

# **THE BREADBOARD**

**START**

**APPEARANCE**

**USAGE**

**EXAMPLE**

**- END -**

**- END -**

**- END -**

# SUMMARY

# THE BREADBOARD

**1**

## APPEARANCE

What are the main sections of the breadboard? What do they look like? How are they typically used?

**3**

## EXAMPLE

An example circuit. The right way and wrong ways to build this circuit on a breadboard.

**END****2**

## USAGE

How are breadboards used to create simple circuits?

**END****END**

START

APPEARANCE

USAGE

EXAMPLE

- END -

- END -

- END -

## THE MAIN SECTIONS

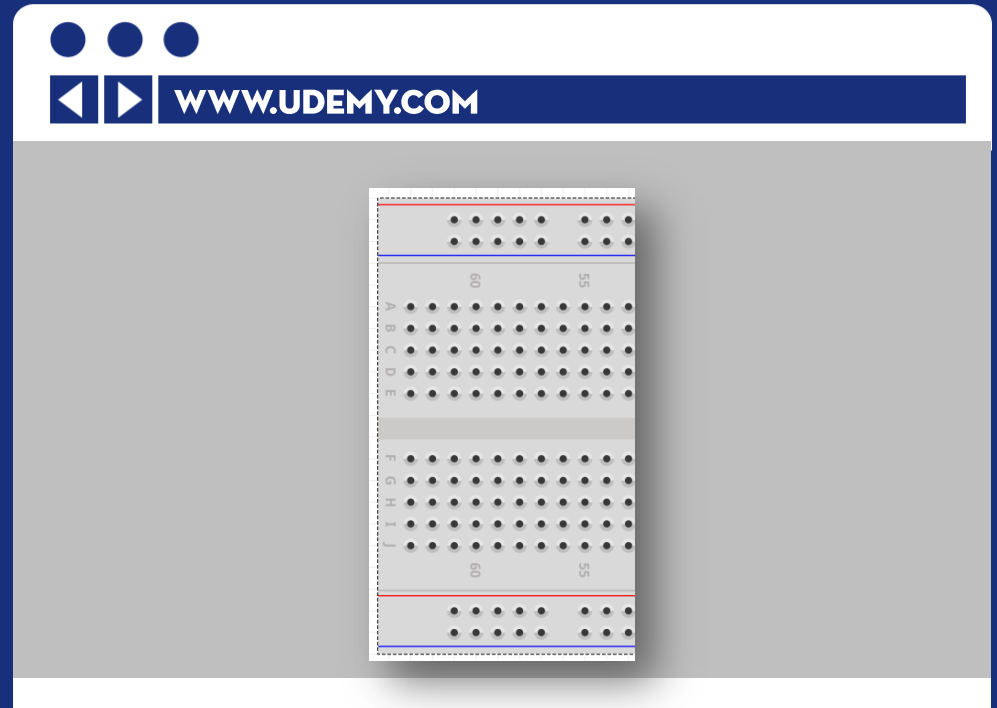
### BREADBOARD GEOGRAPHY

The breadboard is separated into three or four main sections.

The top and bottom sections, where holes are oriented in rows horizontally are called the power and ground rails. They are used to provide power to the different components of your circuit.

The middle sections, where holes are oriented in what looks more like a grid pattern are where the circuit components are placed and connected to each other.

