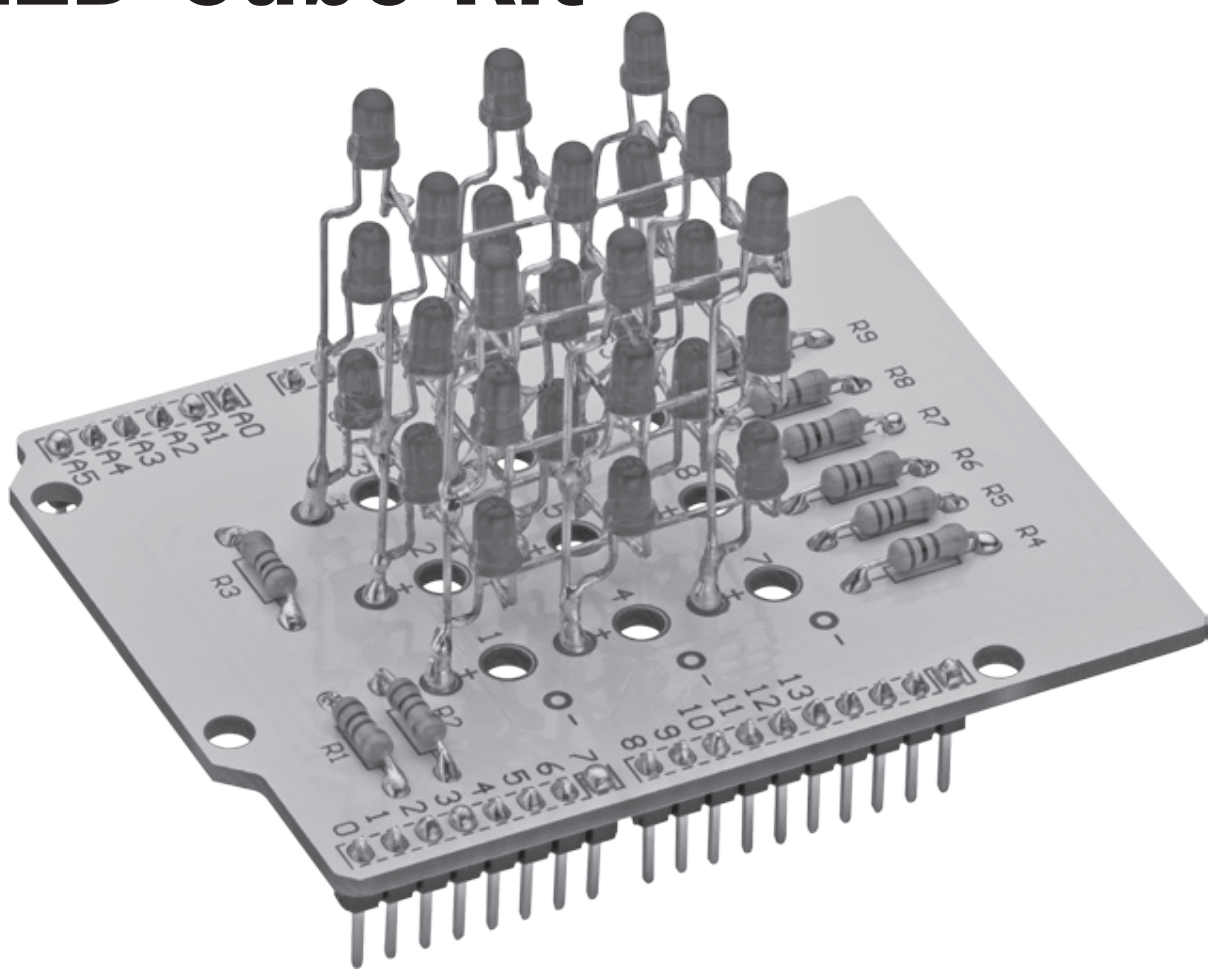
RadioShack®

User's Guide

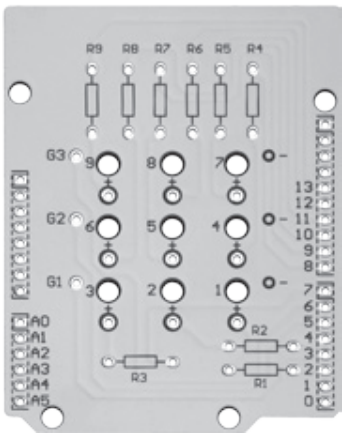
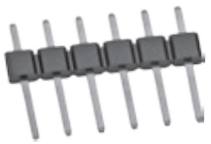
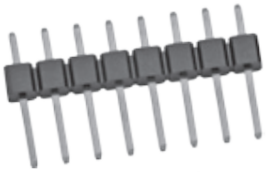
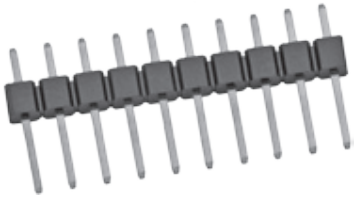
2770158

