the ARTEM!S PR⊙JECT 2012

Music Synthesizer Assembly Instructions

First, make sure you have everything you need:
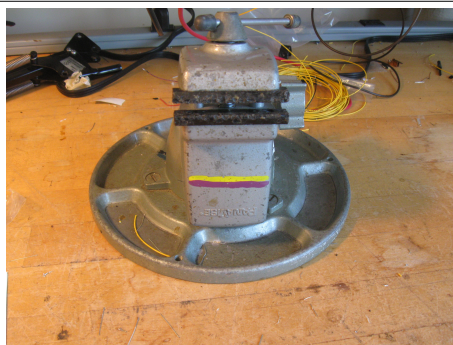
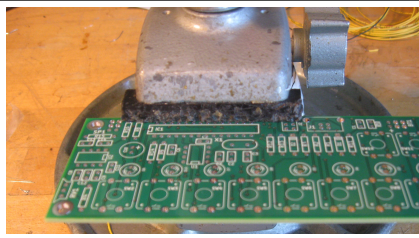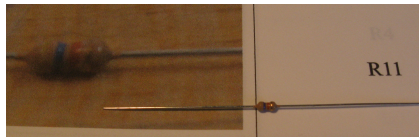|	Parts Kit with Instructions Please check that your kit is complete, but don't lose any of the parts!
	Pliers and Wire cutters	
	Vise and Soldering Iron	

OK, now you're ready to start!

