6. What is the intensity I if the sound level is $\text{SIL} = 40 \text{ dB}$? For $85 \text{ dB}$?

7. What is the sound level in dB if the intensity $I$ is $10^{-10} \text{ W/m}^2$? If $I = 4 \times 10^{-7} \text{ W/m}^2$?

8. If one violin produces a reading of 75 dB on your sound level meter, show that you should get 78 dB from two violins playing together under the same conditions. What reading do you expect from 3 violins together? From 4, 5, and 10? How many violins would it take to produce a reading of 95 dB? How many for 105 dB?

9. Consider a fixed sound of intensity level $\text{SIL}_1 = 70 \text{ dB}$ and another (of different frequency) whose intensity level takes on the series of values $\text{SIL}_2 = 50, 60, 70, 80,$ and $90 \text{ dB}$. To the nearest dB, what is the level of the combined sound in each case? Make a general statement about the combined level for any two sounds when one is much stronger than the other.

10. If the maximum possible power output from a trombone is approximately 130 times that from a clarinet, and the clarinet produces a reading of 76 dB on your meter, what reading will the trombone produce at the same distance?

11. A singer is outdoors, on level ground, with no reflecting structures nearby. About how many dB difference in sound level would you expect between front and back rows if the audience is located between 5 m and 40 m from the source? How much difference do you suppose might be acceptable? Can a shell help solve this problem? How much will the shell help the deadness?

12. Two electronic oscillators are making sine waves, at frequencies $f_1 = 882 \text{ Hz}$ and $f_2 = 880 \text{ Hz}$. At a certain point, the sound level from one alone would be $\text{SIL}_1 = 76 \text{ dB}$, and from the other $\text{SIL}_2 = 82 \text{ dB}$. How often do beats occur? What is the amplitude ratio $A_2/A_1$? How many times $A_1$ is the combined amplitude when the waves are out of phase and when they are in phase? What are the minimum and maximum levels (in dB) of the combined sound? What would be the combined level if the frequencies were widely different?