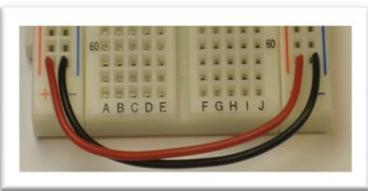
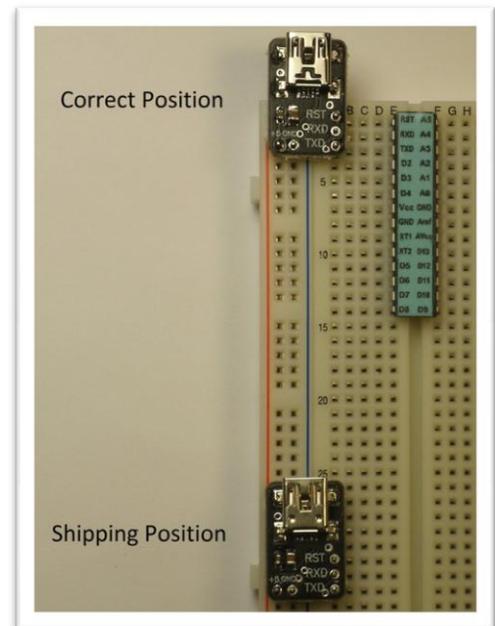


Kit Contents: 830 point solderless breadboard, preprogrammed Atmel AVR ATmega328P with chip label, USB adapter, 16 MHz quartz crystal, 2 green LEDs, two 470 Ω resistors, 2 pushbuttons, piezo speaker, 1 M Ω resistor, jumper wires.

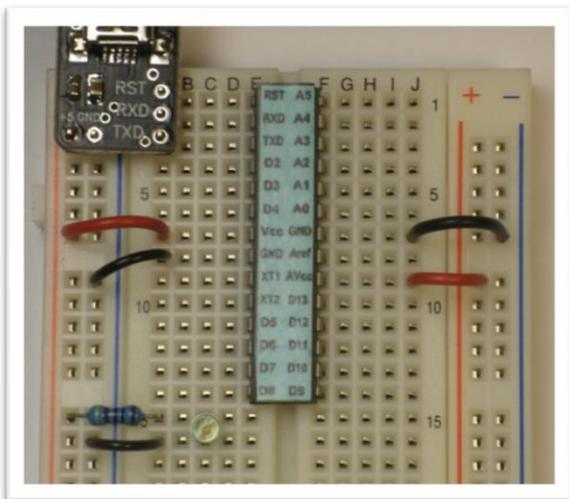
The solderless breadboard has a lot of *tie-points*; small, square holes with a spring clip inside. You can insert a jumper wire or component lead in each hole. The tie-points columns are labeled ABCDE and FGHIJ and are also numbered from 1 to 63 from the top to the bottom. Tie-points are referenced by their column and row positions, e.g., A-1 or B-2.

The pre-programmed Atmel AVR ATmega328P is already installed in the correct position. The USB adapter arrives in the "shipping position" and must be moved to the top left corner of the breadboard, so that its RST, RXD and TXD pins align with the same pins on the ATmega328P chip.



Find the long **red** and **black** jumper wires. Install them at the bottom of the breadboard. Connect the left **red** rail to the right **red** rail using the **red** jumper. Connect the left **blue** rail to the right **blue** rail using a **black** jumper.

Optional, recommended: Install one of the **blue** 470 Ω resistors from the left **red** power rail to tie-point A-15. Install a short **black** jumper from the left **blue** ground rail to tie-point A-16. Find one of the small, **green** LEDs. Notice that one lead is longer than the other. Insert the longer lead into tie-point C-15 and the shorter lead into tie-point C-16. This forms the circuit for the "power on indicator". It's nice to have.



Critical to success! The power connections to the chip look symmetrical but they are not. Follow these instructions carefully and check with the photograph. Then double-check with the printed instructions and then triple-check against the photo. Seriously.

Left [+] to A-7	Vcc	GND	Right [-] to J-7
Left [-] to A-8	GND		
		Avcc	Right [+] to J-8

(Not shown) Install the 2-pin quartz crystal (the one in the shiny, metal can) into tie-points C-9 and A-10. It should line up with the "XT1" and "XT2" pins on your chip.

(Not shown) Install the other **blue** 470 Ω resistor in tie-points J-10 and J-15. Install a short **black** jumper from between tie-point J-16 and the right **blue** ground rail. Find the other small, **green** LED. Install its long lead in tie-point H-15 and the short lead in tie-point H-16. This is the "programmable LED".

You are done. Plug a USB cable into USB adapter and then into your PC. The power indicator LED (if installed) should come on and stay on. The programmable LED should start blinking.

Install the Arduino IDE software on your PC. Follow the instructions for your particular operating system (Windows, Mac or Linux) on the Arduino web site: <http://www.arduino.cc>. Your new computer thinks it's a "Arduino Duemilanove".