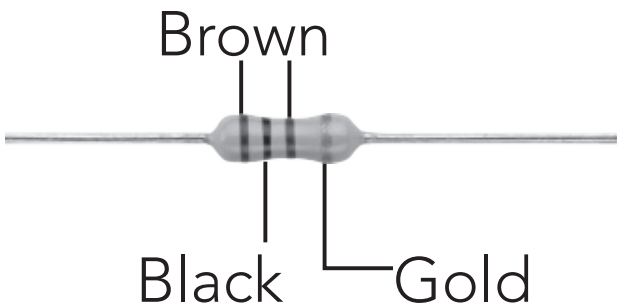
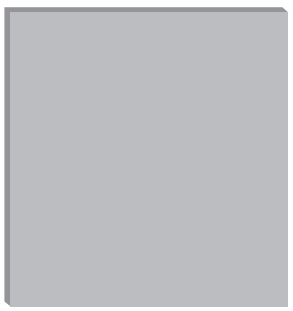
3D LED Cube Kit



Thank you for purchasing your 3D LED Cube Kit from ***RadioShack****. Please read this user's guide before setting up and using your new LED cube.*

Package Contents

Printed Circuit Board	Pin Headers	
		6 Pin
		8 Pin (2)
		10 Pin

100 Ohm Resistors (9)	LED (27)	Sticker
		

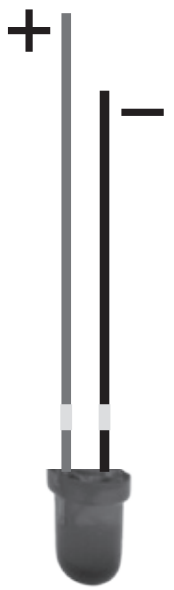
- Compatible with Arduino Uno R2/R3 boards.

Before You Begin

Instill good working habits. A soldering iron is not a toy.

- Prepare a clean, uncluttered workspace with no distractions.
- Verify all tools and parts.
- Review schematics and instructions. Attention to detail is critical.

Assemble the LED Kit



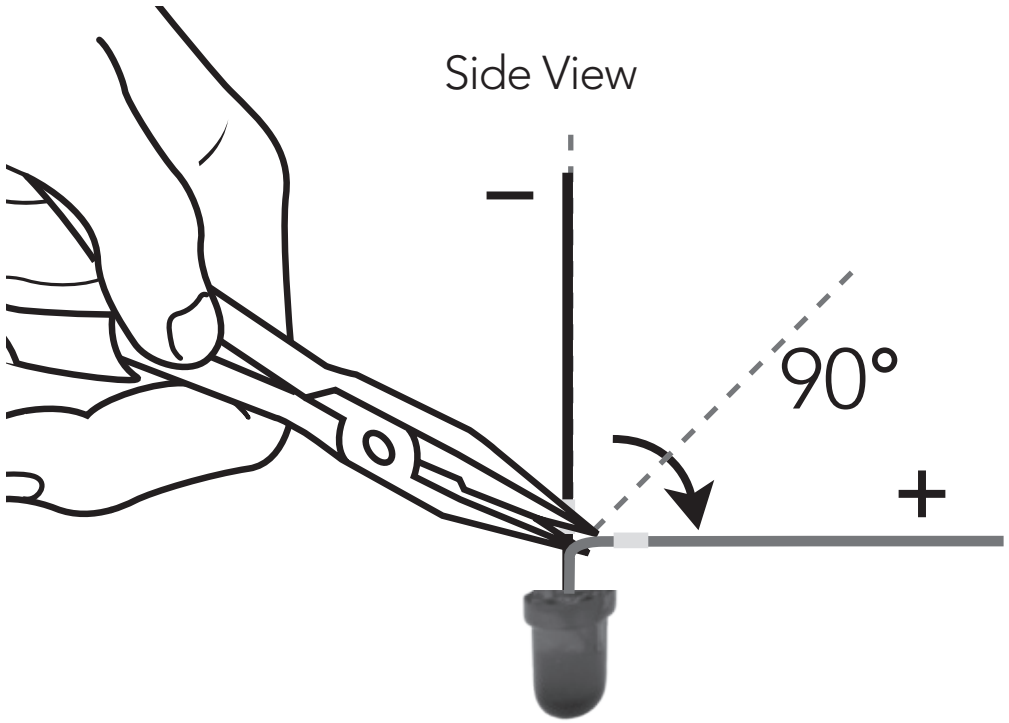
Front View

① Bend the LED Leads

Note: *The LEDs are polarized. The longer lead is positive; the shorter lead is negative.*

Tip: Use needle-nose pliers to make straight right-angle bends.