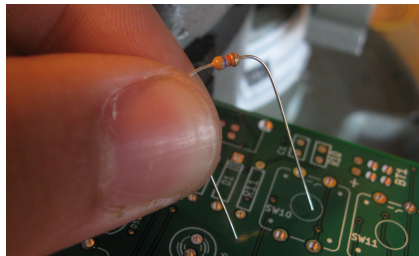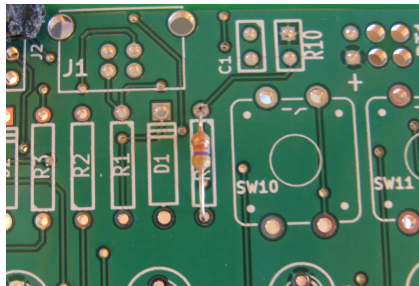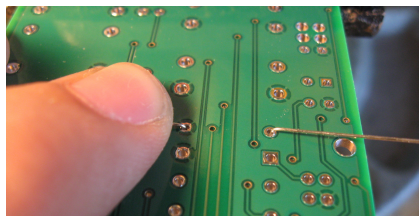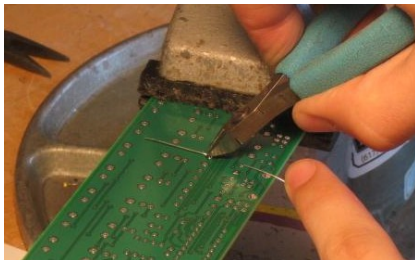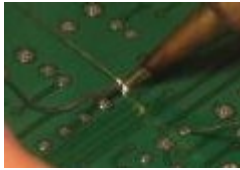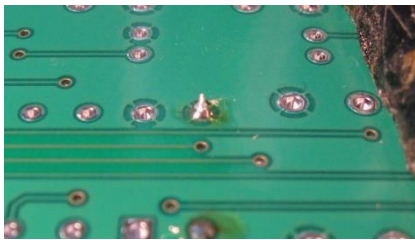|	
	Clamp the board in the vise (with the white labels up)
	Start with the resistors. Find one which matches the color code from the parts list Note the reference number, i.e. "R11"
	Bend the leads like this
	Find the spot on the board with the correct label "R11" Insert the leads so that the component is down flat on the board
	Turn the board over and bend the leads so that the component stays in the board
	Clean off the soldering iron tip on the sponge
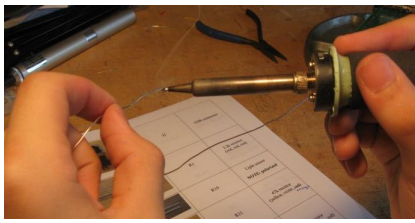
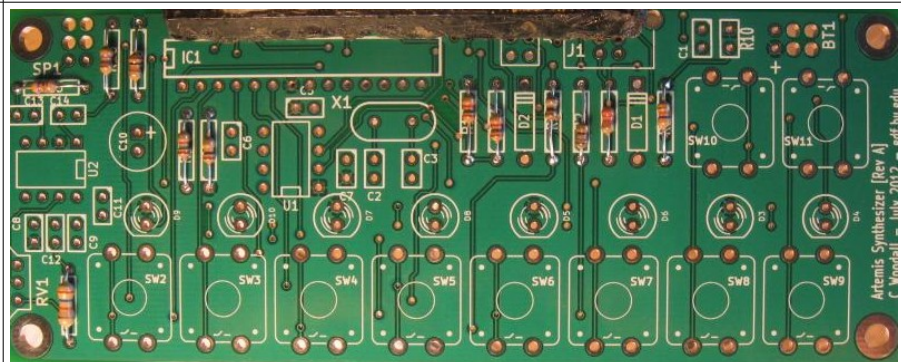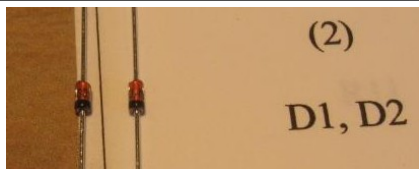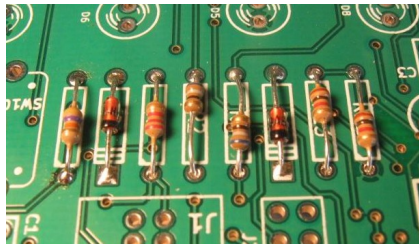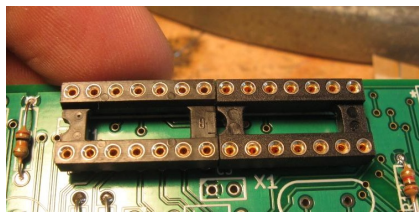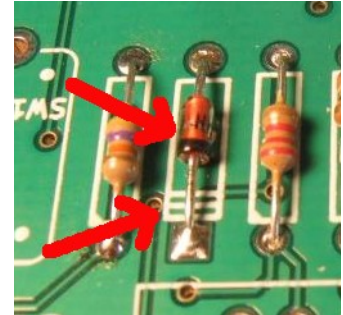|	
	Melt some solder on the tip of the iron
	Touch the tip of the iron to both the wire and the board at the same time. Melt solder on to the joint. Not too much!
	Cut the wires off flush on the board
	This is what it should look like
Install all the resistors, being sure you get each one in the right spot	

