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# My circuit doesn't work! Please can you fix it?

## To avoid driving your teacher nuts, try to fix the most obvious problems before you ask for help.

Many teachers will refuse to fault-find a circuit unless you have attempted to follow these rules ...

* You have a circuit diagram
* Trim the wire insulation so there are no long bare wires showing.
* Colour code your wiring ...
* Red for the (+) supply
* Black for the ground connection
* Blue for the (-) supply if there is one
* If you are wiring up anything with numbered pins such as a seven segment display, use colour coded wires. Use the resistor colour codes.
* Colour code the remaining wires in each subsystem so it's easy to see where one ends and the next begins.
* Avoid spaghetti wiring.  
  Connect components as close together as possible and avoid multiple wire links where you could use just one.  
  If you have built a hamster nest, it will be almost impossible to fault find.
* Count the components on the circuit diagram.  
  Count the components in your circuit.  
  If the counts don't match, work out which is the missing component and sort out that problem.
* Do a systematic circuit check starting with pin one.  
  If you are using a chip, start at pin one of the chip and work your way round each chip pin in turn.  
  Make sure each pin has the correct number of components/wires connected to it.  
  Make sure each component is correctly wired at both ends (each component pin if there are more that two).  
  Expect your teacher to get quite nasty if pin one is not correctly wired!
* Is there power?  
  Is it plugged in?  
  Is it switched on?  
  Use a multimeter to measure the voltages.  
  Is the power supply reaching the power input pins of your circuit?  
  There should be zero volts on the ground pin.  
  If not, there is a wiring fault.  
  There should be about 5, 9 or 12 (or whatever your power supply provides) volts on the power input pins.