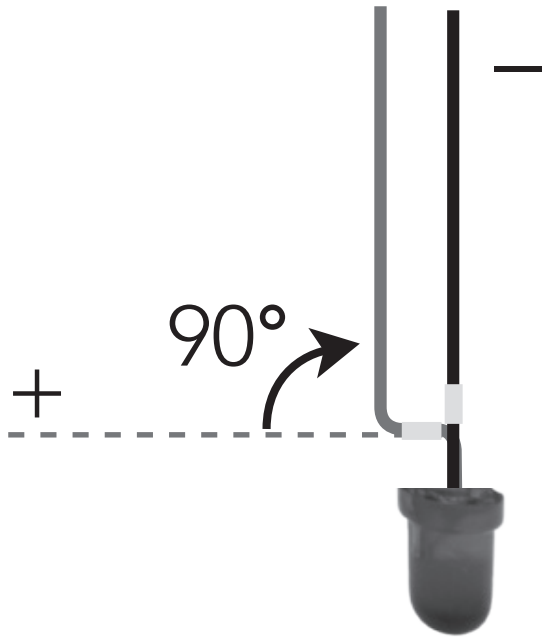
1. Hold the LED with the positive lead facing you.
2. Use pliers to bend the positive lead *below* the notch 90° to the right.



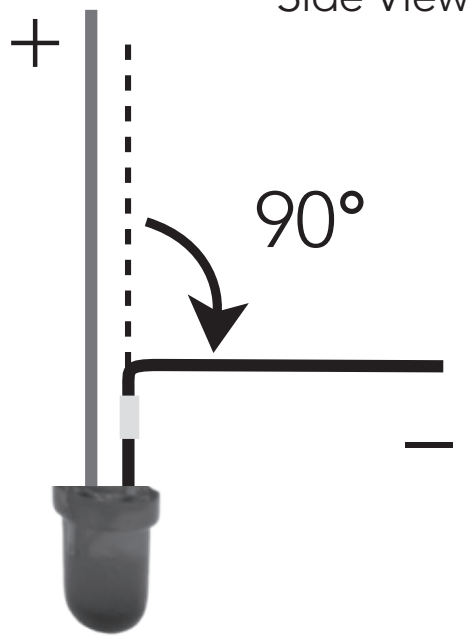
3. Above the notch, bend the positive lead up again at 90°.

4. With the bend of the positive lead facing you, bend the negative lead above the notch, 90° to the right.

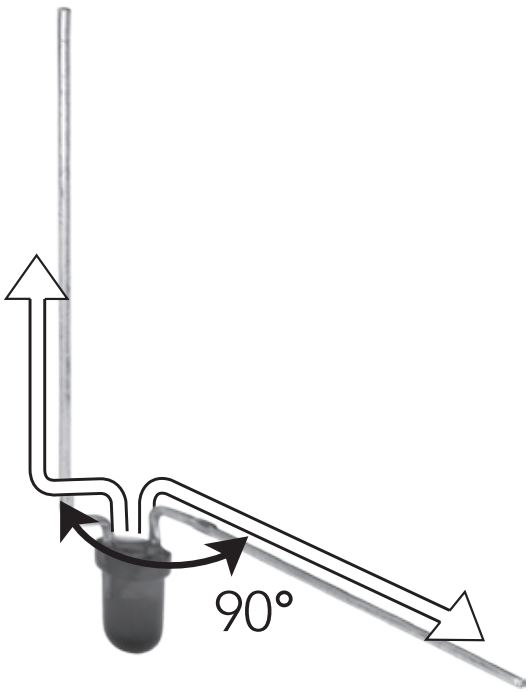
5. Repeat this procedure for all 27 LEDs.



