



Radio Merit Badge Workbook

Name: First _____ Last _____

Troop Number _____ City _____

Please complete this workbook. **Items in RED must be drawn or answered in writing to meet the requirements.** In addition, you will visit a ham radio station and complete your 10 minutes of air time requirement. We can then award a Radio merit badge blue card to you.

1. Explain what radio is.

Then discuss the following:

a. The differences between broadcast radio and hobby radio. _____

b. The differences between broadcasting and two-way communications. _____

c. Radio station call signs and how they are used in broadcast radio and amateur radio. _____

d. The phonetic alphabet and how it is used to communicate clearly. _____

2. Do the following:

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

Locally:



Around the world:



b. Explain how the broadcast radio stations, WWV and WWVH can be used to help determine what you will hear when you listen to a shortwave radio? _____

c. Explain the difference between a DX _____

and a local station. _____

d. Discuss what the Federal Communication Commission (FCC) does _____

and how it is different from the International Telecommunication Union. _____

3. Do the following:

a. Draw a chart of the electromagnetic spectrum covering 100 kilohertz kHz to 1000 megahertz MHz.

b. Label the MF, HF, VHF, UHF, and microwave portions of the spectrum on the diagram.

c. Locate on the four charts 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).

a. Draw Spectrum from - 100 kHz to 1000 MHz

b./c. Medium Frequencies () - 300 kHz to 3 MHz



b./c. High Frequencies () – 3 MHz to 30 MHz



b./c. Very High Frequencies () – 30 MHz to 300 MHz



b./c. Ultra High Frequencies () – 300 MHz to 3000 MHz



4. Explain how radio waves carry information. _____

Include in your explanation:

transmitter, _____

receiver, _____

transceiver, _____

amplifier, _____

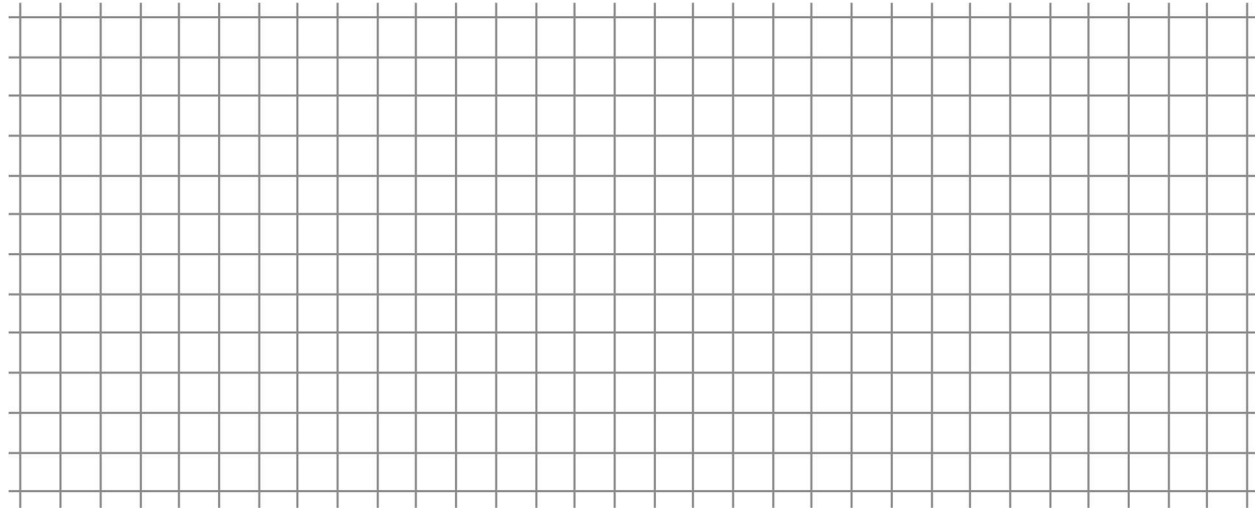
and antenna. _____

5. Do the following:

a. Explain the differences between a block diagram _____

and a schematic diagram. _____

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



c. Discuss how information is sent using AM, FM, CW, SSB , and digital _____

d. Explain how NOAA Weather Radio can alert you to danger. _____

e. Explain how cellular telephones work. Identify their benefits and limitations _____

6. Explain the safety precautions for working with radio gear, _____

including the concept of grounding for direct current circuits, _____

power outlets, _____

and antenna systems. _____

7. When you meet with your Radio merit badge counselors, you will see a ham radio station and with that experience, you will fulfill this merit badge requirement.

8. Find out about three career opportunities in radio.

(1) _____

(2) _____

(3) _____

Pick one _____

and find out education: _____

training, _____

and experience required for this profession. _____

Discuss this with your counselor (when you meet together), and explain why this profession might interest you. _____

9. Amateur (ham) radio

(a)1. Tell why the FCC has an amateur radio service. _____

Describe some of the activities that amateur radio operators can do on the air, once they have earned an amateur radio license. _____

(a)2. Explain some of the differences between the Technician, _____

General, _____

and Extra Class license requirements and privileges. _____

Explain who administers amateur radio exams. _____

(a)3 Explain at least five Q signals or amateur radio terms you hear while listening on the air.

(1) _____

(2) _____

(3) _____

(4) _____

(5) _____

(a)4. Explain how you would make an emergency call on voice or Morse code. _____

(a)5. Explain the differences between:

hand held transceivers _____

and home "base" transceivers. _____

Explain the uses of mobile amateur radio transceivers _____

and amateur radio repeaters. _____

(a)6. When you meet in person with your Radio merit badge counselor, you will have an opportunity to see a real amateur radio station.

In addition, you will participate on the air in order to acquire your merit badge required 10 minutes of live air time. It will be fun. We will have radios available for use.

When you are finished, you may log your contact here:

CALL _____ **NAME** _____

QTH _____

QSL **SENT** _____
 REC'D _____ **REMARKS** _____

DATE	TIME		YOUR					MY					CONDITIONS	
	FROM	TO	Q	R	S	T	FREQ.	Q	R	S	T	FREQ.		