ELECTRONICS

Merit Badge Requirements

1) Do the following:

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

B) Tell the purpose of each part.

2) Do the following:

A) Show the right way to solder and unsolder.

B) Show how to avoid heat damage to components.

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

3) Select ONE of the following:

A) Tell how you can use electronics for a control purpose. Build a circuit to show this.

B) Tell about the basic principals or digital techniques. Show how to change three decimal numbers into binary numbers. Show how to change three binary numbers into decimal numbers. Build a circuit to show digital techniques.

C) Tell about three audio applications of electronics. Build a circuit to show audio techniques.

4) Do the following for the project you built in requirement 3:

A) Show how to read the schematic diagram of the project.

B) Show how the project works. To the best of your ability tell how it 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.

C) Tell about three jobs in electronics. Tell what training is needed for each job.

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Requirement 1

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 and give the use or purpose of each:

Part: _____ Purpose: _____
_____

Part: _____ Purpose: _____
_____

Part: _____ Purpose: _____
_____

Part: _____ Purpose: _____
_____

Part: _____ Purpose: _____
_____

Part: _____ Purpose: _____
_____

Part: _____ Purpose: _____
_____

Requirement 2

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

Demonstrate to your counselor the correct way to unsolder. 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 3

You have been given three options for this requirement. Select and 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: _____
_____
_____

If you selected ***Option B***:

Tell about the basic principles or digital techniques: _____
_____
_____
_____

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

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

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

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: _____
_____
_____

Requirement 4

Using the project you built for requirement 3, tell how to read the schematic diagram of the project. Give a brief explanation: _____
_____
_____
_____

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: _____
_____

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: _____
_____