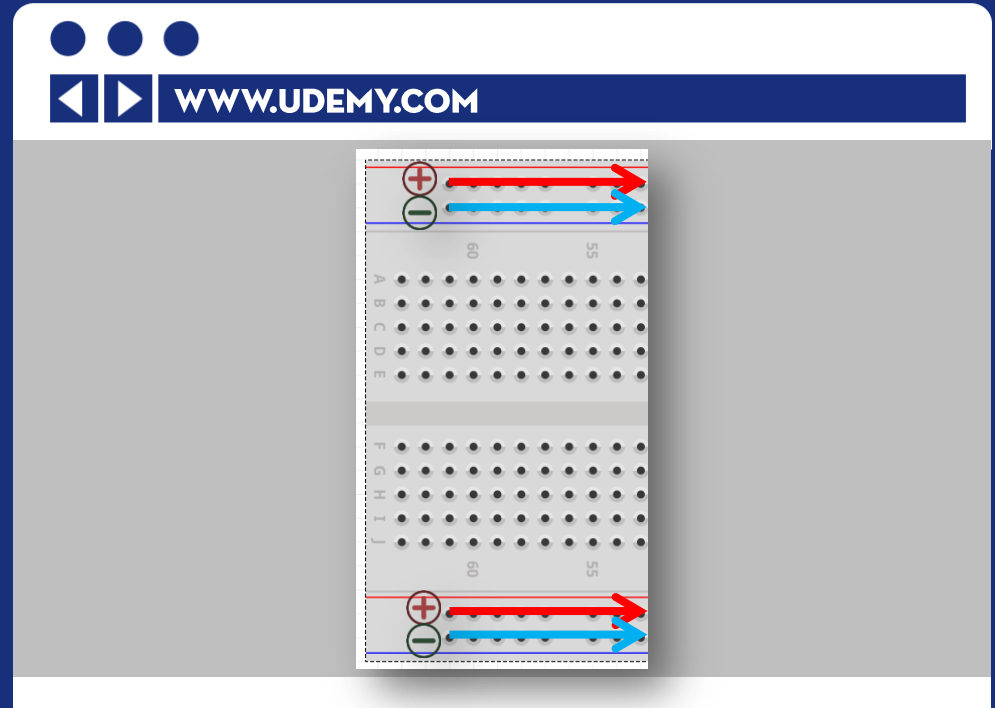
The horizontal gap splitting the bread board in half is called the ravine, or sometimes just the gap. It plays an important role we will learn later.



## THE 'RAILS'

### POWER DISTRIBUTORS

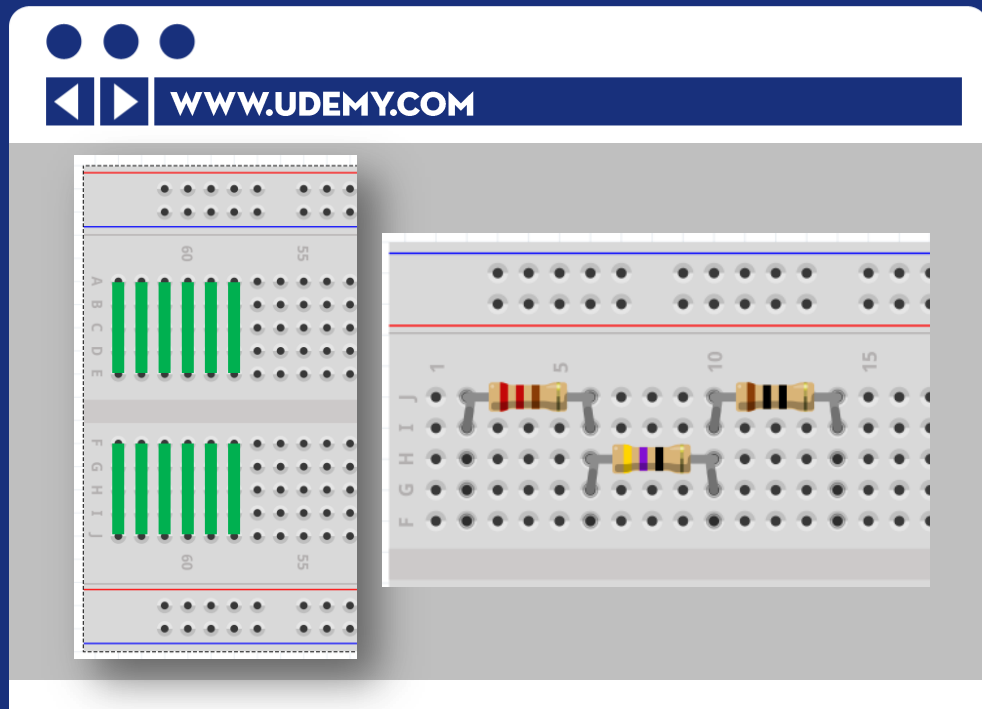
The rails on the top and bottom of the breadboard are electrically connected along its length, like you see in the diagram. In most newer breadboards, they are coloured with red and blue lines to indicate that power (red) and ground (blue) are connected there.



