



Scouting America: Radio Merit Badge Worksheet

Scout Name: _____ Date: _____

Unit/Troop: _____ Counselor: _____



Section 1: Safety & Battery Care (Requirement 1)

1. **Fill in the blank:** An electrical current as low as _____ milliamperes (mA) can be fatal if it passes through the human heart.

2. **What dangerous thermal event can occur if a lithium-ion battery is punctured, crushed, or overcharged?**

3. **Name two safety rules for charging a lithium-ion device:**

- Rule 1:

- Rule 2:
-



Section 2: Technical Diagrams (Requirement 5a & 5b)

4. **Explain the difference between a block diagram and a schematic diagram:**

5. **List 4 of the 8 essential hardware components that make up a standard radio station layout:**

1. _____

2. _____

3. _____

4. _____



Section 3: Cellular & Smart Devices (Requirement 7)

6. **Why are passengers required to switch their devices to "Airplane Mode" when flying on commercial aircraft?**

7. How many satellite radio signals does a cell phone need to lock onto to calculate its 3D position (including altitude/elevation)? _____ Satellites

8. During a major disaster when the local cell towers are highly congested, why should you send a short text message rather than trying to make a voice call?

9. What scientific principle allows a wireless charging pad to pass power to your phone's battery without using a physical wire?



Section 4: Option A — Amateur Radio (Requirement 8a)

10. What are the three active licensing classes for amateur radio operators in the United States?

1. _____

2. _____

3. _____

11. Match the correct Q-Signal or term to its meaning by writing the letter on the line:

_____ CQ

_____ QTH

_____ QSL

_____ DX

_____ 73

_____ QRM

_____ QRN

A. Best regards (used to sign off)

B. General call calling any station

C. Natural Made Noise

D. My location is... / What is your location?

E. I acknowledge receipt / I confirm contact

F. Man Made Noise

G. Shorthand code meaning a distant radio station

12. How do you signal an emergency call when using voice modes? What do you transmit if using Morse Code (CW)?

• **Voice Emergency:** _____

• **Morse Code Emergency:** _____

13. Sketch a diagram showing how different radio wavelengths can travel locally or around the world.

Counselor Notes /

Approval: _____

Counselor Signature: _____ **Date:** _____