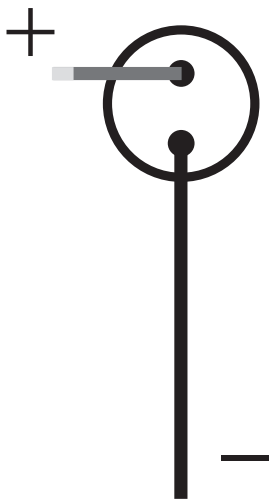
Side View



Front View



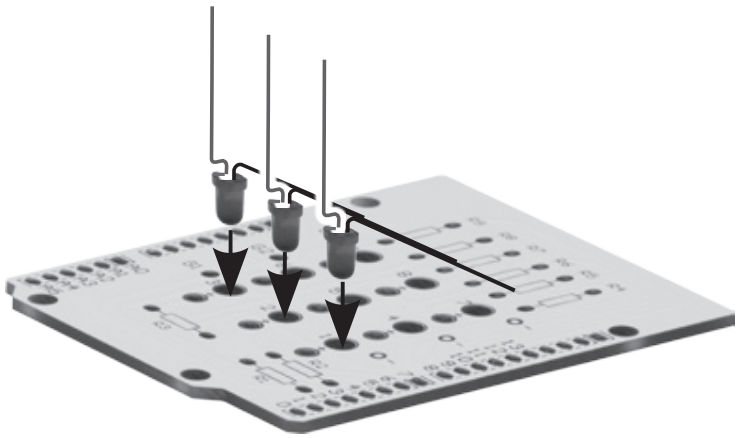
Angled View



Bottom View

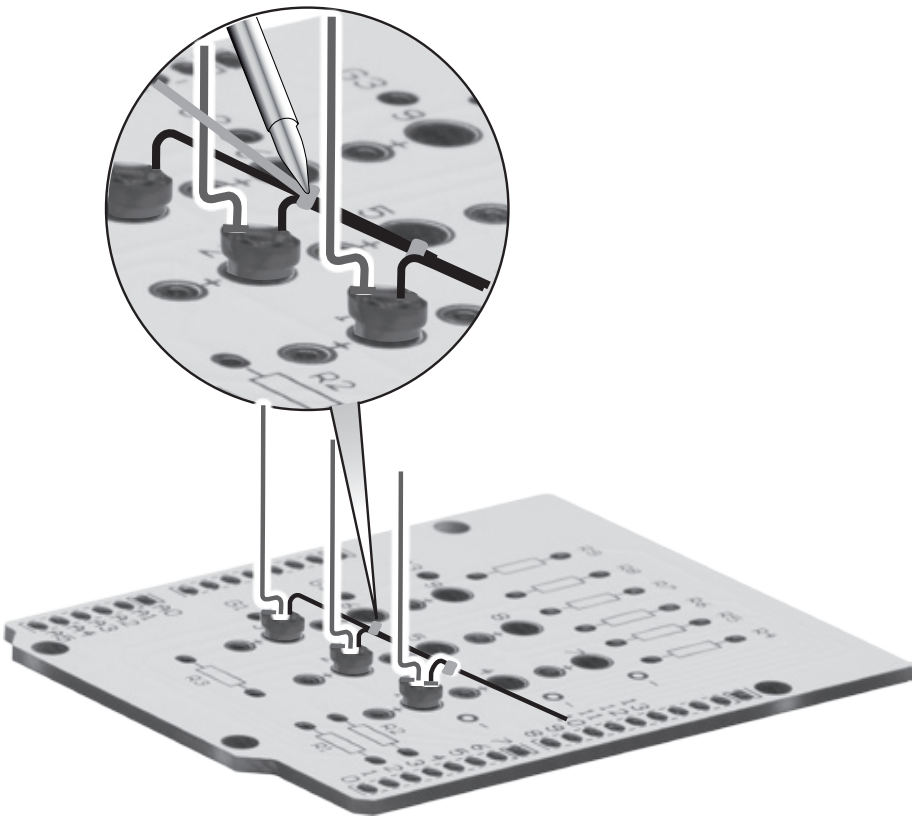
② Build Rows of LEDs

1. Insert the bent LEDs upside down into the 3, 2, and 1 holes on the PCB with the negative leads pointing toward the negative markings and the positive leads pointing toward the positive markings.



