

# T2: PHYSICS AND ELECTRONICS

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# OBJECTIVES

**TO GAIN** A GREATER UNDERSTANDING OF  
ELECTRONICS AND ELECTRICAL CONSTRUCTION

**TO EXPLORE** THE IMPLICATIONS OF  
COMMUNICATION TECHNOLOGIES

**TO INTEGRATE** PHYSICS AND ELECTRONICS INTO A  
SINGLE PROJECT

# Aims

- To gain a greater understanding of electronics and electrical construction.
- To explore the implications of communication technologies.
- To integrate physics and electronics into a single project.

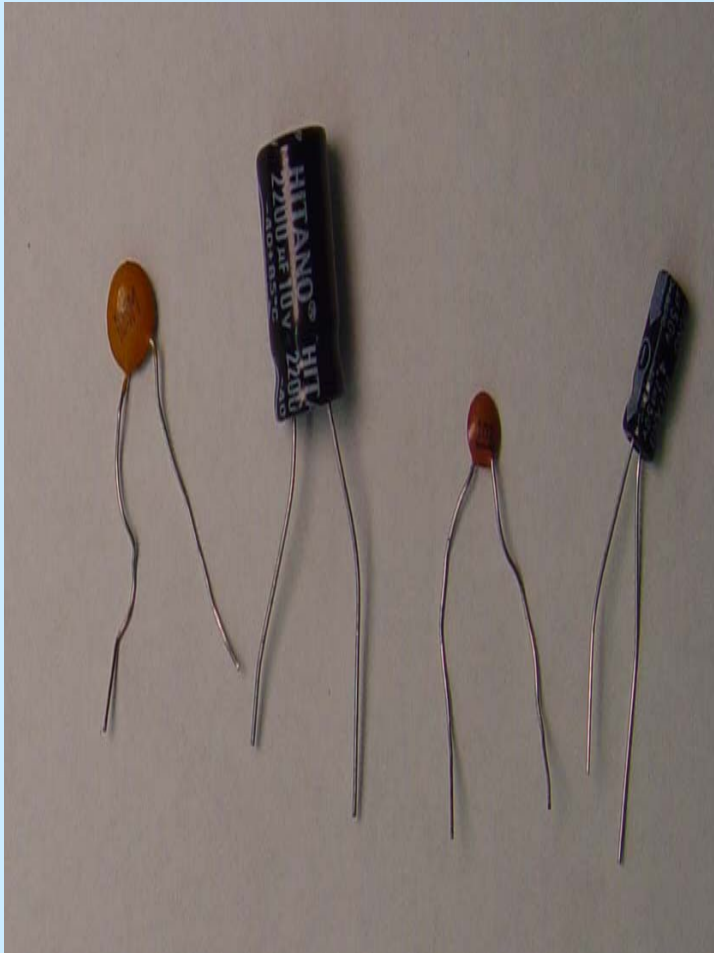
# Abstract

- Basic Constructions
- Speed of Sound
- Speed of Light
- Fiberoptic Communicator

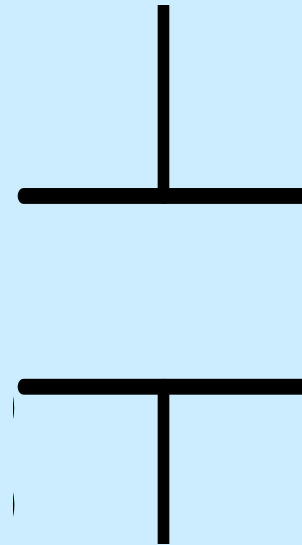
# Basics of Electronics: Components

Capacitors	Fiber optics
Resistors	Potentiometer
Chips	Multimeter (DMM)
LEDs	Amplifier
Breadboards	Power Supply
Speakers	

