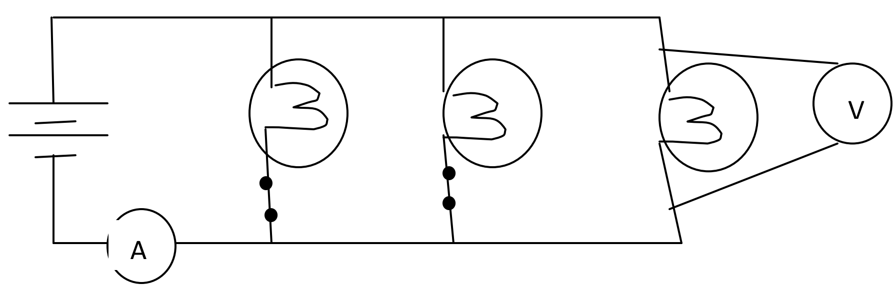
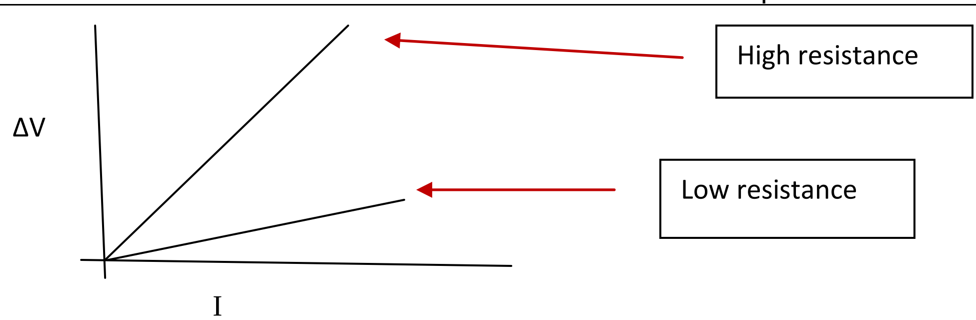
1	**a** Law of Electric Charges: Like charges repel, unlike charges attract and neutral objects can be attracted to charged objects. **b** Charging by Friction: When you rub two objects together, sometimes they get charged (oppositely charged). **d** conductor is a material that allows for electrons to flow **e** an insulator is a material that does not allow for electrons to flow.
4	When you rub two objects together, sometimes they get charged (oppositely charged). This happens because one grabs extra electrons (and becomes negatively charged) while the other gives away electrons (and becomes positively charged). YOU KNOW which is which by looking at the electrostatic series chart. It tells you which material would take electrons and which would give away.
6	**a** This object would have a +1 charge (+4 + -3 = +1) **b** This object would have -2 charge
15	c neutral by grounding  Initially negatively charged (left diagram), electrons leave and the object is grounded. The object (right diagram) is now neutral.
23	Use your electrostatic series here. When ebonite and fur are rubbed together, the ebonite becomes –ve charged. So if ebonite REPELS object C, then C must be –ve too. Object C is attracted to Object A, so A must be +ve. Object A repels B, so B must be +ve as well. A → +ve B→ +ve C → -ve

Chapter 12 – pg.542

5	60 watts is the power rating. That means the lightbulb uses 60 J of energy every second.
10	I would look at the EnerGuide labels and notice how efficient the appliances are. Both of them are rated at the fair left of the scale and thus are some of the most energy efficient ones of the market. I would consider this efficiency but also the PRICE because I have to pay for this appliance.
11	% efficiency = Energy out/ Energy in x 100% = 4500 J / 6500 J x 100% = 69 %

12	Cost to operate = (power in kW) x (time in hours) x (cost of electricity in ₵/kWh) Stove Cost = 12 kW x 300 h x 11₵/kWh = 39600₵ or $396 to run for year. Coffee maker Cost = 0.120 kW x 100 h x 11₵/kWh = 132 ₵ or $1.32 for year.

Chapter 13 – pg. 580

1	a) ‘2 cell’s means 2 batteries. ‘in series’ means the 3 lightbulbs are all in a line – the electrons have only 1 path to travel. ‘switch’ is the on/off control b) ‘in parallel’ means each lightbulb is on its own electrical line – the electrons have 3 different pathways they could travel. The switch would need to be on the shared line if it controlled ALL of the bulbs. c) 
2	a) is a series circuit because the electrons have only 1 pathway. b) is a parallel circuit (in an odd shape!) because the electrons have 2 pathways they could take.
3	 Ammeters are wired ‘in series’ and voltmeters are wired ‘in parallel’.
4	

5	Resistance slows down the flow of electrons. You can calculate it by dividing the potential difference by current.
7	When too much current flows through a wire, it gets hot. It can get so hot that it can 'short circuit' and cause a fire.
8	An ohmmeter should be connected 'in parallel' and in order to get a reading, the circuit must be on!
12	If you touch a circuit with current flowing through, you become part of the circuit (since humans make fair conductors). Thus, the current would flow through you and you would be 'electrocuted'. It doesn't take too much electricity to suffer a heart attack and die.
23	$R = \Delta V / I$ $R = 120\ V / 5.0\ A = 24\ \Omega$ The resistance is 24 Ω
24	$I = \Delta V / R$ $I = 12\ V / 25\ \Omega = 0.48\ A$ The current is 0.48 amps
25	$\Delta V = I R$ $\Delta V = (0.035\ mA) \times (120\ \Omega) = 4.2$ The voltage drop (or potential difference) is 4.2 volts