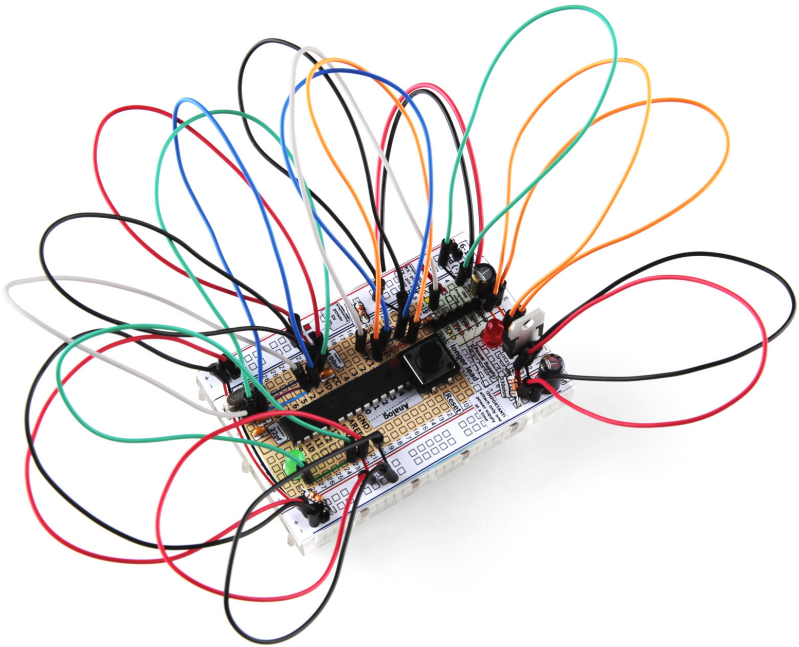


**(RDBR)**  
redboard  
breadboard

# Redboard Breadboard Assembly Guide



**(RDBR)**

  
sparkfun.com



## A Few Words

### ABOUT THIS KIT

The overall goal of this kit is fun. Beyond this, the aim is to get you comfortable using a wide range of electronic components through small, easy circuits. The focus is to get each circuit working then give you the tools to figure out why. If you encounter any problems, want to ask a question, or would like to know more about any part, extra help is only an e-mail away [help@oomlout.com](mailto:help@oomlout.com).



### ABOUT OPEN SOURCE HARDWARE

All of the projects at SparkFun and [.oomlout.](http://www.oomlout.com) are open source. What does this mean? It means everything involved in making this kit, be it this guide, 3D models, or code, is available for free download. But it goes further, you're also free to reproduce and modify any of this material, then distribute it for yourself. The catch? Quite simple; it is released under a Creative Commons (By - Share Alike) license. This means you must credit [.oomlout.](http://www.oomlout.com) in your design and share your developments in a similar manner. Why? We grew up learning and playing with open source software and the experience was good fun, we think it would be lovely if a similar experience was possible with physical things.

More details on the Creative Commons CC (By - Share Alike) License can be found at <http://ardx.org/CCLI>

### ABOUT [.oomlout.](http://www.oomlout.com)

We're a plucky little design company focusing on producing  
"delightfully fun open source products"

To check out what we are up to

<http://www.oomlout.com>

### ABOUT SPARKFUN

SparkFun is an energetic young company seeking to make electronics fun, accessible, and approachable to everyone - from kids in elementary school to PhD-toting engineers.

<http://www.sparkfun.com/>

### ABOUT PROBLEMS

We strive to deliver the highest level of quality in each and every thing we produce. If you ever find an ambiguous instruction, a missing piece, or would just like to ask a question, we'll try our best to help out.