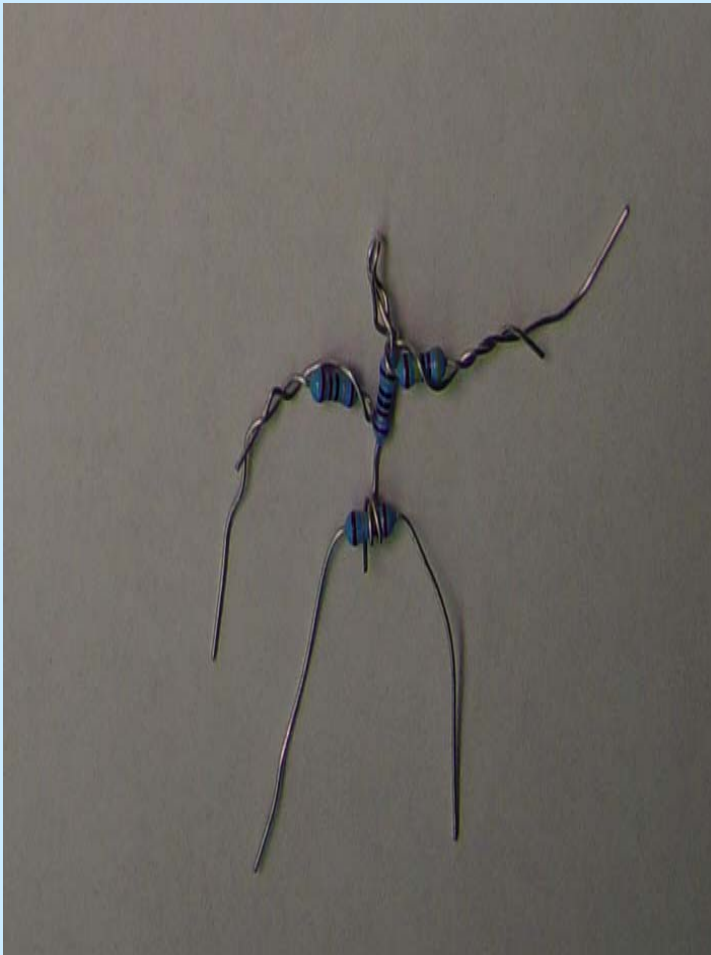
# Capacitors



- Circuit element
- Stores charge temporarily
- Made of two metallic plates



# Resistors

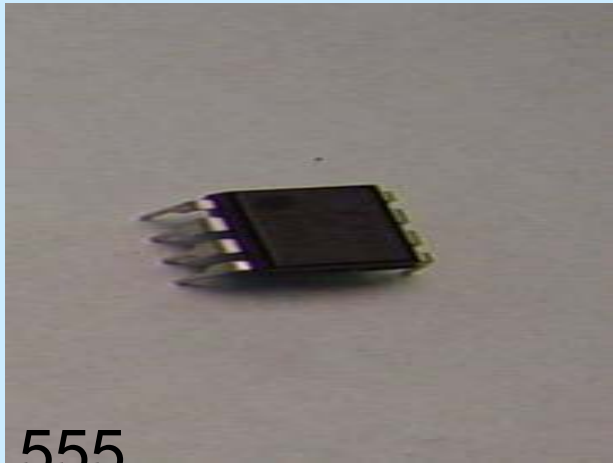


A device that  
dissipates  
excess  
