

RADIO MERIT BADGE WORKBOOK

This Scoutmaster Bucky Merit Badge Workbook is based off the current *Scouts BSA Requirements*.

Consider also using the Radio merit badge class preparation page for clarification and expectations when participating in a Scoutmaster Bucky merit badge opportunity ([online](#) or [in-person](#)).

<https://scoutmasterbucky.com/merit-badges/radio/>

Scout's
Name:

Amateur Radio Direction Finding

This workbook covers only one of the options for this merit badge. Check the Scoutmaster Bucky website for the other possibilities.

REQUIREMENT 1: Explain what radio is. Then discuss the following:

REQUIREMENT A: The differences between broadcast radio and hobby radio

REQUIREMENT B: The differences between broadcasting and two-way communications

REQUIREMENT C: Radio station call signs and how they are used in broadcast radio and amateur radio

REQUIREMENT D: The phonetic alphabet and how it is used to communicate clearly

REQUIREMENT 2: Do the following:

REQUIREMENT A: Sketch a diagram showing how radio waves travel locally and around the world.

REQUIREMENT B: Explain how the radio stations WWV and WWVH can be used to help determine what you can expect to hear when you listen to a shortwave radio.

REQUIREMENT C: Explain the difference between a distant (DX) and a local station.

REQUIREMENT D: Discuss what the Federal Communications Commission (FCC) does and how it is different from the International Telecommunication Union.

REQUIREMENT 3: Do the following:

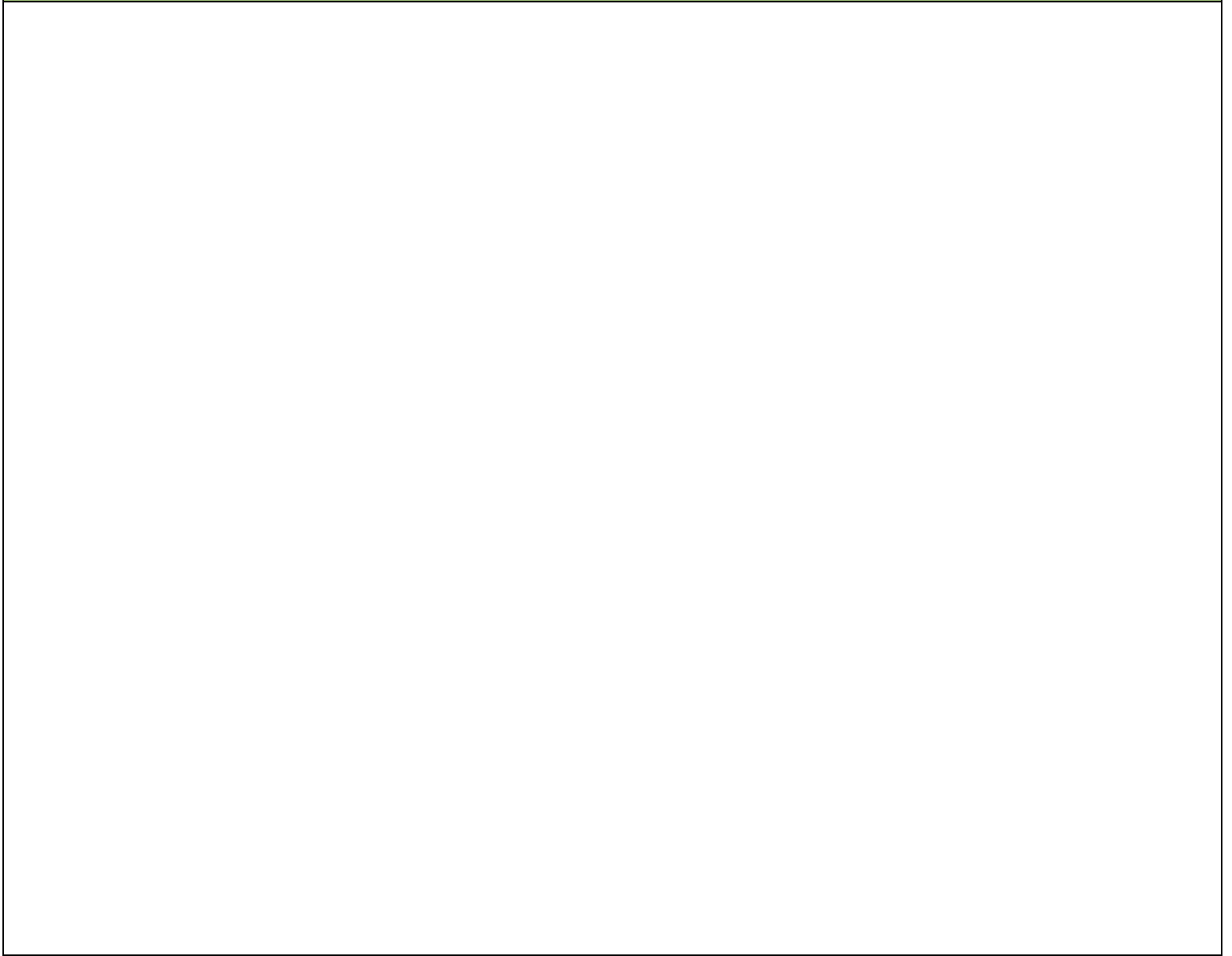
- a. Draw a chart of the electromagnetic spectrum covering 300 kilohertz (kHz) to 3,000 megahertz (MHz).
- b. Label the MF, HF, VHF, UHF, and microwave portions of the spectrum on your diagram.
- c. Locate on your chart at least eight radio services, such as AM and FM commercial broadcast, citizens band (CB), television, amateur radio (at least four amateur radio bands), and public service (police and fire).

