Unit 1 Post-assessment Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. What kind of scale is used to measure sound intensity?

 a. linear

 b. exponential

 c. logarithmic

 d. cubic

2. What decibel level will cause hearing loss when exposed for a long time period?

 a. 90 dB

 b. 50 dB

 c. 80 dB

 d. 30 dB

3. What decibel level will cause immediate hearing loss?

 a. 90 dB

 b. 50 dB

 c. 125 dB

 d. 140 dB

4. What is the formula to convert intensity of sound in Watts/m2 to decibels?

5. What is the intensity (in W/m2) of the softest sound a healthy human ear can detect?

6. Find the decibel level of the sound made by a hippo:  I =0.25 W/m2

7. A mosquito's *buzz* is often rated with a decibel rating of 40 dB. Normal conversation is often rated at 60 dB. How many times more intense is normal conversation compared to a mosquito's *buzz*?

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| a. 2 | b. 20 | c. 100 | d. 200 | e. 400 |

8. If the intensity of a certain sound is doubled, by how many decibels does the sound increase?

9. A power ratio of 100 dB is \_\_\_\_\_\_\_\_\_ times more intense than a 60 dB power ratio?

10. A sound measures 30 dB. This is how many times greater than the threshold of intensity (0dB)?

 a. 10

 b. 100

 c. 1000

 d. 10000

11. The table below represents the decibel level for several sound sources. Use the table to determine how many times more intense is the front row of an 80’s rock band concert than the library after school?

|  |  |
| --- | --- |
| Sound Source | Level (dB) |
| 80’s rock band concert (1st row) | 110 |
| 80’s rock band concert (15th row) | 100 |
| Average factory | 90 |
| Normal speech | 60 |
| Library | 40 |
| Threshold of hearing | 0 |

 12. On a good night, the front row of the Taylor Swift concert would surely result in a 120 dB sound level. An IPod produces 100 dB. How many IPods would be needed to produce the same intensity as the front row of the Taylor Swift concert?

13. In a neighborhood challenge to see who can climb a tree the fastest, you are ready to climb. Your friends have surrounded you in a circle as a cheering section; each individual alone would cause a sound intensity level of 80 dB at your location. If the actual sound level at your location is 87 dB, how many people are rooting for you?

a. 4

b. 5

c. 6

d. 7

 14. What happens to the total decibels when two instruments (e.g. Two violins playing at 85 dB) play at the same time?

15. How many violins would have to play together to increase the sound by 10 dB?

16. Six groups of students are talking in class before the bell rings to go to lunch.  Each conversation has an intensity of 1.4 x10-5 W/m2.  The city traffic in Cincinnati has a decibel level on average of 70 dB (decibels).  Which is louder: Cincinnati traffic or the classroom of kids talking and waiting for lunch?   Compare the decibels and intensities and fill in the blanks below. The  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  is louder than the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ by \_\_\_\_\_\_\_\_\_   more decibels and has a sound intensity that is \_\_\_\_\_\_\_ times more powerful!

17. Give an example of a sound that is about 1,000 times the intensity of a dishwasher.