electricity  
through heat

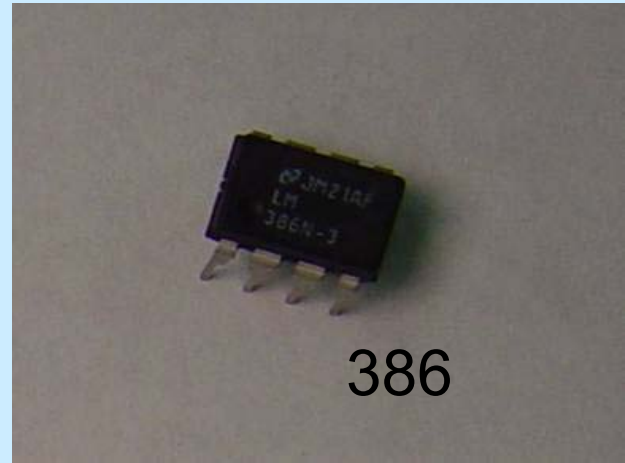




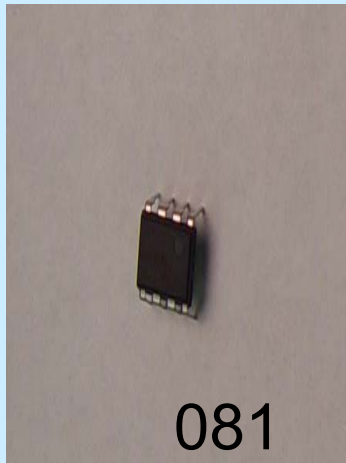
# Chips



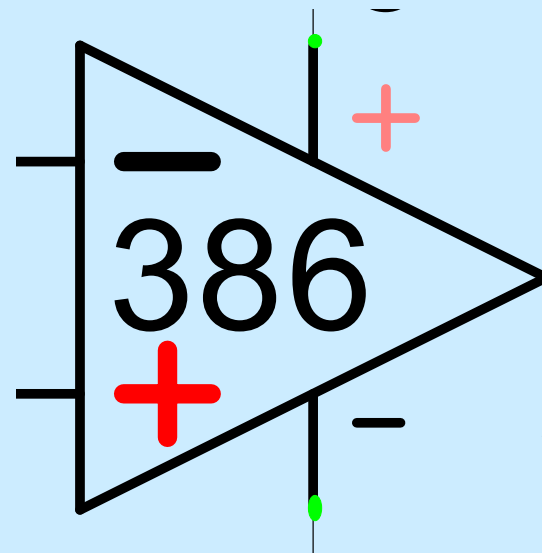
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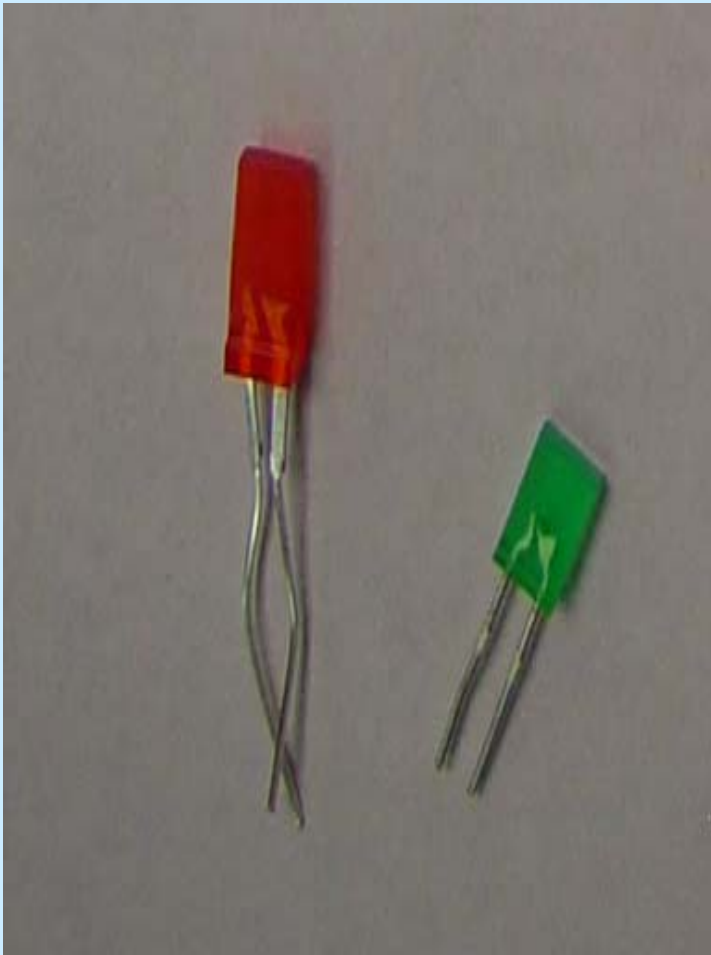
