



ELECTRONICS

Merit Badge Requirements

- 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.
- 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 printed circuit 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:
 - A) Tell how you can use electronics for a control purpose, and then build a control device circuit.
 - B) Tell about the basic principles of digital techniques, and then build a digital circuit. Show how to change three decimal numbers into binary numbers, and three binary numbers into decimal numbers.
 - C) Tell about three audio applications of electronics, and then build an audio circuit.

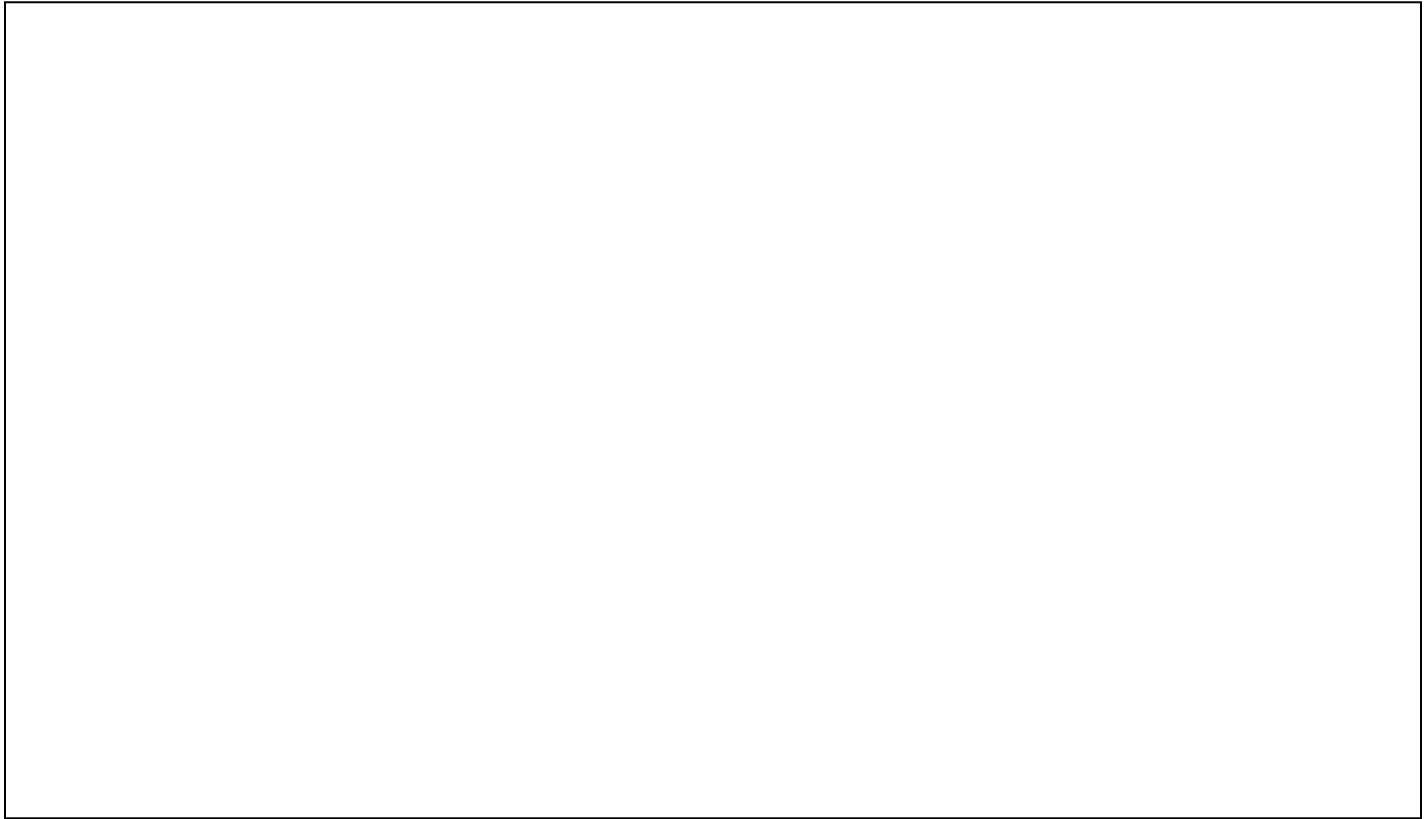
Show how to read the schematic diagram of the project you choose and, to the best of your ability, explain to your counselor how the circuit you built operates.
- 5) Do the following:
 - A) Show how to solve a simple problem involving current, voltage, and resistance using Ohm's law.
 - B) Tell about the need for and the use of test equipment in electronics. Name three types of test equipment. Tell how they operate.
- 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.

Requirement 1

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

Requirement 2

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



List the main parts you used in the diagram above and give the use or purpose of each:

Part: _____ Purpose: _____

Part: _____ Purpose: _____

Part: _____ Purpose: _____

Part: _____ Purpose: _____

Scout Name: _____ Unit #: _____ Date: _____

Part: _____ Purpose: _____

Part: _____ Purpose: _____

Part: _____ Purpose: _____

Part: _____ Purpose: _____

Requirement 3

Demonstrate to your counselor the correct way to solder. Briefly explain/describe the process: _____

Demonstrate to your counselor the correct way to desolder. Briefly explain/describe the process: _____

Tell how to avoid heat damage to components: _____

Tell about the function of a printed circuit board: _____

Tell what precautions should be observed when soldering printed circuit boards: _____

Requirement 4

You have been given three options for this requirement. Discuss each of them with your counselor then complete one of them.

If you selected *Option A*:

Tell how you can use electronics for a control purpose: _____

Build a circuit to show this. Describe the circuit that you built: _____

Scout Name: _____ Unit #: _____ Date: _____

If you selected **Option B**:

Tell about the basic principles or digital techniques: _____

Build a circuit to show digital techniques. Describe the circuit: _____

Tell how you would change three decimal numbers into binary numbers: _____

Tell how you would change three binary numbers into decimal numbers: _____

If you selected **Option C**:

Tell about three audio application of electronics:

Application 1: _____

Application 2: _____

Application 3: _____

Build a circuit to show audio techniques. Describe the circuit: _____

After completing option A, B, or C, describe how to read the schematic diagram of the project _____

Scout Name: _____ Unit #: _____ Date: _____

Describe how your project works and to the best of your ability, tell how it operates: _____

Requirement 5

Tell how to solve a simple problem involving current, voltage, and resistance using Ohm's law: _____

Tell about the need for and the use of test equipment in electronics: _____

Name three types of test equipment and tell how each operates:

Name: _____ Operation: _____

Name: _____ Operation: _____

Name: _____ Operation: _____

Requirement 6

Tell about three jobs in electronics and tell what training is needed for each job.

Job Title: _____ Description: _____

Training Needed: _____

Job Title: _____ Description: _____

Training Needed: _____

Job Title: _____ Description: _____

Training Needed: _____

