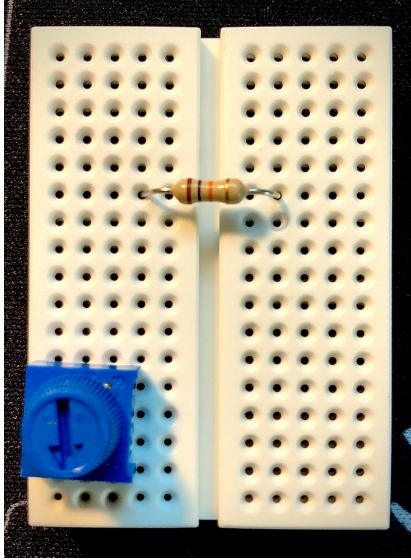


Connecting common circuit components to a breadboard

Dr.P

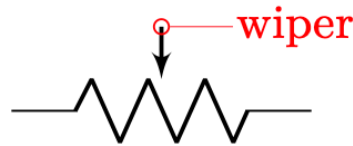
RESISTORS & POTENTIOMETERS



A **resistor** should have both legs connected to different rows on the breadboard. There is no polarity to a resistor. Common mistake: shorting a resistor to itself by placing both legs in the same breadboard row.

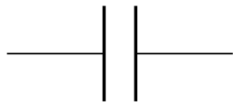


A **potentiometer** should be inserted into a breadboard such that all three legs are in different rows. The wiper is the middle terminal, and the fixed leads are at both ends.

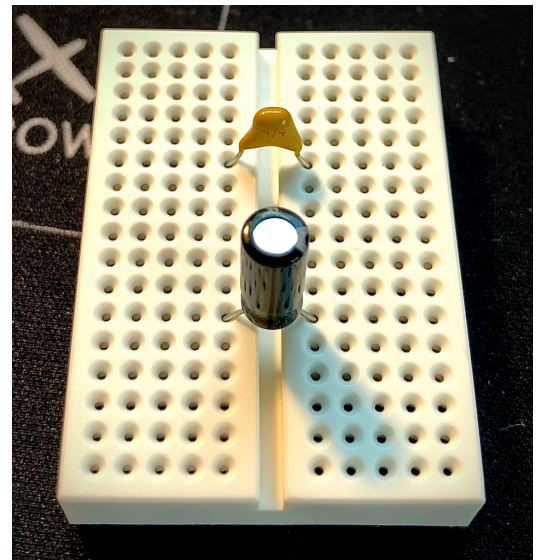
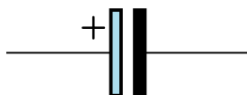


CAPACITORS

A **ceramic capacitor** (resembles a pancake shape) should have both legs connected to different rows on the breadboard. There is no polarity to a ceramic capacitor.



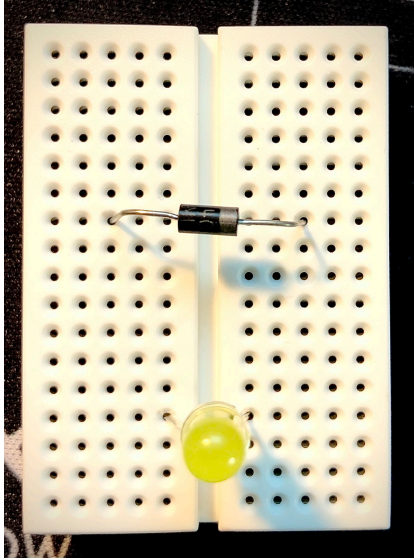
An **aluminum electrolytic capacitor** (resembles a cylinder) should have both legs connected to different rows on the breadboard. There is polarity to electrolytic capacitors: The long leg must be connected to high potential, and the short leg to low potential. There is also a gray stripe along the low potential end.



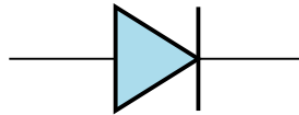
Connecting common circuit components to a breadboard

Dr.P

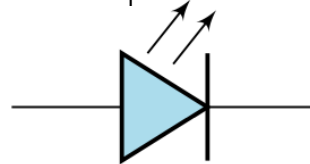
DIODES & LIGHT-EMITTING DIODES



A **diode** should have both legs connected to different rows on the breadboard. There is polarity to a diode: The painted stripe corresponds to the cathode (low potential end) of the diode and aligns with the flat part of the circuit symbol.

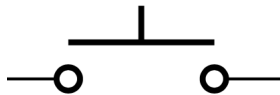


A **light-emitting diode** should have both legs connected to different rows on the breadboard. There is polarity to an LED: The flat edge of the LED (which also has a shorter leg) corresponds to the cathode (low potential end) of the diode and aligns with the flat part of the circuit symbol.



SWITCHES & PUSHBUTTONS

A **pushbutton** should be connected so that each set of two legs straddles the center breadboard trench. Both of the upper pins are always connected, and both of the lower pins are always connected. When the button is pressed, all four pins are connected.



A **toggle switch** should be inserted into a breadboard such that all three legs are in different rows. Throwing the switch changes which two legs are electrically connected.

