Physics of Music Assignment #4
Constructing a Native American Flute
Due March 17, 2017

1. Please attach the "diary" that you have produced as you constructed your Native American Flute. Indicate your final tuning by preparing a table showing the scale that you chose and how closely the pitches (in cents) match the scale. What did you find interesting and challenging about this process? (10 marks)

2. Please prepare a FFT showing your flute's "voice". How many harmonics can you identify when you sound the fundamental? Do this on the FFT and be sure to measure them. (5 marks)

3. Optional Bonus for 5 marks – prepare a sound capture (mp3 format) of you playing a scale with your flute! Email this to me at brian.martin@kingsu.ca
4. Suppose that you tuned your flute to a F4# scale. If you tuned the flute at a temperature of 21 C and played on a summer afternoon when the air temperature was 29 C determine whether your flute will play sharp or flat and by how many cents it will have shifted in frequency. (5 marks)

5. Please read the investigation "*The Trumpet*" on page 91 of your text. The table on the right shows notes played by a B^b trumpet. What is the fundamental note for this trumpet? Explain how a trumpet is able to play both even and odd harmonics even though it appears to be a tube closed at one end. (5 marks)

Mode	Freq. (Hz)
2	230
3	344
4	458
5	578
6	695
7	814
8	931

Frequencies obtained by the B^b trumpet (Berg, Stork)