2. Solder the overlapping negative leads together and trim the excess lead.

3. Repeat this process until you have nine rows of three LEDs.

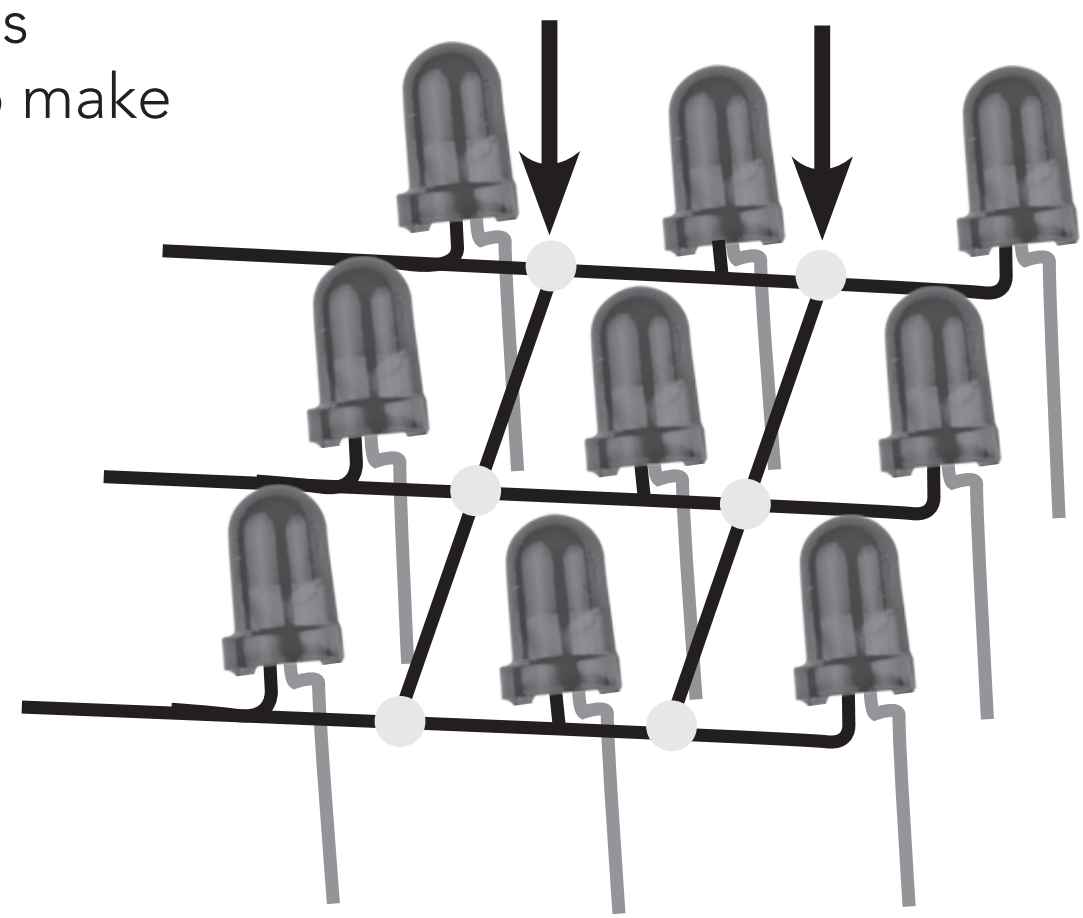


③ Build a Layer of LEDs

1. Join three LED rows by soldering two pieces of wire to the negative leads on each side of the center LEDs.

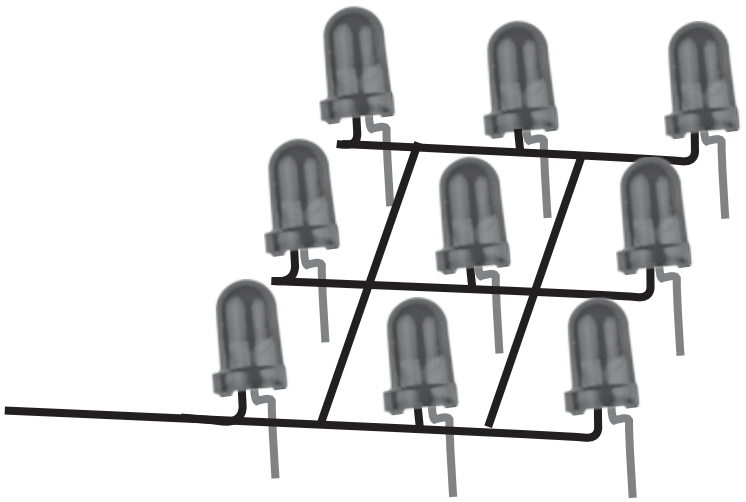
Tip: Apply a small amount of solder where you want to place the wire, then place the wire, and reheat the solder.

2. Trim the excess wire.
3. Repeat this process to make three total layers.



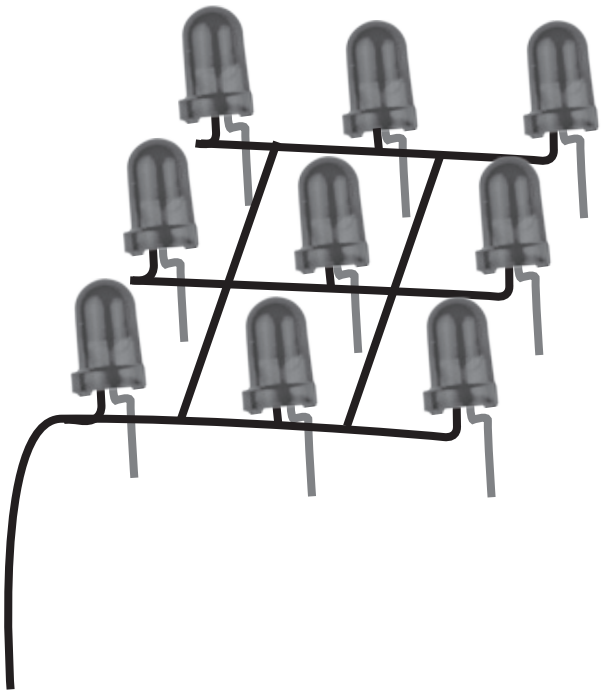
④ Mount the Base LED Layer

1. Select one layer as the bottom layer.
2. Align the layer with the positive leads over the designated pads, and the negative leads over G1, G2, and G3.