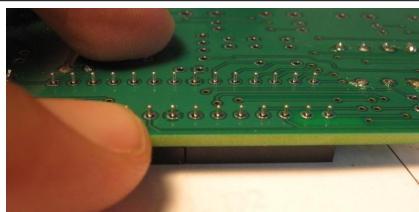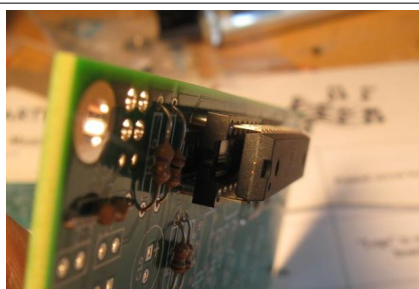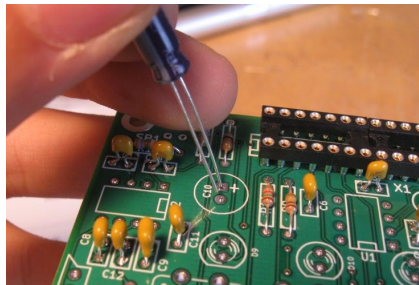|	
(2) D1, D2	Install the diodes **NOTE: They must be installed the right way around.** **The end with the black band must be at the end with the white** **lines painted on the board**
	Here is what they look like when done
	Next, put the two sockets in the board as shown. **Make sure the sockets are both flat on the board** **before you start to solder so the chip will fit in.**
	Lay the board down on the bench so the sockets are held in the board and the pins stick out the back as shown. Carefully solder all the pins to the board
	The Microcontroller chip will go in the two sockets like this
	Locate C9. It is a 0.01uF capacitor, marked "103" Insert the leads in the board at the spot marked "C9", bend and solder Clip extra leads when done
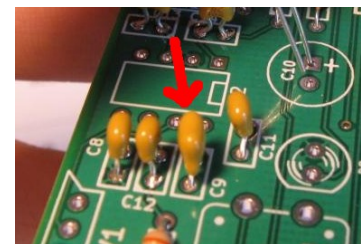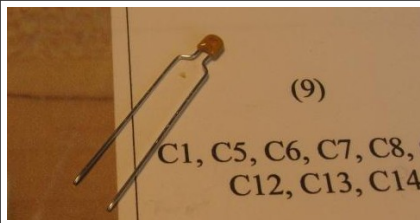
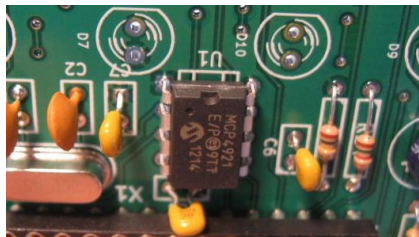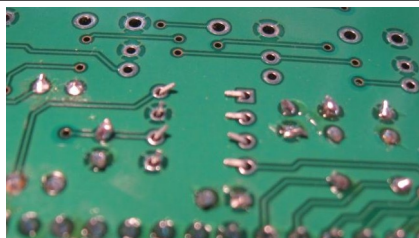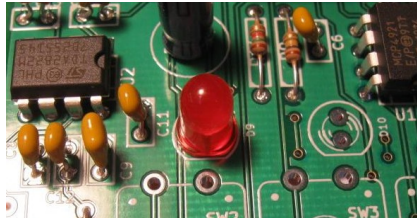|	
	Next, find the 0.1uf capacitors (9 of them, marked "104")
	Install them in the 9 sites: C1, C5, C6, C7, C8 C11, C12, C13, C14, Solder and clip the leads just like the resistors
	Next, install C10. Insert it all the way so that it is flat on the board. *IMPORTANT: Be sure the longer lead goes in the hole marked "+"* Solder and clip the leads
	Install C2 and C3 - capacitors marked "22J" Bend leads, solder and clip. Install crystal X1 Bend leads, solder and clip.
	Install U1 (MCP4921) as shown. Be sure the notch points towards the "U1" on the board as shown.
	Turn the board over, bend some of the leads so the chip doesn't fall out and solder all the leads.
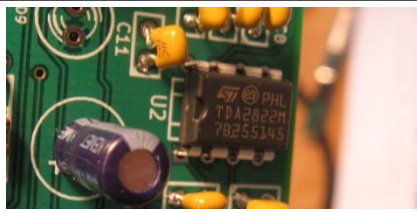
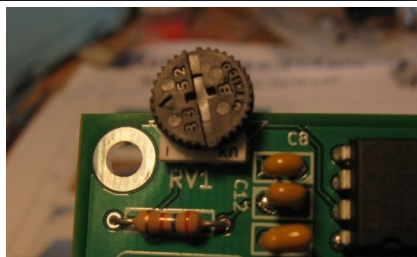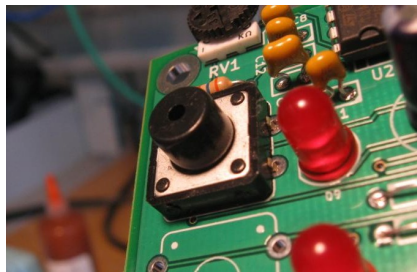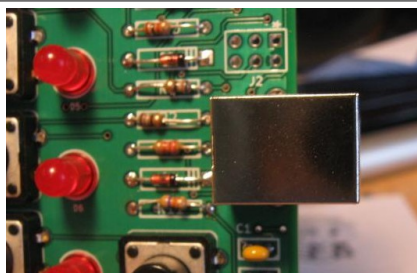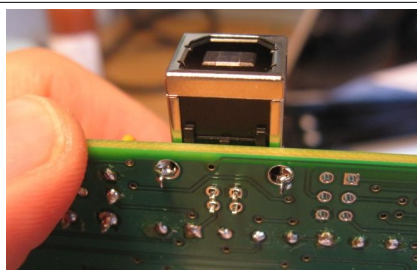|	
	Install U2 (TDA2822) the same way. Be sure the notch points towards the "U1" on the board as shown. Bend the leads and solder.
	Install the red LEDs. Be sure the flat side of the LED is lined up with the flat on the silkscreen as shown. Bend the leads, solder and clip. Install all 8 LEDs the same way.
	Install RV1, the volume control as shown. Solder the 3 leads on the back.
	Install 10 buttons. They should snap into the board and stay in place while you solder them.
	Install the USB connector "J1"
	Solder the 4 small leads and two large ones on the back
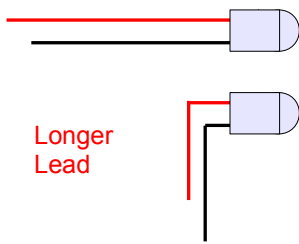
Longer
Lead