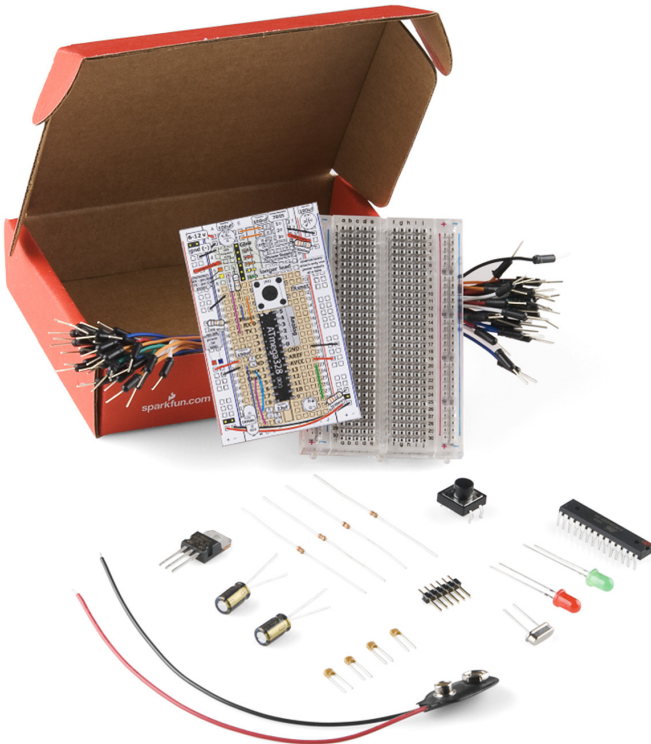
[help@oomlout.com](mailto:help@oomlout.com)

(we like hearing about problems it helps us improve future versions)

**Thanks For Choosing [.oomlout.](http://www.oomlout.com)  
and SparkFun**

# .: Where to Find Everything .:

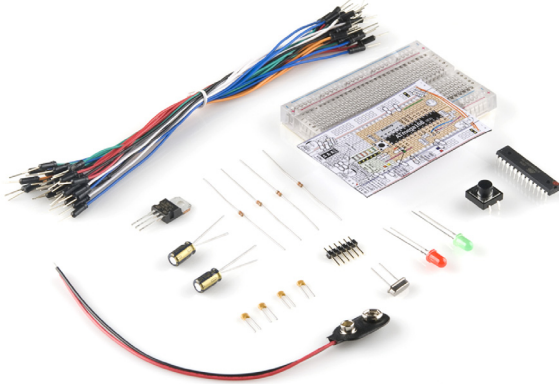
{PART}	Required Parts	02
{COMP}	Comparing a RDBR to an Arduino USB	03
{SCHEM}	RDBR Schematic	04
{ASEM}	Assembly Instructions	05
{PROG}	Programming Instructions	08
{NOTE}	Room to Take Notes	09






# 01 PART

the parts



## :: The Parts Needed for a :: :: Redboard Breadboard ::





### Capacitors

-  **100 uf** - filters the power supply
-  **100 nf** - bypass capacitor (104)
-  **22 pf** - filters the crystal (220)


### Resistors

-  **330 ohm** (orange-orange-brown)  
LED current limiting
-  **10k ohm** (brown-black-orange)  
Pull-ups


### Headers

-  **6 Pin** - used for programming with an FTDI cable
-  **2 Pin** - used to pin down the breadboard layout sheet.