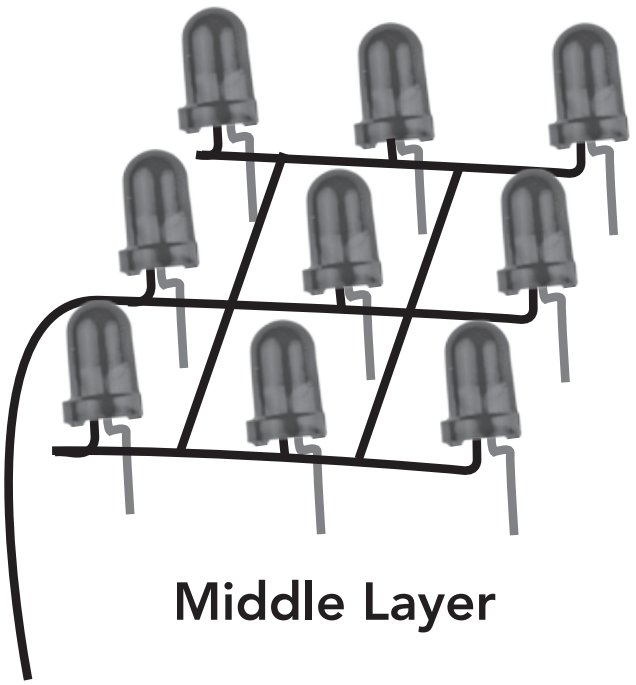
Bottom Layer

3. Trim off the back two negative leads, leaving only the front negative lead over G1.
4. Bend the negative lead, and insert all the leads into their designated pads.



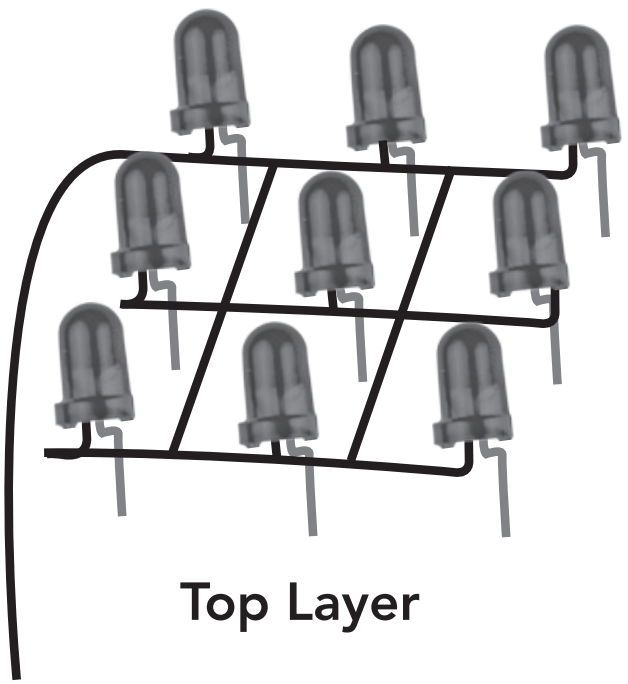
5. Solder all the pads for the layer, and trim the extra leads on the other side of the board as closely to the board as possible.

⑤ Add LED Layers



Middle Layer

1. Select a middle layer and trim off the outside two negative leads, leaving only the middle negative lead.
2. Place the layer on top of the base layer and solder the positive leads to the positive leads of base layer.
3. Bend and solder the negative lead to G2. Use the extra lead trimmings or a separate piece of wire.
4. Repeat the process to connect the top layer to the middle layer, connecting the back negative lead to G3.