Find R10, the light sensor (photodiode)
It looks like an LED but clear.

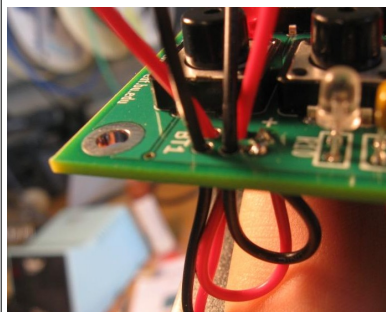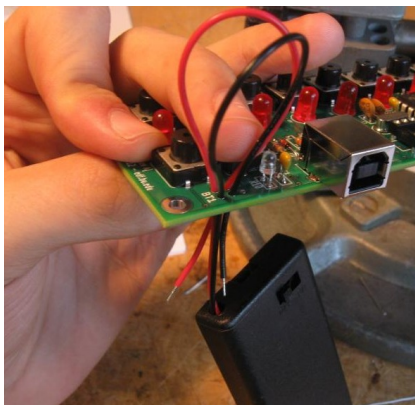Bend the leads as shown. Note that one lead is longer than the other.
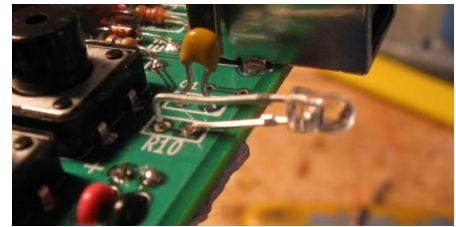
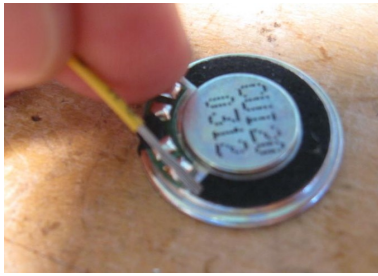Install in the board as shown.
Solder and clip the leads.
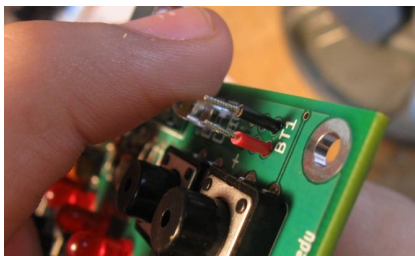
Attach the Battery holder.
Feed the red and black wires up through the holes "BT1" as shown.
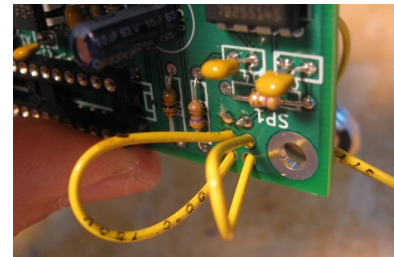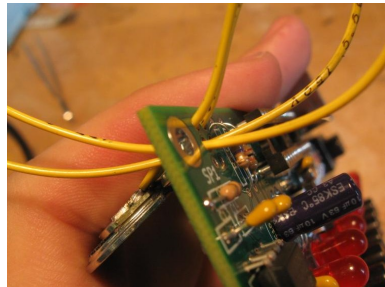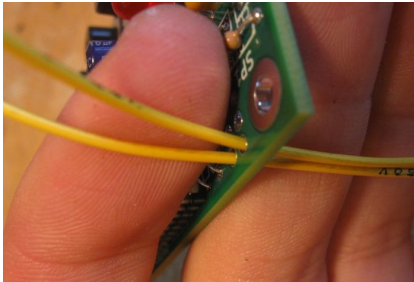*The red wire goes through the hole by the letter "B"*