## THE 'GRID'

COMPONENTS GO HERE

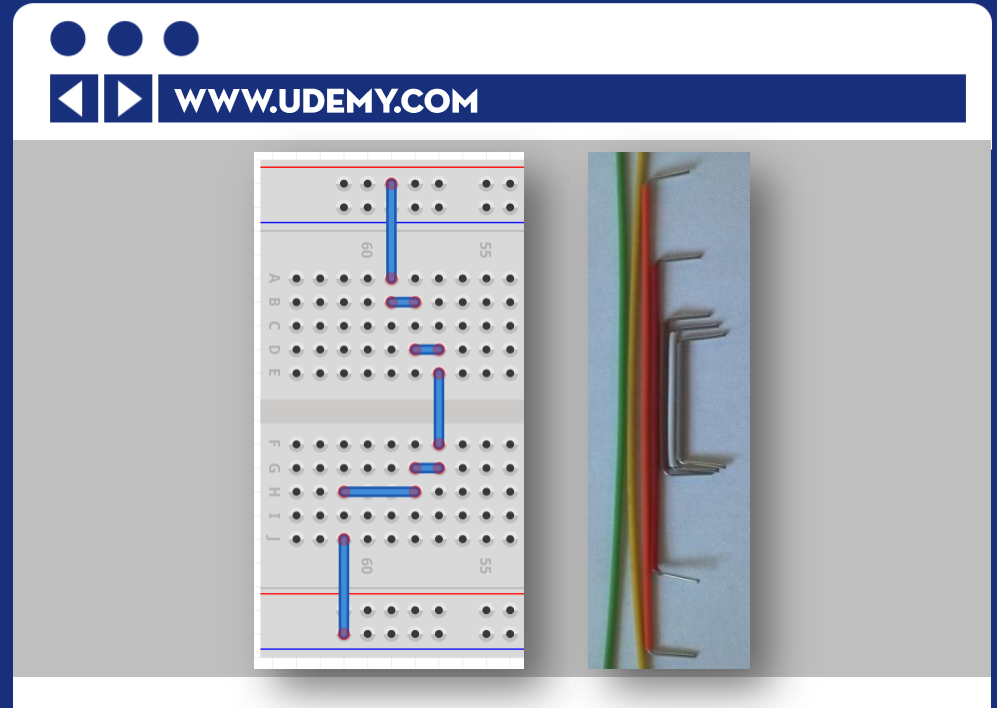
The holes in the middle section of the breadboard are electrically connected vertically. This means that if you “plug in” two components into the same column, they will conduct electricity between them. This is how components are connected, and circuits are built, using a breadboard.



## MAKING CONNECTIONS

### USE JUMPERS

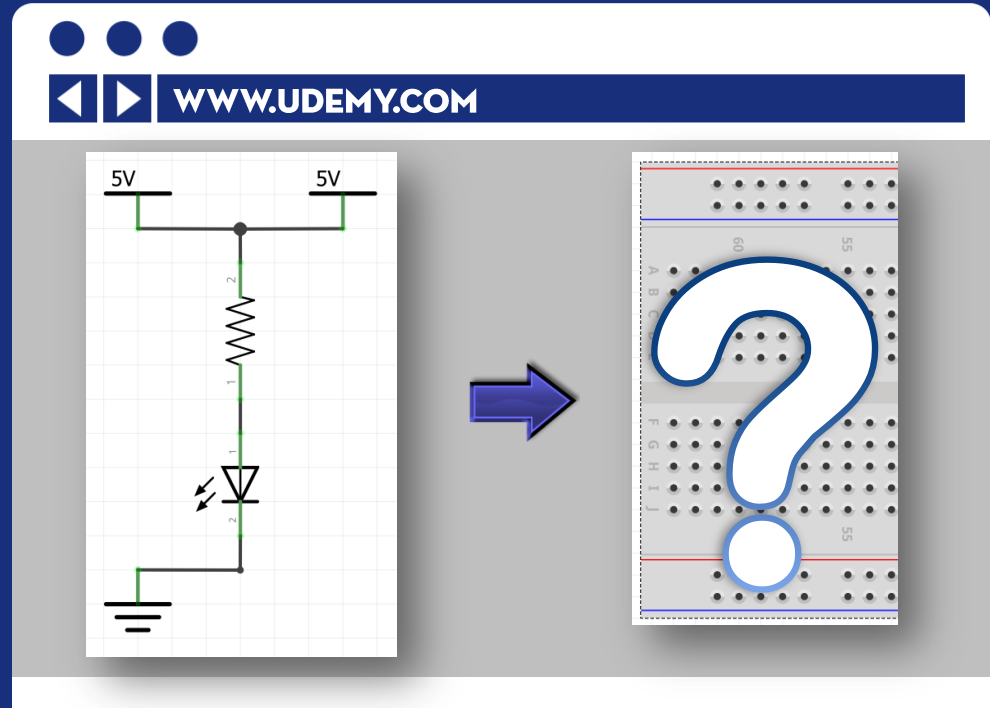
Connections are made between sections on the breadboard using short lengths of wire called jumper wires. These can be made by cutting wire to the correct length and stripping the insulation on the ends, or they can be purchased pre-made in packages of various lengths.