REQUIREMENT 4: Explain how radio waves carry information. Include in your explanation: transceiver, transmitter, receiver, amplifier, and antenna.

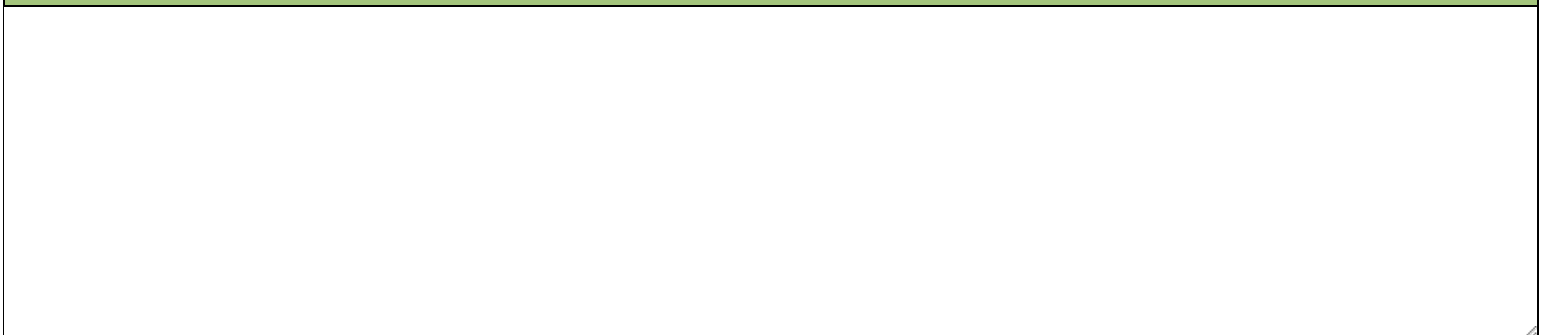
REQUIREMENT 5: Do the following:

REQUIREMENT A: Explain the differences between a block diagram and a schematic diagram.

REQUIREMENT B: Draw a block diagram for a radio station that includes a transceiver, amplifier, microphone, antenna, and feed line.



REQUIREMENT C: Discuss how information is sent when using amplitude modulation (AM), frequency modulation (FM), continuous wave (CW) Morse Code transmission, single sideband (SSB) transmission, and digital transmission.



REQUIREMENT D: Explain how NOAA Weather Radio (NWR) can alert you to danger.

REQUIREMENT E: Explain how cellular telephones work. Identify their benefits and limitations in an emergency.

REQUIREMENT 6: Explain the safety precautions for working with radio gear, including the concept of grounding for direct current circuits, power outlets, and antenna systems.

REQUIREMENT 7: Visit a radio installation (an amateur radio station, broadcast station, or public service communications center, for example) approved in advance by your counselor. Discuss what types of equipment you saw in use, how it was used, what types of licenses are required to operate and maintain the equipment, and the purpose of the station.

REQUIREMENT 8: Find out about three career opportunities in radio. Pick one and find out the education, training, and experience required for this profession. Discuss this with your counselor, and explain why this profession might interest you.

REQUIREMENT 9: Do ONE of the following (a OR b OR c OR d):

REQUIREMENT D: Amateur Radio Direction Finding

REQUIREMENT 1: Describe amateur radio direction finding and explain why direction finding is important as both an activity and in competition.

REQUIREMENT 2: Describe what frequencies and equipment are used for ARDF or fox hunting.

REQUIREMENT 3: Build a simple directional antenna for either of the two frequencies used in ARDF.

Completed

REQUIREMENT 4: Participate in a simple fox hunt using your antenna along with a provided receiver.

REQUIREMENT 5: Show, on a map, how you located the “fox” using your receiver.