

Name _____ Section _____


FM Radio Hyperdoc


Questions are on the left.

Your answers go on the right.

A. What do you already know about the radio?

1. How does sound get from your radio to your ears? Give your best explanation without looking it up.

2. What is your favorite radio station? Give 3 details about it that you know. Use Google to answer A and B.

a. Where is the station located (address)?

b. Who owns this station?

3. Your station has a number, like 93.3 or 102.1. What do you think that number means?

4. What questions can you think of right now about radio signals based on your experience listening to the radio at home or in the car and the number of your station? Write at least 3 questions that you could answer by researching.

B. Check out some radio station tours!

5. First, take the Google Street View virtual tour of BBC 1 Radio at <https://tinyurl.com/bbc1tour>. You can visit each of the rooms, but there aren't any labels to explain what you are looking at. Describe 2 things you saw on your BBC tour.

6. I Heart Radio is a giant company that runs many radio stations, including a bunch around here. Check out this tour of their studios at <https://tinyurl.com/laradiotour>, where a Los Angeles DJ explains all the different parts of the station. Around the 5 minute mark, he shows how his broadcast is programmed on the computer. Describe two things you noticed about this tour.

7. Low power radio stations (you'll learn about this in the next section) can be run by community groups. Visit PhillyCAM, a low power station and watch the station tour at <https://tinyurl.com/phillycam>. What are 2 ways this station is used that are different from commercial radio stations?

8. Watch any 3 minutes of this guide to using radio equipment at <https://tinyurl.com/howtoradio>. What is one new thing you learned?

9. Now that you've seen more modern studies, watch 1 minute of this WOGL Oldies 98.1 tour from 2000 at <https://tinyurl.com/oldies98>. Describe 2 things about the station that you notice are outdated.

C. Now for some technical details	
<p>10. First, you'll visit https://tinyurl.com/radiock12. Look at the electromagnetic spectrum diagram. Describe one detail about the wavelengths of radio waves.</p>	
<p>11. Watch the video from 3:22-3:57. Explain how you hear sound when you tune your radio.</p>	
<p>12. Scroll to AM and FM Radio. What changes in FM radio broadcasts?</p>	
<p>13. Now watch the video at https://tinyurl.com/howrsworks. How is a transmitter used?</p>	
<p>14. At the FCC site https://tinyurl.com/fcclow, they explain low-power radio. How far is the reach of a low power station?</p>	
<p>15. Who is eligible to run a low power station?</p>	
<p>16. Scroll down to <i>How Can I apply...</i> section. How much does it cost to get a low-power license?</p>	
<p>17. How could low power radio help a community?</p>	
<p>18. Now visit https://tinyurl.com/ucarwaves. What are some other ways radio waves are used?</p>	
D. Now let's explore some more...	

<p>19. Why do the stations always end in odd numbers (93.3, 97.5, 98.9, etc.)? Check out the formula for station numbers at https://tinyurl.com/radiodecimal.</p>	
<p>20. FM radio stations go from 88 to 108 MHz. Why can't stations be lower or higher? Find out at https://tinyurl.com/fmfreq.</p>	
<p>21. Now go to https://tinyurl.com/radiofee. About how much does it cost to start a radio station?</p>	
<p>22. What are some of the steps involved in starting a radio station?</p>	
<p>23. WebSDR (software defined radio) is another way to listen to the radio. You can hear multiple bands (AM, shortwave, etc.) by exploring the web receiver at https://tinyurl.com/twentesdr. This receiver is from the University of Twente in the Netherlands! Find any station where you hear anything other than static. You may experiment on your own or use the How to Guide at https://tinyurl.com/howtosdr. Describe what you heard on the right and include the frequency or frequencies where you found it.</p>	
<p>E. Now that you've learned more about FM radio...</p>	
<p>24. Look back to questions you had in Part A. List them here on the left (you may change questions if you have new interests!). Then, answer (or research their answers) on the right.</p>	
<p>Question 1:</p>	
<p>Question 2:</p>	

Question 3:	
What questions do you still have about FM radio that you'd like to talk about as a class?	
F. The Final Project: Google Slide	
25. Create <u>one single</u> Google Slide highlighting what you've learned about FM radio.	
Extension Activities if you have time...	
Check out short wave radio using the receiver at https://www.chilton.com/R8/receiver.html . The book link at the bottom includes some frequencies where people have had listening success.	
Check out http://websdr.org/ for more. You can click on stations from many different countries.	
Check out a local radio legend (Jerry Blavat) who has been broadcasting since the 1960s at https://youtu.be/Ka93Ns-XMyc . Visit his website at https://geatorgigs.webs.com/ .	