

Electronics

Merit Badge Workbook



This workbook can help you but you still need to read the merit badge pamphlet. This Workbook can help you organize your thoughts as you prepare to meet with your merit badge counselor

Merit Badge Counselors may not require the use of this or any similar workbooks.

You still must satisfy your counselor that you can demonstrate each skill and have learned the information. You should use the work space provided for each requirement to keep track of which requirements have been completed, and to make notes for discussing the item with your counselor, not for providing full and complete answers. If a requirement says that you must take an action using words such as "discuss", "show", "tell", "explain", "demonstrate", "identify", etc, that is what you must do. No one may add or subtract from the official requirements found in Scouts BSA Requirements (Pub. + 33216) and/or on Scouting.org.

The requirements were last issued or revised in 2021 • This workbook was updated in November 2023.

Scout's Name:	Unit	Date Started

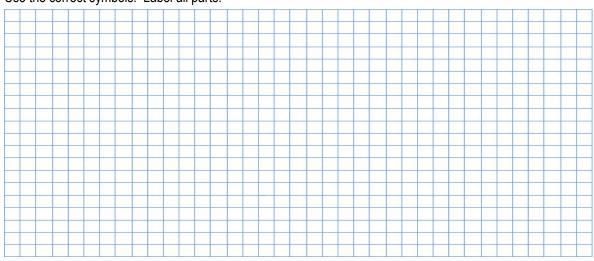
Counselor's Name: ______ Phone No.: ______ Email: _____

Please submit errors, omissions, comments or suggestions about this <u>workbook</u> to: <u>Workbooks@USScouts.Org</u> Comments or suggestions for changes to the <u>requirements</u> for the <u>merit badge</u> should be sent to: <u>Merit.Badge@Scouting.Org</u>

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.



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b.	Tell the purpose of e	ach part.
	Resistor:	
	Capacitor:	
	Transistor:	
	Integrated circuit:	
	Other?:	

3. Do the following:

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- 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.

Do the following	J:
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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.

Electronics

5.

🗌 b.	Show how to change three decimal numbers into binary numbers and three binary numbers into decimal
	numbers.
Пс.	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
	ii. A digital circuit.
	🔲 iii. An audio circuit.
De the f	fallaurinau
_	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.

1.	
~	
2.	

3.	

c. Demonstrate to your counselor how to read the colored bands of a resistor to determine its resistance value.

6.	Find out about three career	r opportunities in electronics that interest yo	JU.
υ.			~

1.	
2.	
3.	

Discuss with and explain to your counselor what training and education are needed for each position.

1.	Training:	
	Education:	
2.	Training:	
	Education:	
3.	Training:	
	Education:	

You can download a complete copy of the Guide to Advancement from http://www.scouting.org/filestore/pdf/33088.pdf.