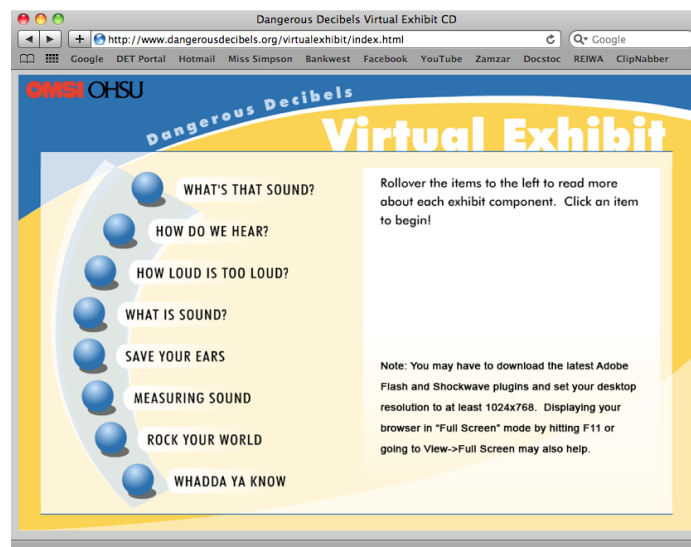


# Dangerous Decibels

This website is designed to help you gain a better understanding of sound and sound waves. You need to complete the series of activities outlined below and answer any questions on this sheet. Have fun!

Go to the website: <http://www.dangerousdecibels.org/virtualexhibit/index.html> or if this fails to load go to [www.google.com](http://www.google.com) and in the question toolbox type "dangerous decibels virtual exhibit" and select the 1st website from the list generated for you. The website homepage should look like the picture below.



From this page click on the first blue ball "What's that sound?" Read the information and answer the following questions.

1. How does permamanent hearing loss happen?

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2. What is tinnitus?

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Click the arrow at the bottom of the screen that says "continue". Adjust the sound and play the game designed to simulate hearing loss.

When you have done this, click the arrow at the top of the screen that says "Return to Virtual Exhibit Index". Click on the 2<sup>nd</sup> blue ball that says "How do we hear?".

3. What is the inner ear shaped like?

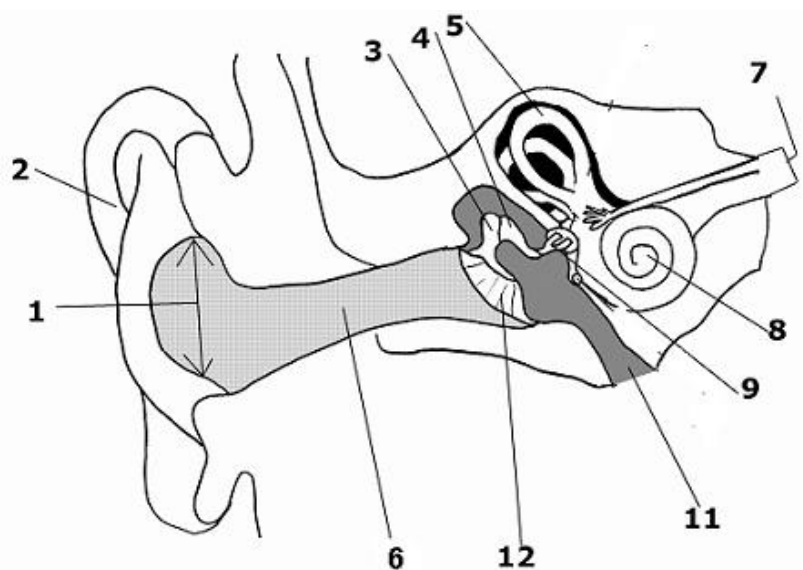
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4. Complete this sentence:

Inside the \_\_\_\_\_, there are thousands of tiny \_\_\_\_\_ cells. Hair cells change the \_\_\_\_\_ into \_\_\_\_\_ signals that are sent to the \_\_\_\_\_ through the hearing \_\_\_\_\_.

Click on the link titled "Take a look inside your ear".