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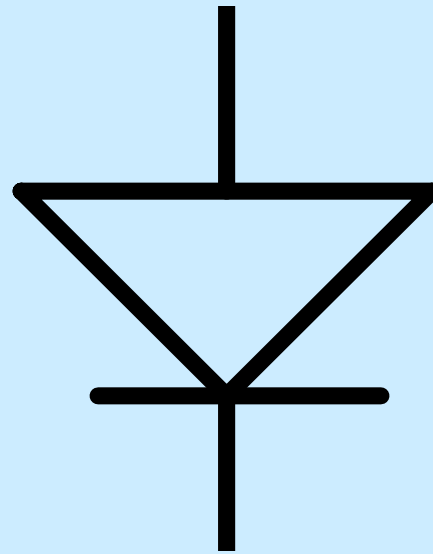
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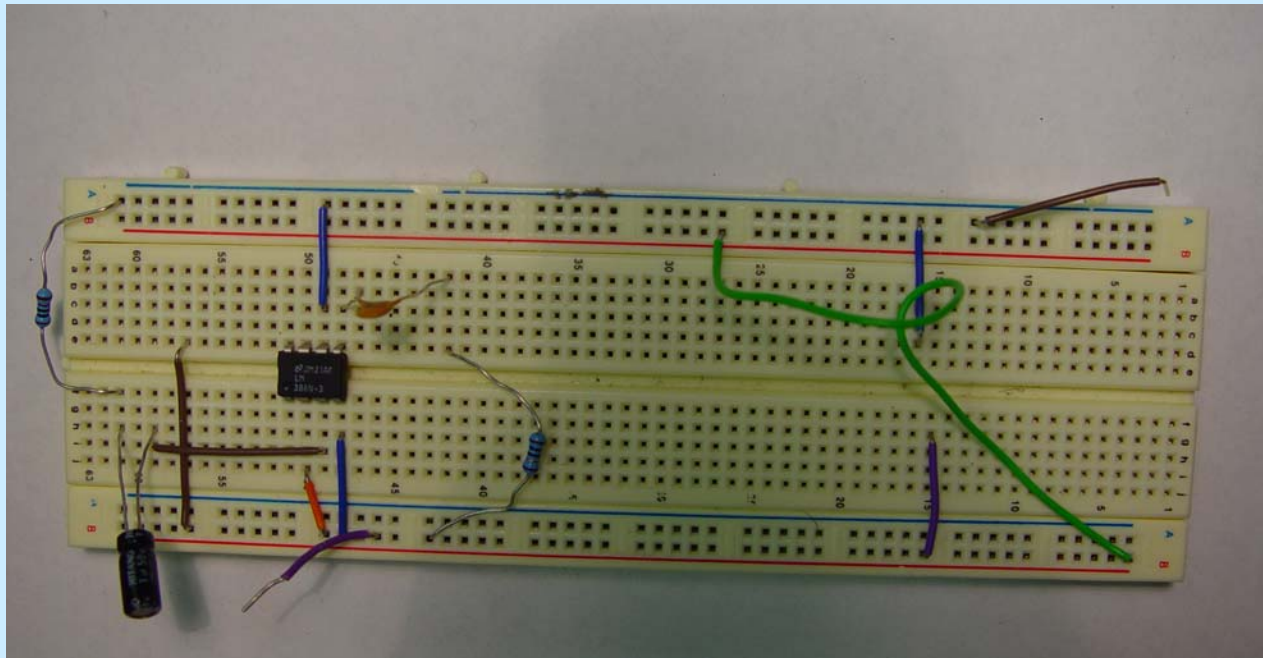
# LEDS