### Battery Clip - (9v)

-  For powering the board with a 9v battery


### Breadboard

-  Allows for easy assembly of circuits without soldering


### Crystal - (16 MHz)

-  Provides a clock signal for the ATmega chip


### Breadboard Layout Sheet

-  Place on top of a breadboard to show where components go


### Microcontroller - (ATMega328)

-  A single chip computer that runs your code


### Pushbutton - (Reset)

-  Resets the micro-controller when pressed

### Voltage Regulator - (7805)

-  Takes in 7-12 volts and outputs 5 volts

### LEDs- (Light Emitting Diodes)

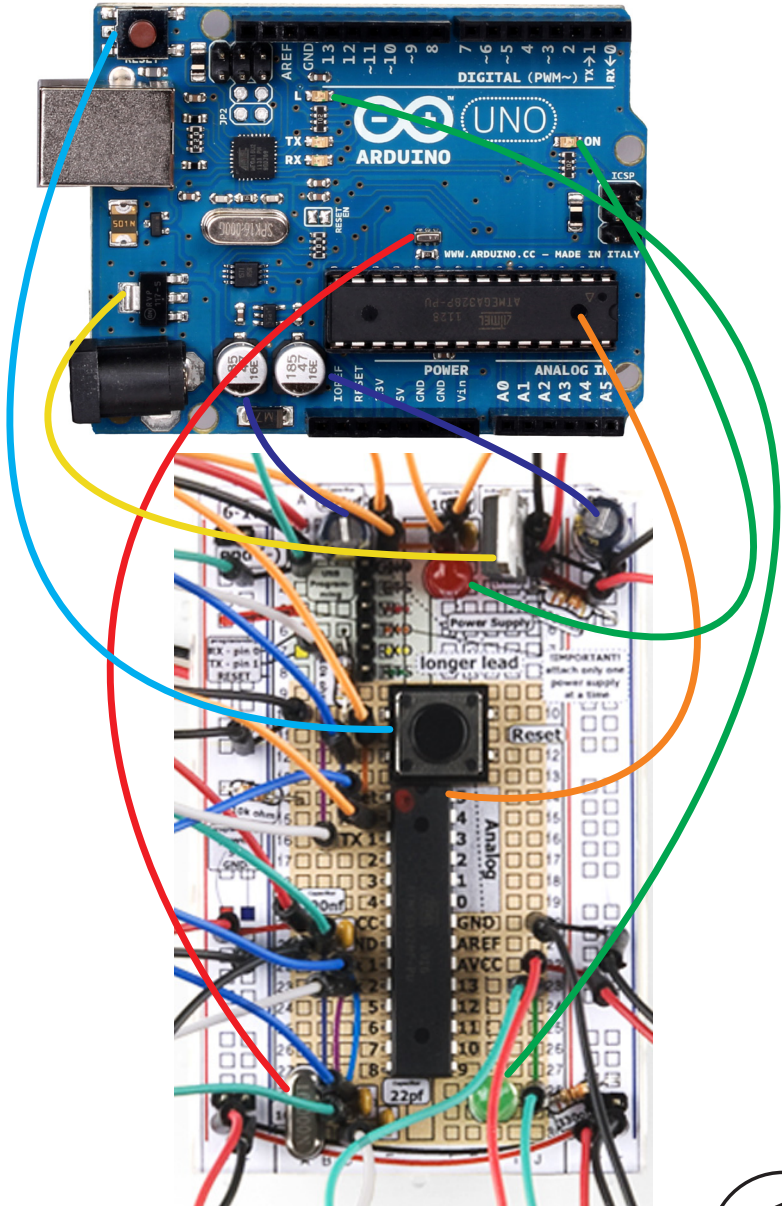
-  Used as indicators  
Red - power  
Green - connected to pin 13

.: An Arduino Uno.:

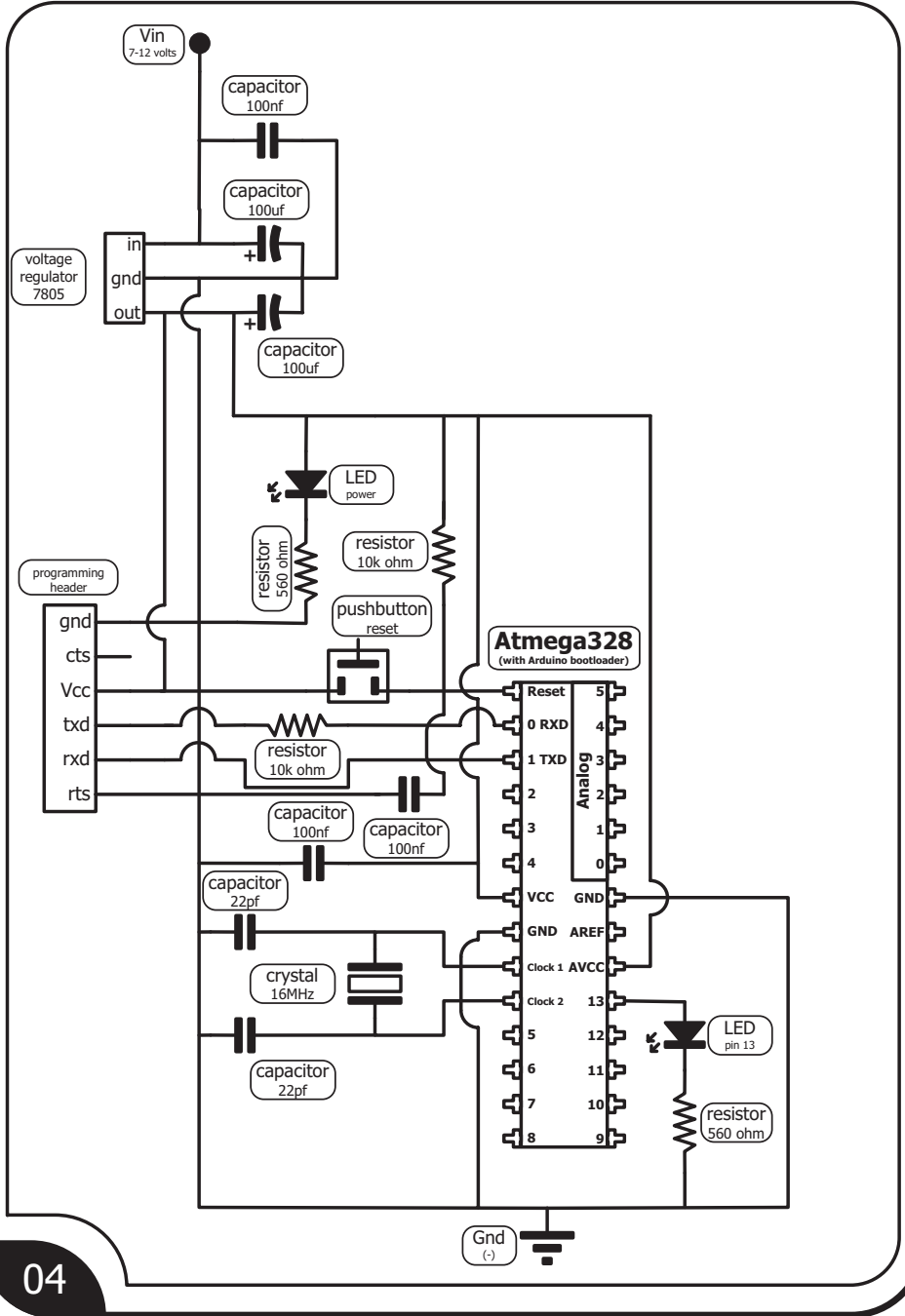
&

.: Redboard Breadboard Compared.:

**02 COMP**  
comparison



## :: Redboard Breadboard: ::Schematic::



**∴ Redboard Breadboard ∴**  
**∴ Assembly Steps ∴**

**Parts:**



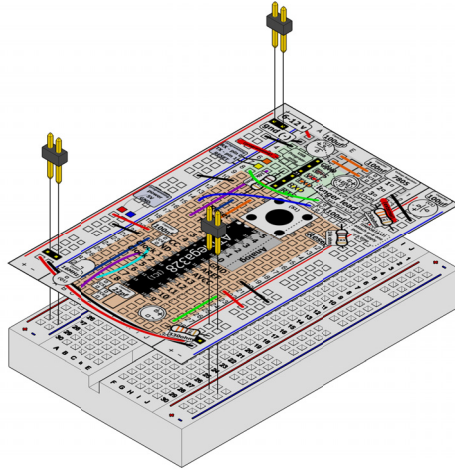
**Breadboard**  
x1



**Breadboard  
Layout sheet**  
x1



**2 Pin Header**  
x3



**1**

**Parts:**



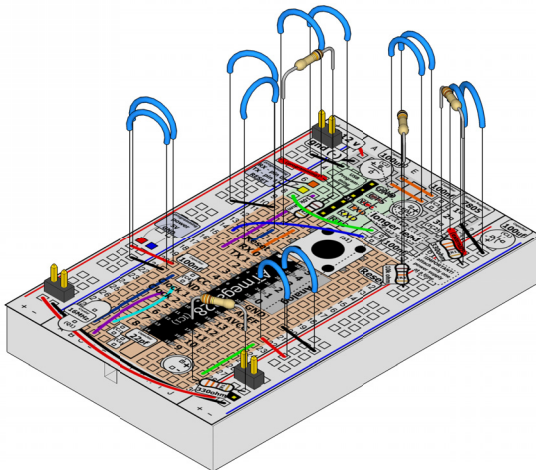
**wire**



**330 ohm resistor**  
(orange-orange-brown)  
x2



**10k ohm resistor**  
(brown-black-orange)  
x2



**2**

# 04 ASEM

assembly

## Parts:



Capacitor  
100 uf  
x2

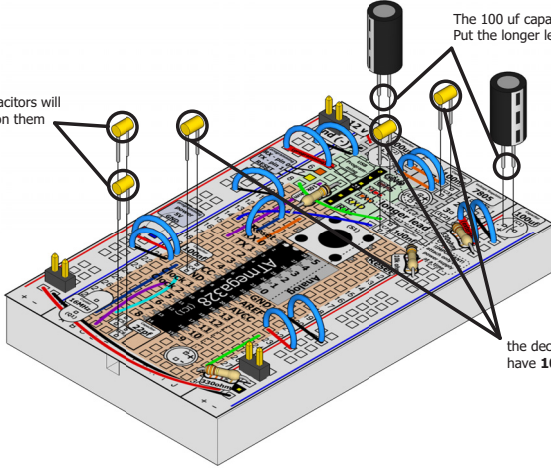


Capacitor  
100 nf (104)  
x3



Capacitor  
22 pf (220)  
x2

the smoothing capacitors will  
have 220 written on them



The 100 uf capacitors are polarized.  
Put the longer lead in the indicated hole

the decoupling capacitors will  
have 104 written on them

# 3

## Parts:



Pushbutton  
x1



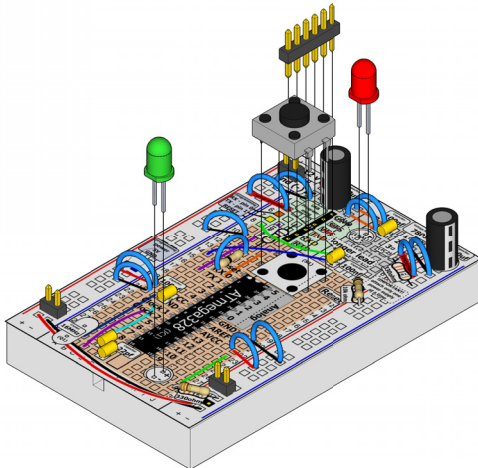
Header (6 pin)  
x1



Red LED  
x1



Green LED  
x1



# 4



**Parts:**



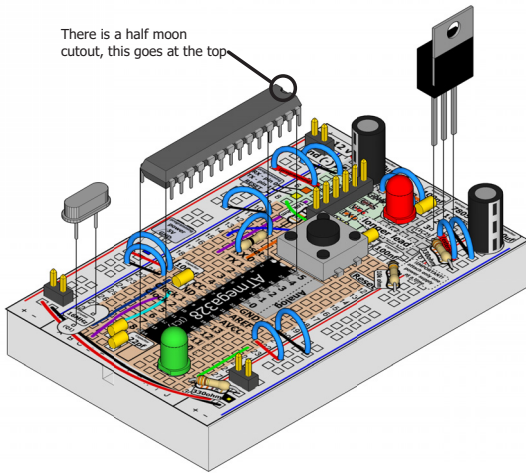
**Microcontroller**  
ATmega328  
