

Exercise 5 Report

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Q1: math exercise (1 pt in total)

A. (0.5 pt)

**# If the vocal tract length is 15cm, and you discretize it with a 48 kHz sampling rate,
how many discrete sampling periods it does take for a sound wave (340 m/s) to travel the
vocal tract?**

#Ans: vocal tract length in meters: $15 \times 10^{-2} = 0.15\text{m}$

#the time that takes to travel to the vocal tract is: $t = 0.15/340 = 0.00044117647058823526\text{s}$

#the period $T = 1/f = 1/48000$

#so the final answer is $t/T = (0.15/340)/T = 21.176470588235293$

B. (0.5 pt)

**# What is the reflection coefficient k when a sound passes from section with area 1cm^2 to
 2cm^2 ?**

#Ans: $k = (Z_2 - Z_1)/(Z_2 + Z_1)$, so according to this formula, we get $(2-1)/(2+1) = 1/3$