

## Intro to Voltage Regulators

- The voltage regulators job is to regulate voltages. The name is pretty self explanatory as you can see.

## Voltage Regulator Demo

- Link to voltage regulator circuit:  
<https://www.tinkercad.com/things/kP8QMYgsUHR-voltage-regulator-demo/editel>
- The voltage regulator will take excess voltage and give the voltage that it was designed to give to the output.
- As the resistance increases, and the voltage going into the voltage regulator decreases, the voltage regulator still outputs 5v. However, voltage regulators only output 5v if the voltage it gets is higher than 5 volts, but if it is lower, then it cannot output 5v, because it cannot create voltages from nothing.
- Essentially, the voltage regulator cuts off extra voltage to reach a set lower voltage. If it doesn't have extra to cut off, then it cannot do its job.
- In the demo, a potentiometer is used to variably increase or decrease resistance. Turning clockwise will increase resistance. On the multimeter, it still says 5v even though voltage increases. This is because the resistance is low enough so that the voltage stays above 5 volts. When it hits 5v or lower however, the multimeter does not say 5v anymore, it says a lower number because there isn't enough voltage to maintain the desired 5 volts.

Students will try to use the Voltage Regulator in their own circuit that they create. Skill Pin:

## Electrical Assembly 2

Students will be given 30-45 minutes at the end of the week/day for their ultrasonic project.