x1



**Crystal**  
(16 MHz)  
x1



**Voltage Regulator**  
(7805)  
x1



**5**

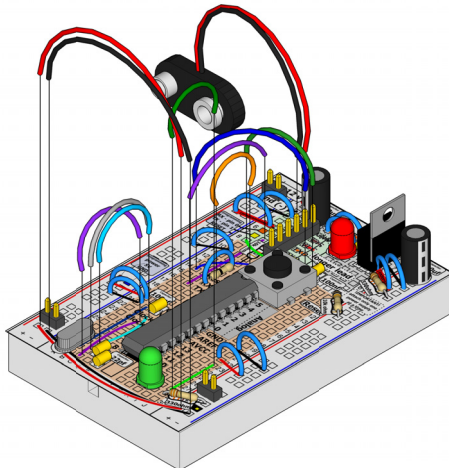
**Parts:**



**Wire**



**Battery Clip**  
x1



**6**

07

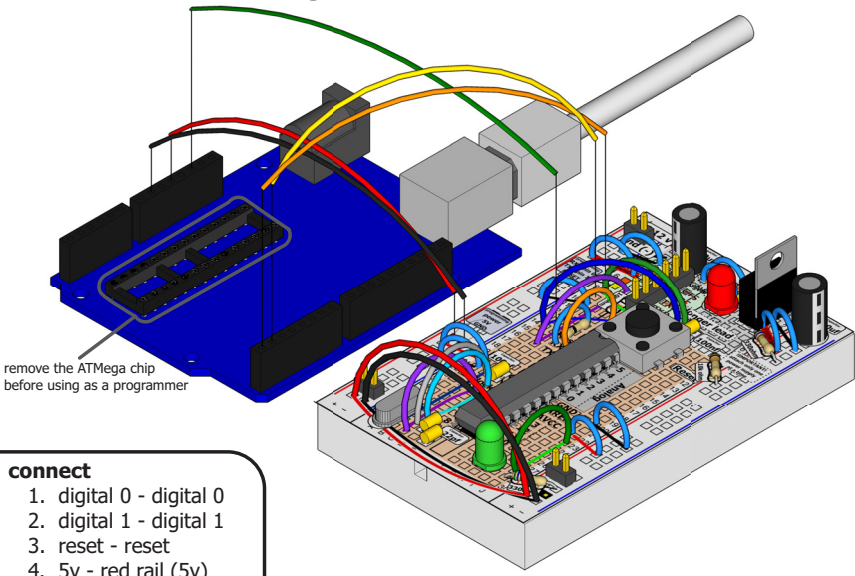
# 05 PROG

programming

## :: Programming Your Redboard Breadboard::

(you can either use an Arduino USB board or an FTDI USB-Serial breakout board to program your RDBR)

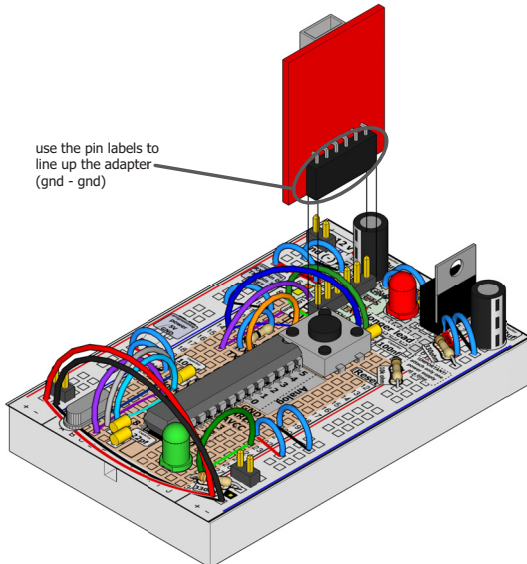
### Using an Arduino USB Board



#### connect

1. digital 0 - digital 0
2. digital 1 - digital 1
3. reset - reset
4. 5v - red rail (5v)
5. gnd - blue rail (gnd)

### Using an FTDI Breakout Board



**.: Notes:.**

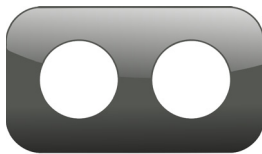
**.:Room for a Few Notes:.**

**06 NOTE**  
notes

A large rectangular area with rounded corners, containing 25 horizontal lines for writing notes. The lines are evenly spaced and extend across most of the width of the page.

**(RDBR)**  
redboard  
breadboard

  
**sparkfun.com**



**www.oomlout.com**

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