LED= Light Emitting Diode

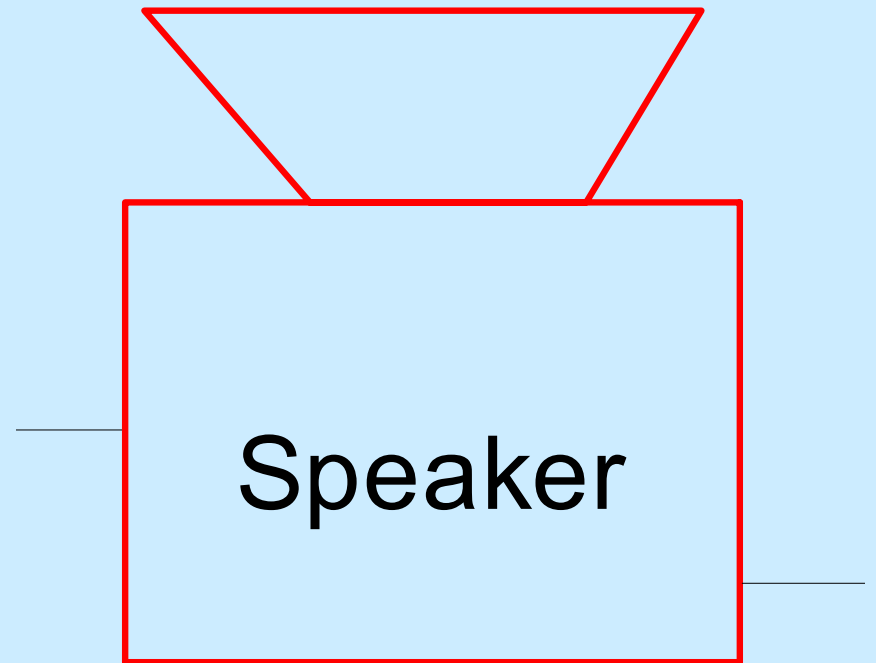
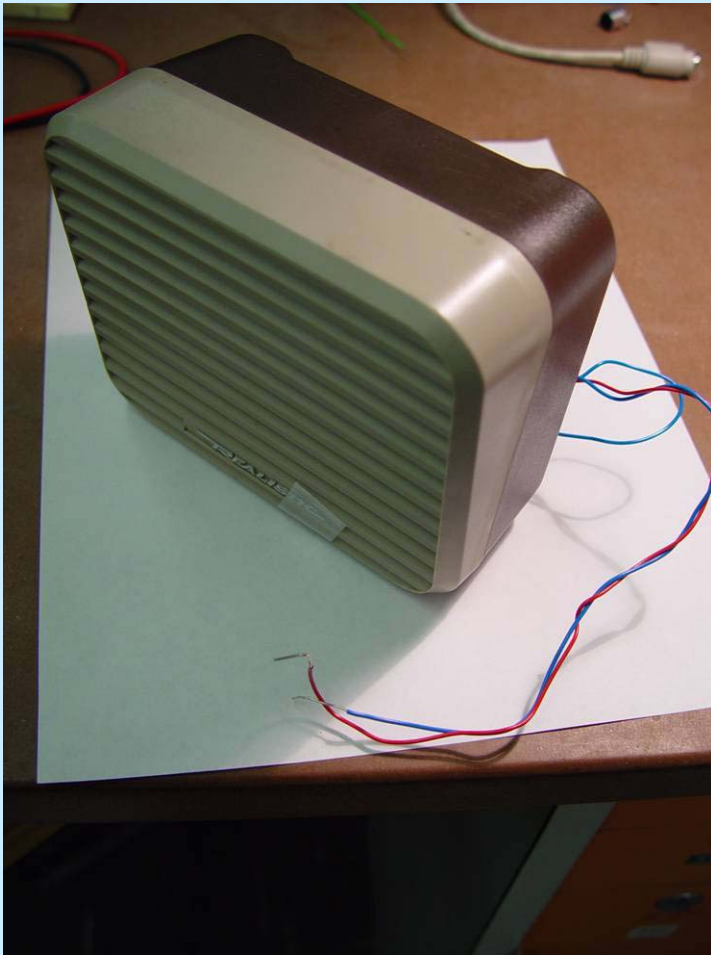