## CIRCUIT #1 - THE LED

SOMETHING FAMILIAR

Consider the circuit we built in the previous lesson. You may remember how we connected it, but for a moment imagine you hadn't connected it before. How can we wire this?



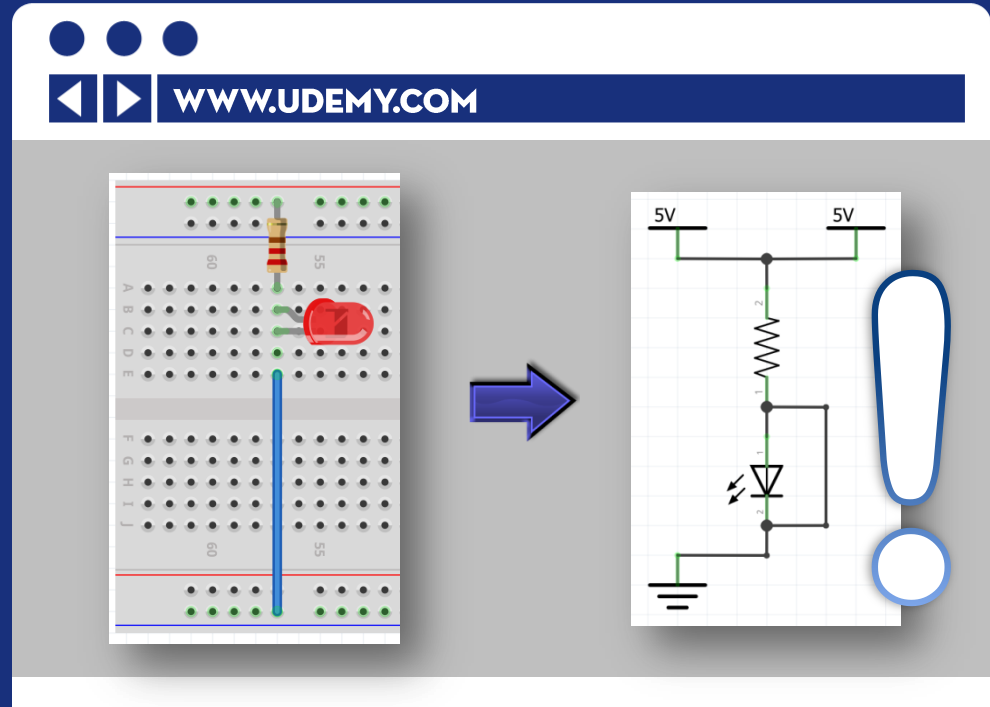
# EXAMPLE CIRCUIT

# THE BREADBOARD

## CIRCUIT #1 - TAKE #1

WILL THIS WORK?

This breadboard circuit is similar to what many beginner circuit builders will try. When they do, the LED does not light up! In this circuit, the current has an easier path to follow. Since the breadboard column is electrically connected, the current can completely bypass the LED and flow to ground. With no current going through the LED, it is obvious why we see no light!





