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|  |  | 1. *Part 2*    1. Observe safety precautions, being sure the transformer is not plugged in.    2. Setting up the Experimental cord       1. Cut \_\_ meters of extension cord.       2. Prepare both ends of the wire. (See note below: Preparing the Wire.)       3. On one end, attach a banana plug. (See note below: Attaching a Banana Plug.)       4. On the other end, attach one strand of wire to the wires labeled "electricity in" and the other strand to the wires labeled "electricity out." (See note below: Attaching the Wire.)   Note: Preparing the Wire   * + 1. Separate the two wires of the extension cord along seam 2 cm from end.     2. Using a wire stripper, strip plastic 1 cm from the ends of both strands.   Note: Attaching a Banana Plug:   * + 1. Unscrew the banana plug.     2. Insert the wire strands into the banana plug holes.     3. Screw the banana plug tightly into place.   Note: Attaching the Wire   * + 1. Physically twist the wires together clockwise.     2. Observing safety precautions by wearing safety goggles, an apron, and gloves, solder the wires together.     3. Fit a shrinking tube over wires, cut it, and blow-dry until it contracts around the wires.   1. Setting up the Control cords      1. Cut new extension cord into two pieces of \_\_meters and \_\_meters.      2. Prepare both ends of both wires. (See note above: Preparing the Wire.)      3. Attach a banana plug to one end of one extension cord. (See note above: Attaching a Banana Plug.)      4. Create a chain of resistors         1. Cut two pieces of copper wire \_\_cm in length and strip all the plastic.         2. Working on a cardboard surface, place \_\_resistors of \_\_resistance in a straight line equidistant from each other approximately \_\_cm apart.         3. Place both copper wires parallel to each other \_\_cm apart on the leads of the resistors.         4. Again taking safety into account, solder the copper wires onto the resistors’ leads.         5. Allow time to cool and re-solder if necessary.         6. Using \_\_ tape, fasten the resistors onto the cardboard by taping perpendicular to the leads.      5. Attach one end of each control cord to two different sides of the resistors.         1. Twist \_\_\_\_ and do \_\_\_\_      6. Attach the remaining loose end to the control bucket.         1. Attach one strand of wire to the wire labeled "electricity in" and other strand to the wire labeled "electricity out."   2. Plug the banana plugs.      1. Insert the Control banana plug into the right-most banana jack. Insert the Experimental banana plug into the control banana plug.      2. Prepare the secondary banana plug.         1. Cut \_\_ cm of wire.         2. Prepare the wire. (See note above: Preparing the Wire.)         3. Fasten both ends of the wire onto two different holes on a single banana plug.         4. Insert this banana plug into the far-left banana jack.   3. Test the setup.      1. Ensure safety         1. Plug in the transformer into the surge protector and turn both on surge protector and transformer.         2. While the setup is powered on, look for any signs of malfunction such as sparks. Immediately turn off if a malfunction is observed.         3. After the ten minutes, observe the temperature of the wiring around both buckets.         4. Turn off the transformer.      2. Make sure the current and voltage is the same in both buckets.         1. Take out right-most banana plugs.         2. Attach the red clip of the VOM meter to the lower right-most red banana jack. Attach the black clip of the VOM meter to the black banana plug of the Control cord.         3. Attach a red electricity clip to the upper right-most red banana jack. Attach the black electricity clip to the Control’s vacant black banana plug.         4. Turn on the transformer.         5. Write down voltage, current, and resistance and turn off transformer.         6. Repeat steps "ii" through "v" with the Experimental banana plug, making sure that both currents and voltages are the same. If the control current is too low, more resistors should be added in parallel to the resistor chain. If the current is too high, then the number of resistors should be reduced. Use Ohm’s Law (V=IR, where V is voltage, I is current, and R is resistance) if necessary.   ***Congratulations on completing Part Two.*** [*Next*](http://docs.google.com/newpage2.htm) |