Reference Section

Sound travels at approximately 343 meters/sec at room temperature. Gravity on Earth is = 9.8 meters/sec^2

$f = \frac{1}{2\pi}\sqrt{\frac{k}{m}}$ $\frac{1}{2\pi}\sqrt{\frac{g}{l}}$ $f_a = \frac{1}{2\pi}\sqrt{\frac{k}{m}}$ $f_b = \frac{1}{2\pi}\sqrt{\frac{3k}{m}}$ $f = \frac{v}{2\pi}\sqrt{\frac{a}{Vl}}$

$v = 331 + 0.6t\ m/sec$ $c = 0.61r$ $v = f\lambda$

$\lambda_n = \frac{2L}{n}\ (n = 1,2,3 \ldots)$ $\lambda_n = \frac{4L}{n}\ (n = 1,3,5 \ldots)$ $v = \sqrt{T/\mu}$

$f_n = n\frac{v}{2L} = nf_1$ (n =1,2,3…) $f_n = \frac{n}{2L}\sqrt{\frac{T}{\mu}}$ $f_n = n\frac{v}{4L} = nf_1\ (n = 1,3,5 \ldots)$

$dB = 10\log_{10}\left(\frac{W}{W_0}\right)$ $dB = 20\log_{10}\left(\frac{p}{p_0}\right)$ $W_0 = 10^{-12}\ W$ $p_0 = 2 * 10^{-5}\ N/m^2$

$¢ = 1200\log_2(f_1/f_2)$ $¢ = 1200\log_{10}(f_1/f_2) / \log_{10}2$

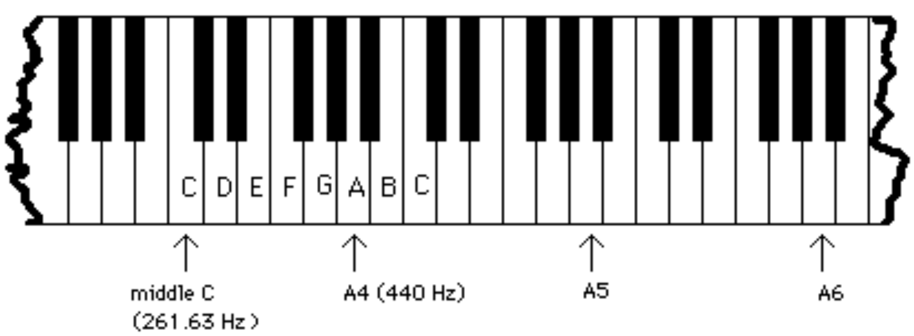
log(ab) = log(a) + log(b) log(a/b) = log(a) – log(b) $\log(x^n) = n\log(x)$

$f' = f_s\left(\frac{v+v_0}{v}\right)$ $f' = f_s\left(\frac{v-v_0}{v}\right)$ $f' = f_s\left(\frac{v}{v-V_s}\right)$ $f' = f_s\left(\frac{v}{v+V_s}\right)$

Sound intensity in a <u>free field</u> is 11 dB down at 1 meter from the source, dropping by 6 dB per doubling of distance. In a <u>hemispheric field</u>, it drops 8 dB at 1 meter and then 6dB per doubling of distance.

Quarter-comma Meantone temperament:

C D-½δ E-δ F+¼δ G-¼δ A-¾δ B-$\frac{5}{4}$δ C



(The piano goes down to A0, which is four octaves below A4)