

17-62)

Look at Figure 17.36 for information regarding a healthy ear. First, let's check to see if what the problem tells us is correct. At 1000 Hz, the 40 phon line is indeed at 40 dB. Now, we'll just follow the 40 phon line to each of the frequencies listed and read off the intensity level in dB. FYI I've also included the actual required intensity of each frequency.

Frequency (Hz)	Intensity level (dB)	Intensity (W/m <sup>2</sup> )
60	69	$7.9 \times 10^{-6}$
3000	37	$5.0 \times 10^{-9}$
8000	51	$1.39 \times 10^{-7}$

Again, the idea here is that these four sounds will seem equally loud to a human although they are measurably very different in energy content..