



Merit Badge College 2019 Electronics (Not Electricity)



You need to print this form and bring it with you to Merit Badge College.
Highlighted areas are to be completed outside of class.

1. Describe the safety precautions you must exercise when using, building, altering, or repairing electronic devices.

2. Do the following:

a. Draw a simple schematic diagram. It must show resistors, capacitors, and transistors or integrated circuits. Use the correct symbols. Label all parts.

b. Tell the purpose of each part.

Resistor:

Capacitor:

Transistor:

Integrated circuit:

Other?:

3. Do the following:

a. Show the right way to solder and desolder.

b. Show how to avoid heat damage to electronic components.

c. Tell about the function of a printed circuit board. Tell what precautions should be observed when soldering boards.

4. Discuss each of the following with your merit badge counselor, and then choose ONE of the following and build a circuit to show the techniques used: (*Hint: an electronics kit may be used. Consider one of the kits from your Scout Shop.*)

a. Discuss each of the following with your merit badge counselor:

i. How to use electronics for a control purpose

ii. The basic principles of digital techniques

iii. How to use electronics for three different audio applications

b. Show how to change three decimal numbers into binary numbers, and three binary numbers into decimal numbers.

c. Choose ONE of the following three projects. For your project, find or create a schematic diagram. To the best of your ability, explain to your counselor how the circuit you built operates.

i. A control device OR ii. A digital circuit OR iii. An audio circuit

5. Do the following:

a. Show how to solve a simple problem involving current, voltage, and resistance using Ohm's law.

b. Tell about the need and use for test equipment in electronics. Name three types of test equipment. Tell how they operate.

1.

2.

3.

6. Find out about three career opportunities in electronics that interest you. Discuss with and explain to your counselor what training and education are needed for each position.

1. Position

Training:

Education:

2. Position

Training:

Education:

3. Position

Training:

Education:

Scout Name

Address

Troop Number

Counselor Signature

Unit Leader Signature

Date Completed

Counselor: Initial next to the box located to the left of the requirement completed in class. Sign the space that states Counselor Signature.

Scout: Complete the spaces above for Scout Name, Address and Troop Number. Complete all highlighted areas outside of class.

This form replaces the traditional "Blue Card".