5. On the diagram, label the important features of the ear.



6. What are the functions of each of the following structures in the ear?

- a) Eardrum \_\_\_\_\_
- b) Pinna \_\_\_\_\_
- c) Ossicles \_\_\_\_\_
- d) Auditory Nerve \_\_\_\_\_

Click on the back button on the top of your window to get you back to the previous page.

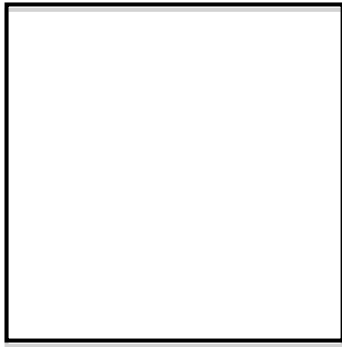
7. If a hair cell dies, can it grow back? \_\_\_\_\_

8. What type of hair cells are the most easily damaged? \_\_\_\_\_

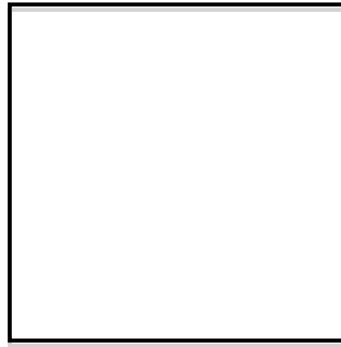
9. Give 2 examples of the types of sounds people have trouble hearing when they are suffering hearing loss.

\_\_\_\_\_  
\_\_\_\_\_

10. In the boxes below, draw a quick diagram comparing normal ear hair cells with damaged ones.



Normal hair cells



Damaged hair cells

Scroll to the top of the screen and click "Return to Virtual Exhibit Index". Click on the 3<sup>rd</sup> blue ball "How Loud is Too Loud".

11. What unit of measure do we use to measure sound?

\_\_\_\_\_

12. How long would you have to listen to an 85dB sound for to cause hearing damage?

\_\_\_\_\_

13. How many dB can instantly cause damage?

\_\_\_\_\_

Press the start button to play the game. As you play, answer the following questions:

14. How much sound does a jackhammer produce? \_\_\_\_\_

15. How much sound does a vacuum cleaner produce? \_\_\_\_\_

16. How long could you listen to a chainsaw before you could damage your hearing?

\_\_\_\_\_

13. How much sound does a jet engine produce? \_\_\_\_\_

14. How much sound does a gun firing produce? \_\_\_\_\_

15. What was your score out of 18? \_\_\_\_\_

Scroll to the top of the screen and click "Return to Virtual Exhibit Index". Select the 4<sup>th</sup> blue ball "What is sound?"

16. Complete this sentence:

Sound starts as a \_\_\_\_\_. Something has to \_\_\_\_\_ for sound to exist. For instance, you can ring a bell, clap your hands, or pluck guitar strings to produce \_\_\_\_\_ that cause sound waves. \_\_\_\_\_ travel in sound \_\_\_\_\_ from one place to another through the \_\_\_\_\_.

Scroll to the top of the screen and click "Return to Virtual Exhibit Index". Select the 6<sup>th</sup> blue ball "Measuring Sound".

17. Sound energy travels in waves and is measured in frequency and?

\_\_\_\_\_

18. What does amplitude measure?

\_\_\_\_\_

19. How many decibels (dB) are normal speaking voices?

\_\_\_\_\_

20. Frequency is measured in the number of sound vibrations in what time measurement?

\_\_\_\_\_

21. For every 3dB over 85dB, how much is the amount of time we can listen to the sound decreased? \_\_\_\_\_

Scroll to the top of the screen and click "Return to Virtual Exhibit Index". Select the 7<sup>th</sup> blue ball "Rock Your World" and play the game there.

22. What was your yearbook title at the end of the game? \_\_\_\_\_

Scroll to the top of the screen and click "Return to Virtual Exhibit Index". Click on the last blue ball (8<sup>th</sup>) "Whadda Ya Know".

23. What was your final score? \_\_\_\_\_

**END OF WEBQUEST**