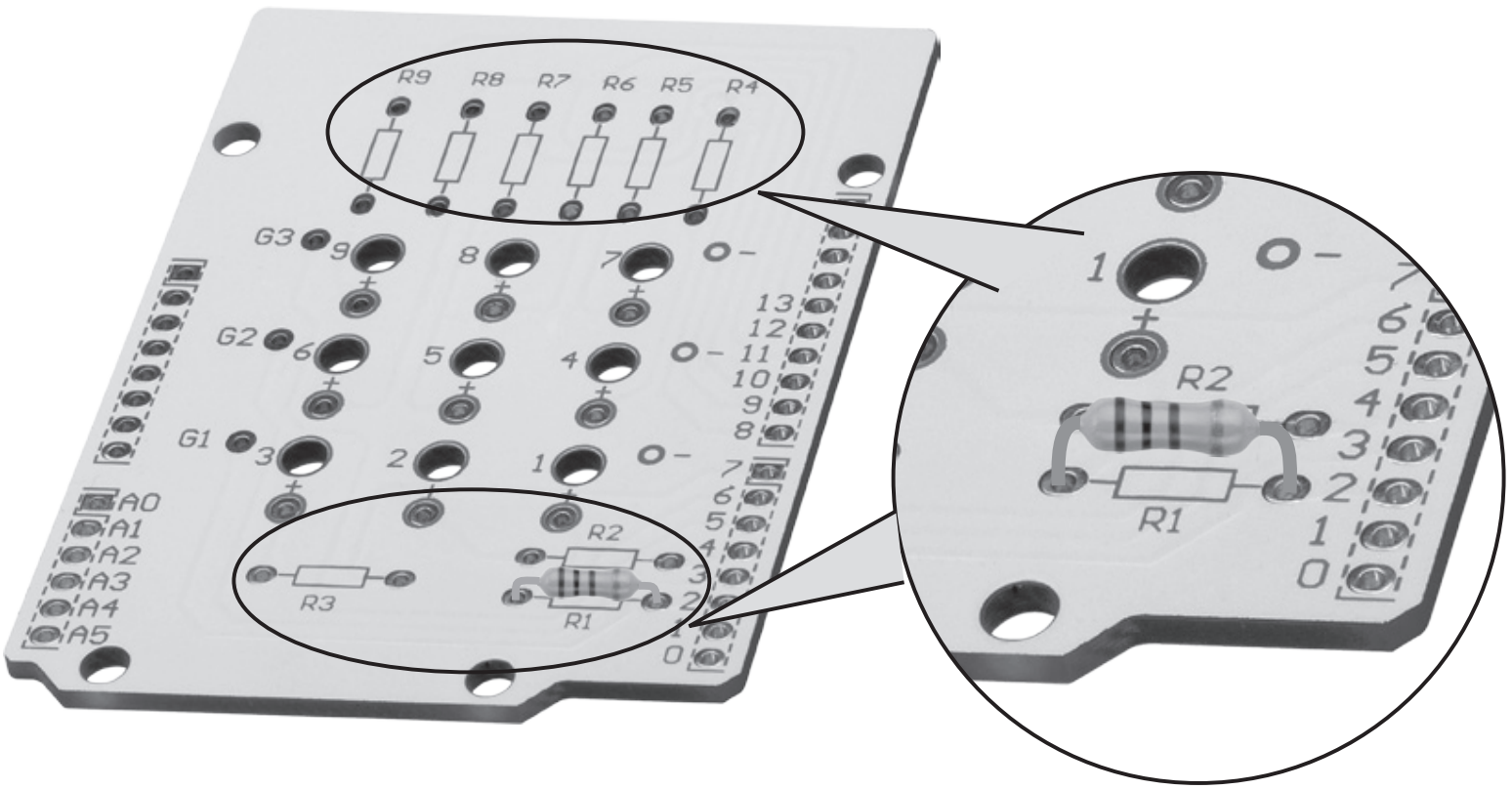


Top Layer

⑥ Install Resistors

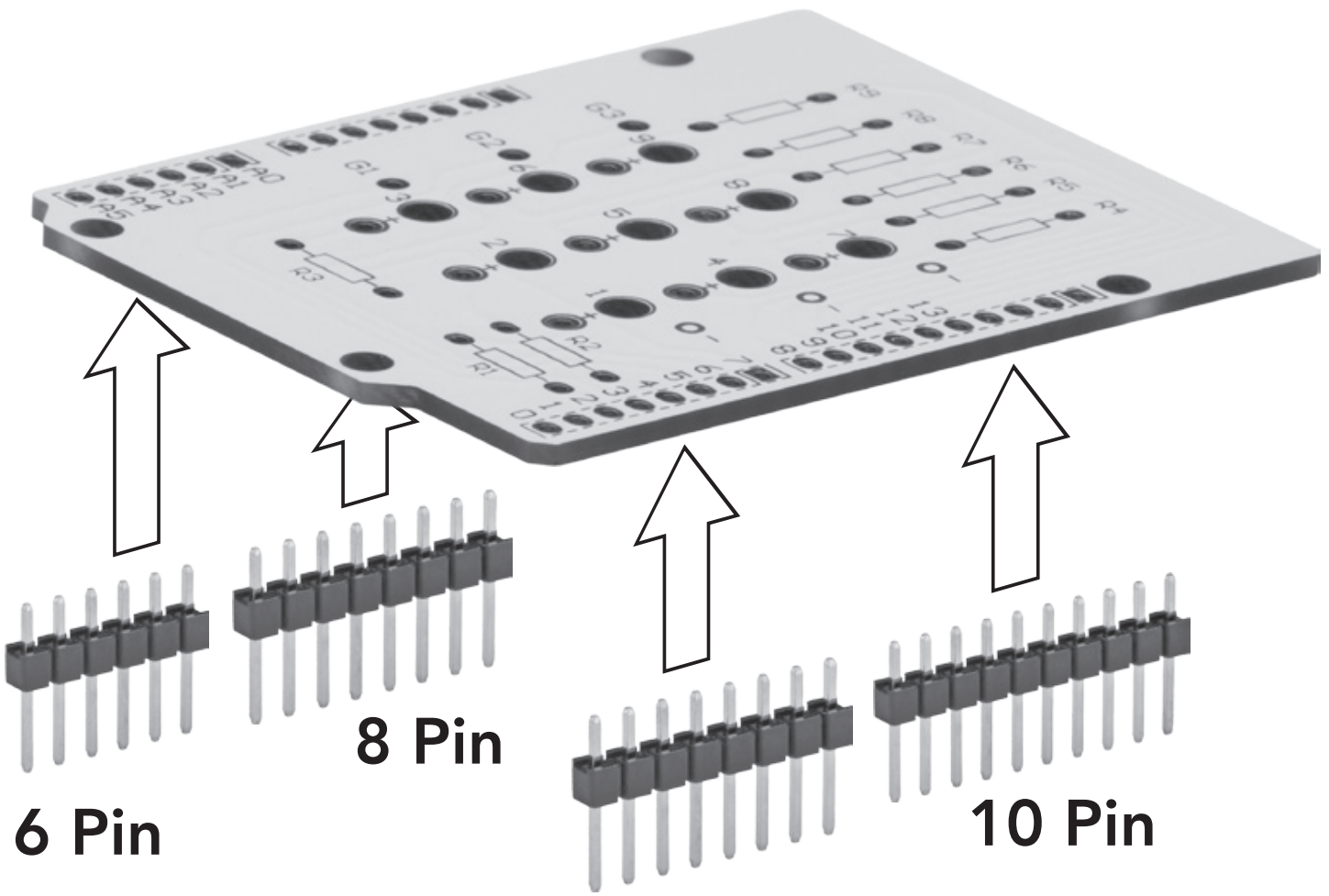
1. Bend the resistor leads close to the resistors.
2. Solder the resistors to the resistor pads (R1 to R9) and trim the excess leads flush with the board.
3. Peel the sticker from the backing and apply it to the bottom of the PCB. Be sure not to cover the pads for the pin headers.