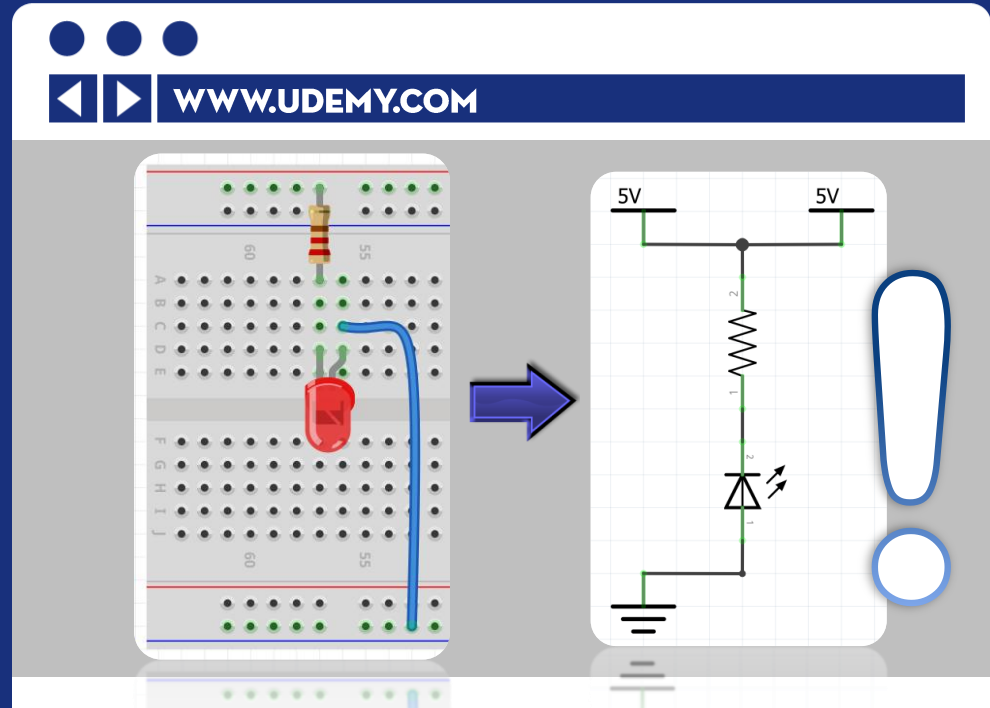
# EXAMPLE CIRCUIT

# THE BREADBOARD

## CIRCUIT #1 - TAKE #2

WILL THIS WORK?

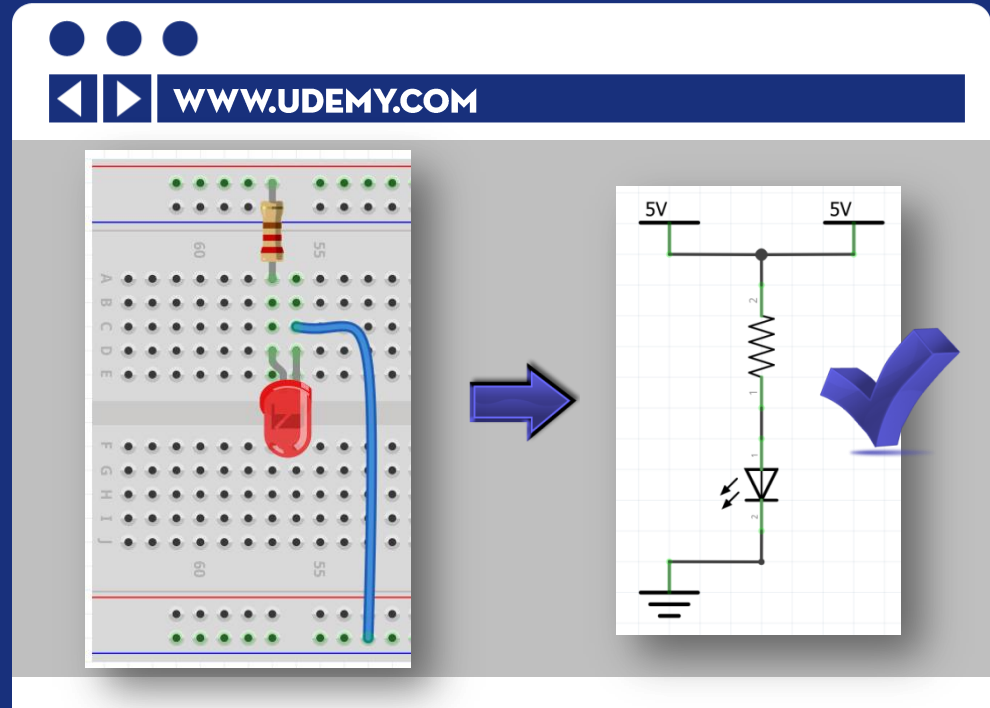
Here is another common mistake. Even though the current path is setup so that there is no alternate route, only through the LED, there is still no light. The problem here is the LED is backwards! Unless the LED is oriented in the correct way, current won't flow, and this is the case here. Remember how to identify the leads on an led?



## CIRCUIT #1 - TAKE #3

WILL THIS WORK?

Finally, here we have a good, hopefully working circuit. The current path goes from the power rail, through the resistor, through the LED, and finally to the ground rail.



**THE END!**

**START**

**APPEARANCE**

**USAGE**

**EXAMPLE**

**- END -**

**- END -**

**- END -**