Friday 10

Digital Sound name___________________________

Consider making digital recordings using a sound card.

How many bits of resolution will you need to get 100 dB of dynamic range (including the sign bit)?

Roughly \( N = 1 + \frac{\text{dynamic range in dB}}{6} \) = ___18___________ (rounding up)

If you only need 4 kHz of bandwidth, what is the minimum sample rate that you will need?

4 kHz = Nyquist frequency = (sample frequency/2)

Sample frequency = _____8000___________ Hz

If frequencies above the Nyquist frequency are not prevented from reaching the digitizer, what phenomenon will happen?

_________Aliasing______________________; these frequencies appear as other frequencies that are within the bandwidth.

If sound levels exceed the dynamic range you expect to have _______clipping______________________________.

If sound levels approach the low end of the dynamic range you expect to have

_________bit_noise__________________________.

MP3 encoding involves both ____lossy_______ and ___lossless_______ compression. The algorithm uses a psychoacoustic model of _____masking______ to perform the lossy compression.