Note: *Resistors are not polarized and can be inserted facing either direction.*



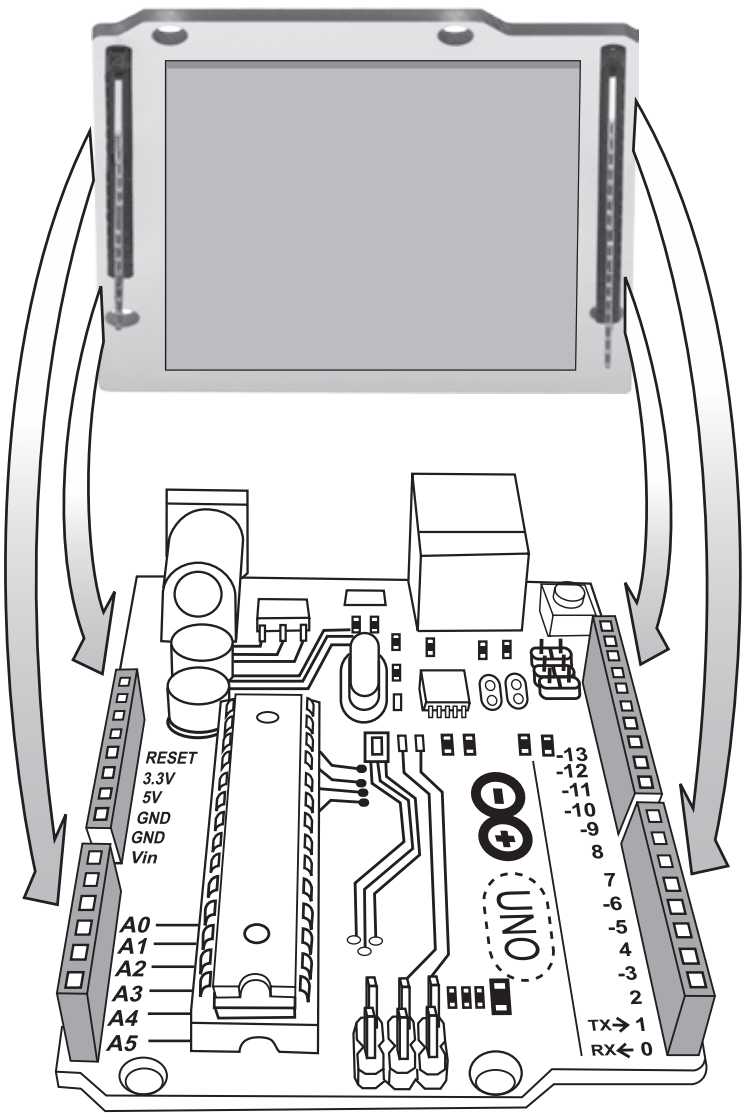
⑦ Install Pin Headers

Insert the pin headers through the bottom of the PCB and solder them in place.



⑧ Connect to the Arduino Board

1. Plug the pin headers into the matching pin holders on your Arduino board.
2. Connect your Arduino board to your PC with a USB cable (not included) so that it can communicate and receive power.



Download the Arduino Sketch

1. Go to the RadioShack techspecs blog and find the "RadioShack LED Cube Offers a Fun Challenge" blog post (http://blog.radioshack.com/2013/03/radioshack-led-cube-offers-a-fun-challenge/).
2. Click **RadioShack LED Cube Support Files**, open the folder, and extract the contents of the folder onto your computer.
3. Double-click **LED_CUBE.ino** to open the sketch in the Arduino development program. You can then save the file to your Arduino folder.
4. Verify and upload the sketch.

Note: *The* **RadioShack LED Cube Support Files** *include the schematic for your LED Cube.*

FCC Information

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

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RadioShack warrants this product against defects in materials and workmanship under normal use by the original purchaser for **ninety (90) days** after the date of purchase from a ***RadioShack***-owned store or an authorized ***RadioShack*** franchisee or dealer. ***RADIOSHACK*** MAKES NO OTHER EXPRESS WARRANTIES.

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