# Breadboards

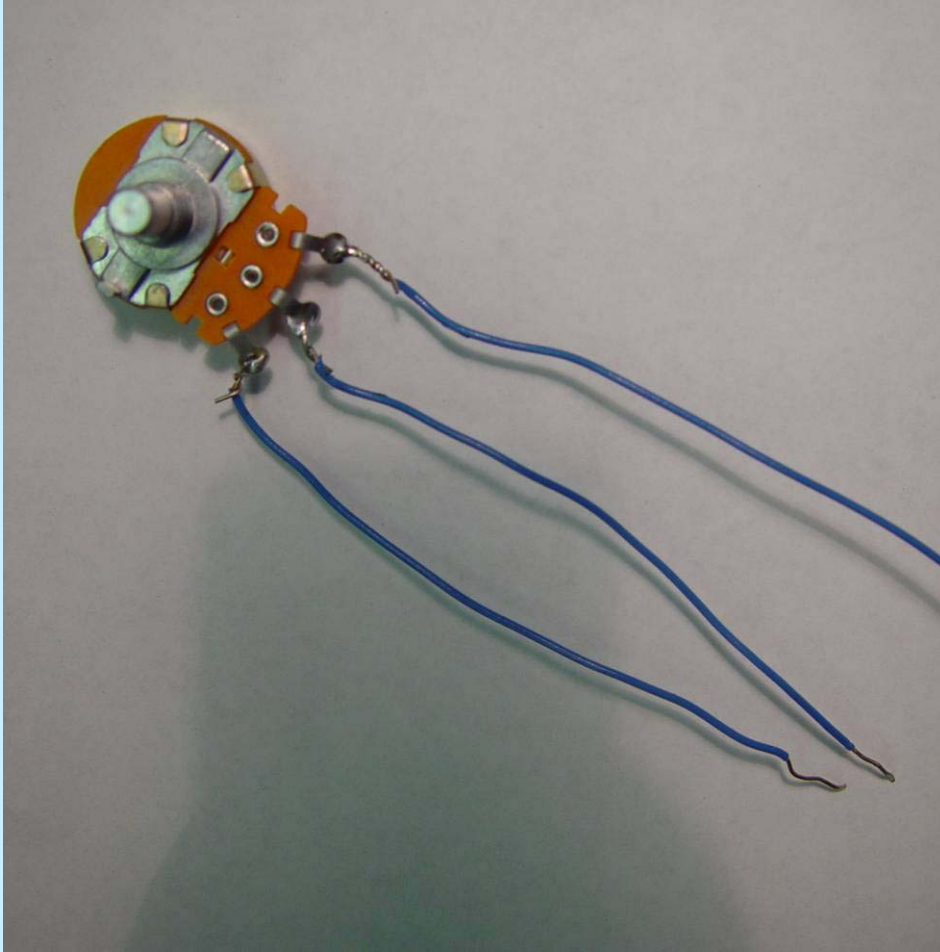


**Simplifies circuit building**

# Speakers



# Potentiometer



# Multimeter (DMM)



# Electronics Basics: Physics

Voltage = volts

Current = amps

$$V=IR$$

(I=current, R=resistance)

# Circuitry Basics: Blinking LED



# Circuitry Basics: PA System

# Circuitry Basics: Voice to LED

# Speed of Sound: Intro

# Speed of Sound: Data

# Speed of Light: Intro

# Speed of Light: Results

# Intro of Communicator

Data



# Conclusions

# References

# Thanks

- Brian Holton
- Karl Strohmaier
- Governor McGreevey and the Members of the NJ State Legislature