A breadboard is a rectangular array of small electrical sockets that is designed to enable rapid and easily reconfigured circuits. One typically builds a prototype circuit on a breadboard, and then transfers the circuit to a more robust layout such as a soldered perf-board or a printed circuit board.

Figure 1 is an annotated image of a medium-sized breadboard. This style of breadboard is common. For example this is the style of breadboard included with the Arduino Inventors Kit. Beware that other styles with slight variations in the layout.

A breadboard is organized into rows and columns of electrical sockets. Those rows and columns can be further subdivided into groups. When the breadboard is oriented as in Figure 1, there are two outer pairs of columns with $+$ and $-$ labels. These are power rails that are used to supply a common voltage (say $+5V$ or $+12V$) and a common ground to the circuits in the main part of the board.

Between the power rails are two other groups of sockets. Again, referring to the orientation in Figure 1, these groups have letter labels at the top (a-e and f-j) and numerical labels along the left and right edges (1-30). Within these two central groups of sockets, *only the rows of sockets are electrically connected*. However, the two groups are not connected across the central gap. In other words, sockets a-e in row 8 are *not connected* to sockets f-j in row 8.
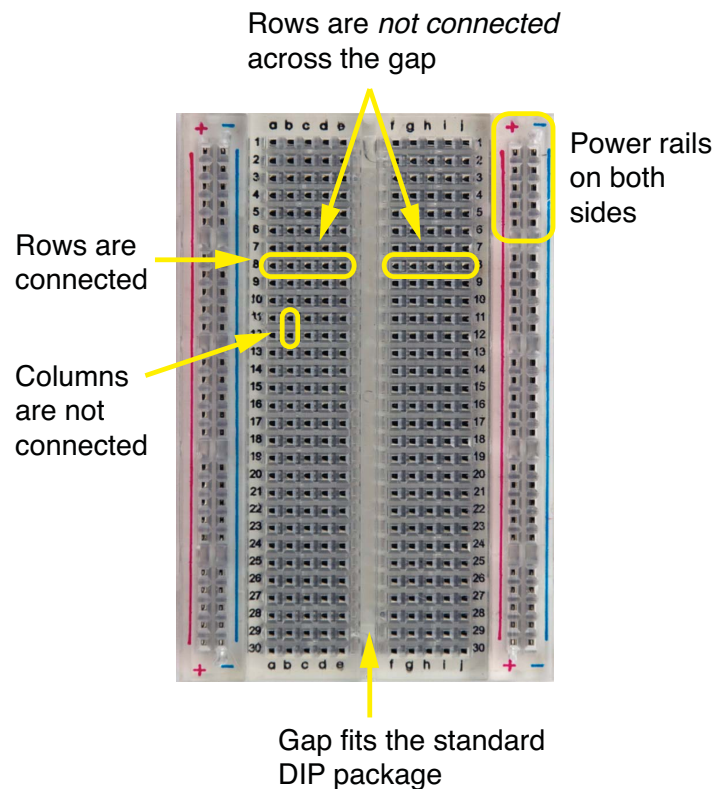

Figure 1: Medium size breadboard with connections highlighted.

Figure 2 shows how resistors in series are connected on a breadboard. Figure 3 show how resistors in parallel are connected on a breadboard.
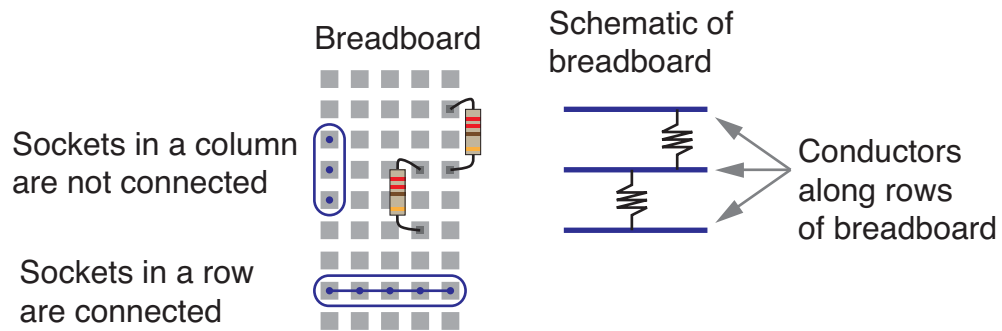
Breadboard   Schematic of
                    breadboard

Sockets in a column   Conductors
are not connected   along rows
                                             of breadboard
Sockets in a row
are connected

Figure 2: Resistors in series on a breadboard.

Breadboard   Schematic of
                    breadboard

Sockets in a column   Conductors
are not connected   along rows
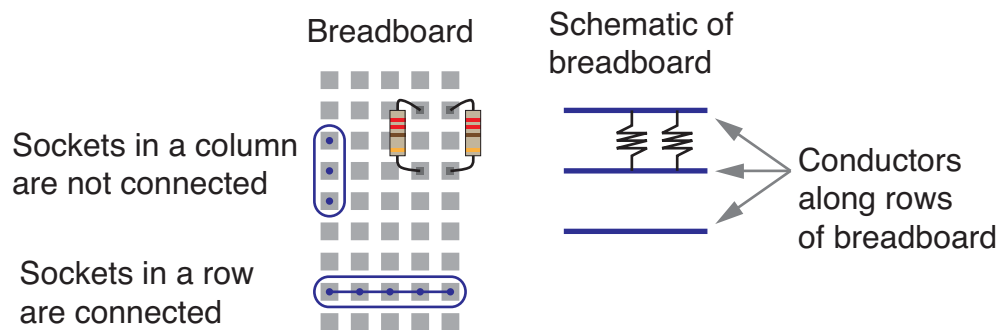   of breadboard
Sockets in a row
are connected

Figure 3: Resistors in parallel on a breadboard.