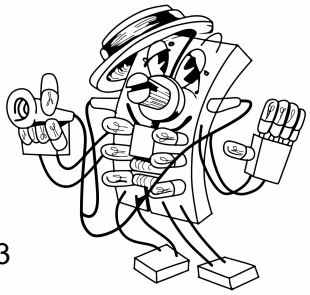
ASSEMBLY GUIDE 19 for the Mr Circuit STEM Electronics Learning Lab 1

____ Experiment 19: "Build a Continuity Tester Circuit"



Step E19-1. **Find all the parts needed for Experiment #19**:

one Solderless Circuit Board in Bag #15
one 9-Volt Battery Snap in Bag #1
one 10 Ohm resistor (brown, black, black, gold) in Bag #3
one 220 Ohm resistor (red, red, brown, gold) in Bag #3
one 1000 Ohm resistor (brown, black, red, gold) in Bag #3
one 120k Ohm resistor (brown, red, yellow, gold) in Bag #3
one NPN 3904 Transistor in Bag #11
one 555 Timer IC in Bag #13
one 0.01uF (103) disc Capacitor in Bag #6
one Speaker in Bag #14
eight Jumper Wires in Bag #16

Step E19-2: Now, using the Pictorial Diagram on Page 30, install the parts on the Solderless Circuit Board in this order.

Install the 10 Ohm resistor (brown, black, black, gold) in holes 20j to 23j
Install the 220 Ohm resistor (red, red, brown, gold) in holes 17c to 25c
Install the 1000 (1k) Ohm resistor (brown, black, red, gold) in holes 15h to 16i
Install the 120k Ohm resistor (brown, red, yellow, gold) in holes 16j to 17j
Install the 555 Timer IC with Pin 1 in hole 15e as shown in pictorial
Install one 0.01uF (103) disc Capacitor in holes 15c to 16b
Install one NPN 3904 Transistor -Collector in 24d, Base in 25d, Emitter in 26d
Install Jumper Wire #1 in holes 1a to 26a
Install Jumper Wire #2 in holes 1c to 15a
Install Jumper Wire #3 in holes 1f to loose end
Install Jumper Wire #4 in holes 2f to loose end
Install Jumper Wire #5 in holes 2j to 20i
Install Jumper Wire #6 in holes 2h to 15i
Install Jumper Wire #7 in holes 15g to 18c
Install Jumper Wire #8 in holes 16d to 17g
Install the Battery Snap, Black lead in hole 1e and Red Lead in hole 1f

Step E19-3: Touch the battery to the Battery Snap and the Speaker should <u>not</u> make a sound until you touch the two Jumper Wires #3 and #4 together. If not, recheck your wiring. These are the Test Probes for Checking continuity. Touch these two wires to the ends of a good fuse, and the speaker will make a sound indicating there is "continuity" which means the fuse is good. When the LEDs are blinking back and forth, you should be able to change the frequency of the blinking by adjusting the Potentiometer.

Step E19-4: Conclusion: You should have observed in this simple experiment that a 555 Timer IC can be used to make a continuity checker.