Then down through the next set of holes.
Finally up through the last set of holes and solder

Pull the wires tight (use pliers if needed)

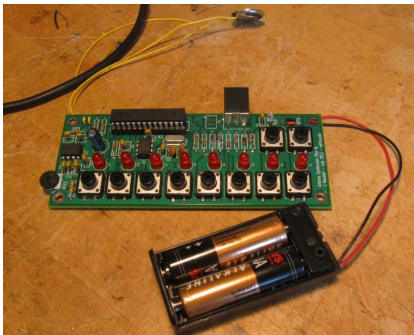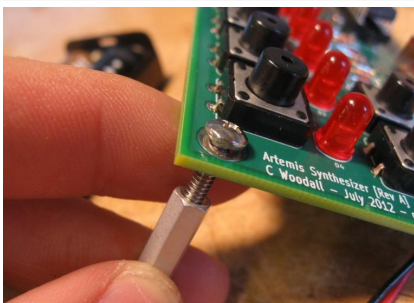|	
	Next, solder two yellow wires to the back of the speaker as shown.
Thread the wires up through one set of holes by "SP1", down through the next set, and finally up and solder. (It doesn't matter which wire goes in which hole)	
	Install the microcontroller (ATMEGA328P) in the socket. Make sure all the leads go in their holes, and that the notch matches up with the mark on the board
	You're almost done!
	Use screws to attach the 4 "legs" (standoffs)
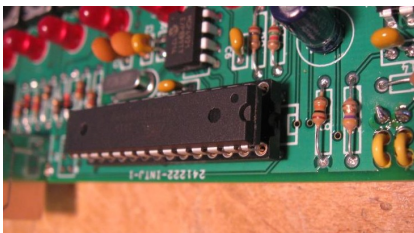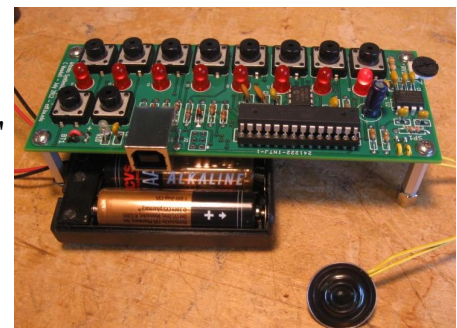
You're done! Please go find a helper to inspect your work carefully before you install batteries.